

**Youth-Onset Type 2 Diabetes:
Self-management among adolescents in Bangkok**

by

Sappaporn Wirattanapokin

B.Sc. (Medical Technology), M.Sc. (Medical Parasitology)

Submitted on

20 May 2011

A thesis submitted in total fulfillment of the requirements for the degree of

Doctor of Philosophy (PhD)

Social Sciences and Health Research Unit

School of Psychology and Psychiatry

Faculty of Medicine, Nursing and Health Sciences

Monash University

DECLARATION

I hereby declare that this thesis has not been submitted either in whole or in part, for any other degree or diploma at any university or equivalent institution and, that to the best of my knowledge and belief, the work is original. This thesis contains no material previously published or written by another person, except where due reference is made in the text of the thesis.

Signed:

(Sappaporn Wirattanapokin)

Date: 20 May, 2011

Copyright Notices

Notice 1

Under the Copyright Act 1968, this thesis must be used only under the normal conditions of scholarly fair dealing. In particular no results or conclusions should be extracted from it, nor should it be copied or closely paraphrased in whole or in part without the written consent of the author. Proper written acknowledgement should be made for any assistance obtained from this thesis.

Notice 2

I certify that I have made all reasonable efforts to secure copyright permissions for third-party content included in this thesis and have not knowingly added copyright content to my work without the owner's permission.

ABSTRACT

The increasing prevalence of type 2 diabetes, in parallel with increased obesity among young people, has been a global concern, as these health issues are dual risks for developing cardiovascular disease in adulthood. The built environment, shaped by rapid urbanisation, industrialisation, and Westernisation, is one of the most important factors of endemic childhood obesity in Thailand. In this urban environment, eating out or public eating has expanded, together with an increase of nuclear families and the shift in the roles and positions of women, fading their role as primary caregivers.

Weight reduction and blood glycaemic control are major goals of paediatric treatment and self-management of pre-diabetes and type 2 diabetes. Many young patients find it difficult to comply with these medical requirements, because of various underlying factors, both personal and social. This thesis explores how Thai adolescents with pre-diabetes and type 2 diabetes understand causes of their illness and lifestyle, including prior to their diagnosis. The study site is Bangkok and its surroundings.

This study is mainly based on a qualitative approach, using grounded theory, as a systematic method of qualitative research rather than a philosophy or theoretical standpoint. Fieldwork was conducted between December 2006 and January 2008. Data were collected through in-depth interviews and participant observation methods. Sixteen young people who were diagnosed with pre-diabetes or type 2 diabetes, aged 12-19, were study participants. They were recruited in three selected hospitals located in Bangkok. Their parents or primary caregivers were also included in the recruitment. Information from primary caregivers, other family members, and healthcare providers was gathered to broaden and contextualise data obtained from adolescents.

I also draw on quantitative data collected from 60 healthy adolescents to supplement the qualitative findings. Information gathered from healthy adolescents provided a broad picture of teenagers' attitudes and lifestyles in contemporary Thailand, and provided some insight about potential factors associated with the development of pre-diabetes and type 2 diabetes among young people. In doing so, a 10-minute interview was conducted at two selected shopping malls – Siam Square and the Mall *Baang Khae* - to obtain data related to adolescents' lifestyle, i.e. daily food intake and activity.

The findings from both quantitative and qualitative methods are concordant in that they indicate poor diet and inadequate physical activity among young people. Overall, in this study, family history of diabetes and childhood obesity, caused by poor diet and limited physical activity, predominantly influenced the development of pre-diabetes and diabetes among participants in this study. Similar to the healthy group, all adolescents with chronic illness who had had a history of childhood obesity followed an unhealthy lifestyle prior to their diagnosis.

Unlike adults with type 2 diabetes, most young participants are diagnosed without delay as their caregivers seek help promptly from paediatric endocrinologists. Young participants' and caregivers' explanatory models of the causes of their illness are close to biomedical models, despite study participants not fully understanding the latter. Young participants' health beliefs are not affected by folk or supernatural notions of illness. Most of them perceive that their illness is caused by their personal lifestyle, behaviour and heredity.

Living in a built urban environment which does not support an active lifestyle, the majority failed to change their unhealthy eating and sedentary behaviours, despite advice they received from health professionals. They frequently reported low self-efficacy and intention in adhering to diet control and regular exercise, perceived their illness as non-severe, understood that the disease cannot be cured, even if they followed health professionals' advice, and believed that they would face barriers in their social life if they modified their behaviours. Adolescents and their caregivers also reported that food availability at home and elsewhere (e.g. schools) is a barrier to changing lifestyle or maintaining healthiness.

According to adolescents' and their caregivers' perceptions and management behaviours, four patterns of diabetes self-management were identified: thriving, accommodating, indulging and indifferent. The findings suggested that two illness management styles – thriving and accommodating – resulted in improved health outcomes. The remaining two illness management styles - indulging and indifferent - worsened blood glucose levels and body weight. The 'indifferent' adolescents reported both internal barriers (i.e. lack of self control, low self-efficacy, and no life goal) and external barriers (i.e. lack of social support and easy access to unhealthy food) to their diet control and exercise. Barriers to taking medication regularly commonly reported by

those regarded as belonging to the ‘indulging’ and the ‘indifferent’ groups included skipping breakfast and forgetting to take medicine.

Overall, parental involvement and the perceived benefits of weight loss and/or the perceived severity of the illness facilitate adolescents in the thriving and the accommodating management style to be able to control their food and exercise, but also psychological factors, including intention and self-efficacy, play a role in these illness management styles. The perceived barriers of adhering to diabetes self-management (i.e. social life disruption) and limited parental involvement predict low intention and self-efficacy in changing unhealthy behaviours among adolescents in the indulging and the indifferent management style.

In the family setting, my study confirms that parents’ modelling and parenting styles, such as authoritative parenting, can prevent children from developing unhealthy habits and behaviours from childhood to adolescence, and enhance young people’s lifestyle modification. The families of young people with chronic illness need social support. Healthcare providers can potentially support or help caregivers or families by facilitating parental involvement, setting up dietary plans and raising awareness of unhealthy foods countrywide.

This study also demonstrates a need to enhance self-efficacy and actual intention among adolescents, and to increase parental involvement in diabetes tasks in the achievement of treatment goals. The encouragement of life goals, to increase internal motivation and self-efficacy among young people, is a key strategy to help them achieve their diabetes self-management. This could be a solution for eliminating internal barriers. The enhancement of the social networks of ill adolescents, including young people with or without chronic illness and sportsmen, in self-help groups or as peer supporters, would benefit both ill adolescents and their peers to reduce a discrepancy between them; they can share life and learn from each other through lifestyle modification to be healthy.

Furthermore, intervention programs for primary caregivers, aiming to encourage them to be highly involved in diabetes self-management and to be “healthy” role models, and enhancing their willpower in taking care of children with chronic illness, may be useful diabetes management strategies. These strategies would not only improve the health outcomes of ill young people but also the whole family, and in particular those who themselves have type 2 diabetes.

As my study has a small sample size, with limited diversity in age, ethnicity, and the place of residence, and is based predominantly on qualitative research, the findings cannot be generalised. In addition, future research needs to investigate the social and environmental context (i.e. peers, teachers and school) and its impact on the lifestyle of healthy and ill adolescents and the illness management strategies of those who are diagnosed with type 2 diabetes.

ACKNOWLEDGEMENTS

To be honest, I have never expected that undertaking a PhD would be the most difficult and challenging task in my life, but finally I have come to the end - the last page. My special thanks go to the Royal Thai Government, for sponsoring me throughout the course, and also to the director and all my colleagues in the institution where I work – Kanchanbhishek Institute of Medical and Public Health Technology – for providing me with the opportunity to study abroad. I also pay my respects to the Deputy Director of Prabaromarajchanok Institute, Dr Tipaporn Sukosit, who accepted willingly to be my official local advisor during my fieldwork. Without Professor Suttipong Wacharasindhu and Associate Professor Sompongse Suwanwalaikorn (both my field advisors), Ms Suphab Aroonparkmongkol, and Ms Shalaosri Sangeam at King Chulalongkorn Memorial Hospital; Professor Thep Himathongkam at Theptarin Hospital; Dr Chaicharn Deerochanawong at Rajavithi Hospital; and all other staff who participated in my study, it would not have been possible to recruit young participants and start my research. My greatest appreciation is to all my participants and their parents or caregivers, who donated their time and their worthy stories for this study.

I am also thankful and respectful of my all-supportive and extraordinary supervisors. Working with all of them, I have obtained many ideas, suggestions, and document sources (e.g. textbooks and articles) which helped me to go forward and expand my thinking, reading and writing more widely and deeply. Dr Milica Markovic – my main supervisor – has taught and suggested to me many things not only about academic knowledge but also about many aspects of life. “Trust” is what I have learnt from her and she has proved that I can trust her. In turn, I would like to be one who all my supervisors can trust. I would like to thank her for her patience, kindness and everything she has done for me, particularly in the first year and final year, when I feared that she would get a headache and would be annoyed with my language errors and limited understanding of broad aspects and theories. My inspiration for academic achievement comes from Professor Lenore Manderson – my co-supervisor – she has been amazing and a genius in her profession. I will not forget the way she has supervised me, full of encouragement. I have learnt being a “supportive” supervisor from her and this will inspire me to do the same. I wish to express my appreciation also to Associate Professor Andrea Whittaker – my external supervisor. I have been very

grateful to her for her academic advice and comments on my thesis, even after she moved to The University of Queensland. Additionally, I would like to thank Associate Professor Rosemary Clerehan, who helped me improve my academic writing and edit some thesis chapters prior to submitting them to my supervisors. I also appreciate Dr Bhensri Naemiratch (*pee Poy*) who has supported me, providing me with Thai and English articles and books related to my thesis topic, and with meaningful messages to enhance my willpower. I will never forget all of my peers in the Social Sciences and Health Research (SSHR) group, the research staff and the friendly student seminars on Fridays. This was an invaluable experience, and has made my PhD life lively. Kathleen and Thomas Nolan – my unforgettable friends – treated me as a member of their family; it was a wonderful time living and learning many valuable things from both of them.

I am very lucky to have all supportive and loving family members. My parents are my deepest inspiration, and this underpins my PhD achievement. I am grateful to my husband's family, particularly his parents and his sisters who have shown their concern and encouraged me. Finally, the most important person, my husband, Somchai Wirattanapokin, who has been dedicated himself to me and has stood beside me throughout my journey. My greatest thankfulness is for his absolute patience with my swinging emotions, my talk about diabetes every day, reading and editing my thesis, and helping me to make all the graphic images. I am so grateful that you have always put me first. This thesis is my gift to you.

TRANSLITERATION

Romanized transcriptions of Thai words in this study are based on the modified version of the Royal Thai General System (RTGS), revised by the Royal Institute, Bangkok, in 2000. This official transliteration is used in road names and government publications, and is close to standard sounds in English. However, the Thai transliteration system has some limitations which cannot represent some Thai pronunciation: there are no tone marks and the way of distinguishing between short and long vowels. To distinguish short and long vowels, I used a single letter for short vowels (a, e, i, o, u) and double letters for long vowels (aa, ee, oo, uu). For example, *bun* and *jai* represent short pronunciation while *baap* and *Sii* have long sounds. Some place names and personal names are frequently written inconsistently, for example, *Bang Khae* (the name of a shopping mall in Bangkok), used in publicity and representing a short sound, is replaced by *Baang Khae* in this thesis to keep its tone longer and closer to local pronunciation.

GLOSSARY

<i>Aahaan</i>	Food
<i>Aahaan nak</i>	Food usually eaten as a meal
<i>Aahaan sukkhapaab</i>	Healthy food
<i>Aahaan waang</i>	Food usually eaten during a meal as a light meal
<i>Baowaan</i>	Diabetes
<i>Baowaan paek</i>	Wet diabetes
<i>Baowaan heank</i>	Dry diabetes
<i>Baowaan khuen taa</i>	Retinopathy caused by diabetes
<i>Bun</i>	Merit
<i>Baap</i>	Sin
<i>Chaa khai muke</i>	Pearl milk tea
<i>Cor-dum</i>	An appearance of darker skin around the neck
<i>Dek</i>	A child
<i>Dek thai mai kin waan</i>	1. Literally, Thai children do not eat sweets or sweet food 2. The name of the project “Sweet enough campaign,” aimed to reduce sweets and sweet food consumption, and to promote exercise among children and adolescents
<i>Haai</i>	1. (Things or human) disappear, vanish, and are lost 2. (Health or illness) get well, recover, are healed or cured
<i>Haai khaad</i>	Completely cured
<i>Haai puay</i>	Recovering or cured from illness
<i>Haai jaak roak</i>	Recovering or cured from disease
<i>Hoi hoi</i>	Feeling of being hungry in relation to low blood sugar
<i>Jai</i>	Heart
<i>Jai sun hwew hwew</i>	A symptom of the heart beating fast and light
<i>Joak</i>	A Chinese rice soup, congee
<i>Karn obromlieangdoo-dek</i>	Child-rearing
<i>Kamma or kam</i>	Sin, misfortune
<i>Kammaphan</i>	Heredity or genetics
<i>Khai nai hin</i>	‘Too protective’, which refers to children who are nurtured intentionally and carefully, like keeping an egg in a hard container to prevent danger from outside
<i>Khanom</i>	One type of <i>khong kinlen</i> such as snacks or sweets
<i>Khee klai</i>	An outer layer of skin
<i>Khon baap</i>	A sinner
<i>Khong kinlen</i>	Edible things, such as light foods, snacks, sweets, fruits and drink, are commonly eaten as a light meal

<i>Kin jubjib</i>	A characteristic eating habit (common among females), which refers to people who like eating sweets or snacks at any time
<i>Kin pen ga-la-mung</i>	Literally meaning of eating a large amount of food
<i>Look a-katonyoo</i>	An ungrateful daughter or son
<i>Mee hade pon</i>	Rational, based on reason
<i>Moo gatha</i>	Korean-style grilled pork
<i>Nam daeng</i>	Red cordial such as Hale's Blueboy (a trade name)
<i>Paae thong</i>	A symptom of pregnancy such as morning sick
<i>Pa-dedkarn</i>	Authoritarian
<i>Ploipla-laloei</i>	Neglecting
<i>Pluttikam</i>	Behaviour
<i>Raksaa dai</i>	Treatable
<i>Roak</i>	Disease
<i>Taam jai paak</i>	Lack of self-control in eating food
<i>Tham bun</i>	Make merit
<i>Thamjai</i>	Fair understanding and accept a (critical or poor) situation to overcome the sufferings
<i>Tham than</i>	Give alms, money or things, donate
<i>Wai</i>	Age
<i>Wairun</i>	Teenagers or adolescents and there are various terms, referring to teenagers in either a positive or a negative sense as below:
- <i>waicanong</i>	wild age
- <i>waison</i>	naughty age
- <i>waijoh</i> or <i>waijaab</i>	(slang) cool age
- <i>waikumdud</i>	immature age
- <i>wairackyam</i>	budding or blooming age
- <i>wailaorian</i>	studying age
- <i>wai duerun</i>	stubborn age
- <i>wai hualiaw-huatore</i>	critical age
- <i>waiuntarai</i>	dangerous age
<i>Waan</i>	Sweet
<i>Yark nam waan</i>	Thirst for sweetened drinks

LIST OF ABBREVIATIONS

ADA	American Diabetes Association
BMA	Bangkok Metropolitan Administration
BMI	Body Mass Index
COPD	Chronic Obstructive Pulmonary Disease
DKA	Diabetes Ketoacidosis
FBG	Fasting Blood Glucose
FBS	Fasting Blood Sugar
GP	General Practitioner
GPA	Grade Point Average
HbA _{1c}	Haemoglobin A _{1c}
IDDM	Insulin Dependent Diabetes Mellitus
IFG	Impaired Fasting Glucose
IGT	Impaired Glucose Tolerance
MoPH	Ministry of Public Health
NIDDM	Non-Insulin Dependent Diabetes Mellitus
OGTT	Oral Glucose Tolerance Test
PE	Paediatric Endocrinologist
T1DM	Type 1 Diabetes Mellitus
T2DM	Type 2 Diabetes Mellitus
ThaiHealth	Thai Health Promotion Foundation
VicHealth	Victorian Health Promotion Foundation
WHO	World Health Organization

TABLE OF CONTENTS

ABSTRACT	i
ACKNOWLEDGEMENTS	v
TRANSLITERATION	vii
GLOSSARY	ix
LIST OF ABBREVIATIONS	xi
TABLE OF CONTENTS	xiii
LIST OF TABLES	xvii
LIST OF FIGURES	xix
LIST OF TEXT BOXES	xxi
CHAPTER 1 INTRODUCTION	1
Significance and epidemiology of diabetes	5
Diabetes self-management	13
Research related to the study	17
CHAPTER 2 DISEASE AND HEALTHCARE ASPECTS	25
Aetiologies, characteristics and risk factors	25
Diagnostic tests	33
Treatment of type 2 diabetes	37
Factors affecting treatment and self-management	42
Healthcare system in Thailand	50
CHAPTER 3 ADOLESCENTS WITH DIABETES	67
Definition of adolescence	67
Thai adolescents' health and lifestyle risks	69
Theoretical framework	79
Research on self-management of type 2 diabetes in Thailand	93

CHAPTER 4 METHODOLOGY	101
Aims and research questions	101
Research design	102
Study areas: geography, growth and religious belief	104
Fieldwork: Preparatory phase	110
Fieldwork: Collecting data	113
Data analysis	128
Study limitations	134
CHAPTER 5 FAMILY, LIFESTYLE AND CHILDHOOD OBESITY	137
Adolescents' and caregivers' backgrounds	138
Lifestyle-related factors	143
Family's health-related belief and behaviours	169
CHAPTER 6 PATHWAYS TO DIAGNOSIS	195
Adolescents' illness history	195
Access to paediatric specialists	210
Feelings of being diagnosed with (pre) diabetes	215
Participants' perspectives of health care services and providers	219
Hospital brochures	223
CHAPTER 7 EXPLANATORY MODELS OF YOUTH DIABETES	227
Lay explanatory models of diabetes	229
Types of diabetes	231
Causation	234
Signs and symptoms	244
Severity of diabetes	245
Adolescents' and caregivers' understanding of treatment	253
CHAPTER 8 DIABETES SELF-MANAGEMENT STYLES	265
Perceptions of living with diabetes	266
Management behaviours	284
Diabetes self-management styles	297
CHAPTER 9 DISCUSSION	327
Factors affecting adolescents' diabetes self-management	327
Public health policies and campaigns	343
Implications and Recommendations	348

BIBLIOGRAPHY	353
APPENDIX 1.1 ETHICS APPROVAL: CHULALONGKORN UNIVERSITY	391
APPENDIX 1.2 ETHICS APPROVAL: RAJAVITHI HOSPITAL	393
APPENDIX 2.1 PARTICIPANT INFORMATION SHEET [THAI]	395
APPENDIX 2.2 PARTICIPANT INFORMATION SHEET [ENGLISH]	399
APPENDIX 3.1 CONSENT FORM [THAI]	401
APPENDIX 3.2 CONSENT FORM [FOR ADOLESCENTS]	403
APPENDIX 3.3 CONSENT FORM [FOR PARENTS/GUARDIANS]	405
APPENDIX 4.1 DEMOGRAPHIC FORM [THAI]	407
APPENDIX 4.2 DEMOGRAPHIC FORM [ENGLISH]	409
APPENDIX 5.1 INTERVIEW GUIDELINE [THAI]	411
APPENDIX 5.2 INTERVIEW GUIDELINE [ENGLISH]	417
APPENDIX 6.1 STUDY QUESTIONS [THAI]	423
APPENDIX 6.2 STUDY QUESTIONS [ENGLISH]	425
APPENDIX 7 PARTICIPANTS' GENEALOGY	427
APPENDIX 8.1 MESSAGES OF "JUMBO QUEES"	437
APPENDIX 8.2 A BEAUTY COMPETITION OF OVERWEIGHT WOMEN	439
APPENDIX 9 TABLES OF DIABETES MANAGEMENT STYLES	441
APPENDIX 10 PUBLICATIONS	445

LIST OF TABLES

Table 1.1 DALY attributable to major diseases by gender, Thailand, 2004	6
Table 1.2 Epidemiology of youth type 2 diabetes from population-based studies	10
Table 1.3 Epidemiology of youth type 2 diabetes from clinic-based studies	11
Table 2.1 ADA-diagnosis of pre-diabetes and type 2 diabetes	35
Table 5.1 Demographic and family data of adolescents by gender and diagnosis	139
Table 5.2 Diabetes data of adolescents by gender and diagnosis	141
Table 5.3 Main caregivers' demographic data	142
Table 5.4 Characteristics of child-rearing styles among study families	180
Table 7.1 Lay understanding of <i>haai</i> (curable diabetes)	256
Table 8.1 Perception and management behaviour themes and sub-themes	266
Table 8.2 Diabetes self-management styles across given themes	296
Table 8.3 Description of the rating scale for lifestyle change	298
Table 8.4 Young respondents' lifestyle change scores	299
Table 8.5 Snapshot of illness management behaviours	300

LIST OF FIGURES

Figure 2.1	Dianostic tests of pre-diabetes and type 2 diabetes	36
Figure 2.2	Age structure of the Thai population in 1960 and 2010	51
Figure 2.3	Pre-elementary school attendance rate, Thailand, 1992-2006	52
Figure 2.4	Proportions of hospitals by agency and region in 2005	54
Figure 2.5	Proportion of doctors by agency, 1998-2005	55
Figure 2.6	Population to doctors ratio by region, 1998-2005	56
Figure 2.7	Population to hospital beds ratio by region, 1998-2005	57
Figure 2.8	Healthcare delivery system in Thailand	58
Figure 2.9	The mascot of the Sweet Enough Network, the pink ant, <i>Noynoi</i>	64
Figure 3.1	Hamburger advertisement at a sky-train station	77
Figure 3.2	A food billboard	78
Figure 3.3	Pepsi image at Siam Square	78
Figure 4.1	Central Region of Thailand	105
Figure 4.2	Greater Bangkok	106
Figure 4.3	Recruitment process of adolescents with pre-diabetes and diabetes	116
Figure 4.4	A doctor and a young patient in the examination room	125
Figure 5.1	Types of fast food consumed by healthy adolescents	146
Figure 5.2	Frequency of fast food intake among healthy adolescents	147
Figure 5.3	Types of drinks consumed by healthy adolescents	148
Figure 5.4	Pearl milk tea	149
Figure 5.5	Frequency of soft drink intake among healthy adolescents	150
Figure 5.6	Types of snacks consumed by healthy adolescents	151
Figure 5.7	Frequency of snack intake among healthy adolescents	151
Figure 5.8	Fried food sold outside school	156
Figure 5.9	Types of exercises most frequently done by healthy adolescents	160
Figure 5.10	Intensity of exercise among healthy adolescents	161
Figure 5.11	Activities frequently done in spare time by healthy adolescents	162
Figure 5.12	Intensity of computer use among healthy adolescents	162
Figure 6.1	Pathways to diagnosis	197
Figure 6.2	Access to a paediatric endocrinologist	212
Figure 6.3	Registration counters at the outpatient department diabetes clinic	213

Figure 6.4	Waiting rooms for physical examination	213
Figure 6.5	Hospital documents related to diabetes from different hospitals	224
Figure 6.6	Thai diabetes-related booklets for children and adolescents	225
Figure 7.1	A traditional drug used by a young patient with diabetes	240
Figure 7.2	Adolescents' perceptions of diabetes curability and controllability	254
Figure 7.3	Caregivers' perception of diabetes curability and controllability	255
Figure 8.1	Sib-jed's lifestyle model	304
Figure 8.2	Nueng's lifestyle model	310
Figure 9.1	Factors influencing diabetes self-management	332

LIST OF TEXT BOXES

Text box 1 Sib-haa's history	183
Text box 2 Sib-sii's history	187
Text box 3 Song's history	190
Text box 4 Sib-sam's history	192

CHAPTER 1

INTRODUCTION

Diabetes mellitus is a non-communicable, chronic and incurable disease associated with insufficient or deficient insulin and high blood glucose (World Health Organization, 2006; American Diabetes Association, 2008a). Pre-diabetes is the term used to indicate a relatively high risk of developing type 2 diabetes, and refers to a blood glucose level which is high (see Chapter 2) but has not reached the diagnostic level of diabetes. It is referred to as a 'pre-stage', through which individuals almost always pass before developing type 2 diabetes (Ritchie et al., 2003). Based on the new classification from the American Diabetes Association (2008a) and the World Health Organization (2008), diabetes mellitus is divided into four categories, according to aetiology: type 1 (T1DM), type 2 diabetes (T2DM), gestational diabetes (GDM), and other specific types.

Diabetes is now a global disease with prevalence estimated to rise to 300 million by the year 2025 (Wild et al., 2004). By this time, the number in the mainland Chinese population with diabetes will increase to almost 38 million and in India, to approximately 57 million people. Overall, India, China, and the US currently have the greatest number of people with diabetes (ibid.). In Thailand, according to a population-based study conducted in 2000, the prevalence of diabetes among Thai adults was 9.6% (2.4 million people), and was slightly more prevalent among women (9.9%) than men (9.3%) and in urban (12.1%) than rural areas (8.4%) (Aekplakorn et al., 2003). In the past decade, diabetes prevalence has increased in all age groups and in both genders (Vannasaeng, 2007).

Previously, type 1 and type 2 diabetes were named insulin-dependent diabetes mellitus (IDDM) and non-insulin-dependent diabetes mellitus (NIDDM) respectively, based on the need for insulin treatment, but recently, some patients with NIDDM have also required insulin injections because they have reached a severe stage of the disease (e.g. developing complications such as liver disease or the damage of insulin-secreting cells). However, the two diabetes types are still distinguished on the basis of onset and prevalence: children predominate in type 1 diabetes, so-called childhood or juvenile-onset diabetes, while the highest prevalence and onset of type 2 diabetes is among adults, and so is called adulthood, adult-onset or maturity-onset diabetes. Type 2 diabetes is the most prevalent of all diabetic types, followed by type 1 diabetes (The National Diabetes Information Clearinghouse, 2007; American Diabetes Association, 2008a). For example, in Australia, 85-90% of all people with diabetes have type 2 diabetes and 10-15% have type 1 diabetes (National Centre for Monitoring Diabetes, 2002). In Thailand, over 95% of all people with diabetes have type 2 diabetes (Rotaree, 2004; Nitiyanant et al., 2007).

Type 2 diabetes now includes paediatric-onset or youth-onset as well as adult-onset diabetes, with increasing prevalence among children aged 6-19 (Pinhas-Hamiel et al., 1996; Copeland et al., 2005). Historically, ethnic minorities in North America – Native Americans and Canadian First Nations People - were regarded as especially high risk groups for type 2 diabetes (Pinhas-Hameil and Zeitler, 2005). According to publications between 1966 and 1999, clinic-based data on diabetes prevalence in the United States indicated that newly diagnosed cases of type 2 diabetes account for 8-45% of all paediatric diabetes (American Diabetes Association, 2000; Fagot-Campagna et al., 2000). The variation in prevalence results from differences in ethnicity and sampling strategy. Since the late 1990s, the global prevalence and incidence of type 2 diabetes

among young people has soared, particularly in Asian countries such as Japan, India, Taiwan, and Thailand, and continues to increase (Kitagawa et al., 1994; American Diabetes Association, 2000; Wei et al., 2003b; Likitmaskul et al., 2005; Mohan et al., 2007).

My predominantly qualitative study focuses on type 2 diabetes and pre-diabetes among young people in Thailand, as this has now become a major public health problem. Although many studies using a qualitative approach have been conducted among adults and older people with type 2 diabetes, qualitative studies conducted among adolescents have been scarce. Therefore, in my study, I explored health-related risks (i.e. unhealthy diet consumption and sedentary lifestyle) of urban adolescents prior to and following their diagnosis with pre-diabetes and diabetes, using in-depth interviews for data collection. These health issues are associated with obesity, which is an important risk factor for developing type 2 diabetes (Hu et al., 2001). I also collected data on the same issues from healthy adolescents, to provide me with a broader picture of contemporary adolescents' health risks and lifestyle in Bangkok. These findings supplement data on diet and lifestyle from the pre-diabetes and diabetes groups. I found out in what ways adolescents and their primary caregivers seek diagnosis and/or treatment, and how they both felt when the former were first diagnosed with pre-diabetes or diabetes. In addition, my study addressed adolescents' explanatory models of their illness, and the illness perceptions of other family members with or without diabetes. Furthermore, I explored diabetes self-management, using thematic analysis to develop an understanding of an area where little research has been conducted in Thailand. I also investigated potential factors determining adherence to each management style.

I have clarified the terminology of type 1 and type 2 diabetes and pre-diabetes. I will discuss the significance of diabetes in terms of its prevalence globally and in Thailand, mortality and morbidity, discuss the cost burden of diabetes care and the epidemiology of type 2 diabetes among young people in selected countries, including Thailand. I conceptualise the terms self-management, compliance and adherence. I review the literature which informed my study, and illustrate how this helped to shape my study aims and research questions. In Chapter 2, I present the medical background of type 2 diabetes, including its aetiology, characteristics and risk factors, treatment and diagnosis, as well as factors affecting diabetes self-management. I also discuss the healthcare system and health promotion for young people with diabetes in Thailand. In Chapter 3, I review the literature on Thai adolescents' health- and lifestyle-related risk factors: unhealthy food consumption, sedentary behaviours and childhood obesity. I then discuss behavioural models in relation to self-management and lifestyle modification. At the end of the chapter, I summarise research on self-management of diabetes in Thailand. Chapter 4 sets out the study aims and research design, details of study participants, study sites, the process of conducting fieldwork, methods and instruments for data collection, ethical considerations, the data analysis process, and limitations of the study. In Chapters 5 to 8, I present all quantitative and qualitative results. In Chapter 5, I identify lifestyle-related factors, demographic and familial factors which contribute to the development of pre-diabetes and diabetes. In Chapter 6, I discuss how the adolescents were diagnosed with pre-diabetes and diabetes, and present their pathways to diagnosis. I explain how these adolescents and their caregivers understand the disease in terms of meaning, cause and treatment in Chapter 7. In Chapter 8, I propose patterns of diabetes self-management and identify demographic and psychosocial factors affecting these patterns. I consider how these patterns affect

adolescents' blood glycaemic levels and weight control. In the last chapter, I summarise the main discussions and the key findings of the thesis contributing to theoretical models, outline the implications, and offer recommendations for the further study.

Significance and epidemiology of diabetes

Mortality and morbidity

Regardless of diabetic types, diabetes contributes significantly to both mortality and morbidity. In 2006, diabetes was the seventh major cause of fatalities in the US, based on 72,507 death certificates (National Institute of Diabetes and Digestive and Kidney Diseases, 2008). Although diabetes is underreported as a cause of death, people with diabetes have twice the risk of death as those without diabetes of a similar age. For example, 68% of diabetes-related death certificates, among the US elderly in 2004, identified heart disease as a cause of death (*ibid.*). Similarly, according to health status data of Thai people in 2004, using DALY calculations,¹ diabetes was the eighth major cause of DALY among men (3.2%), and the third among women (6.9%) (Table 1.1). The mortality rate of Thai people attributed to diabetes tends to increase every year (Vannasaeng, 2007). A 2006 report from the Ministry of Public Health revealed that the mortality rates of Thai people with diabetes (7.9-11.8/100,000 population), hypertension (3.3-5.1/100,000 population), and coronary heart disease (3.6-14.4/100,000 population) had increased continuously between 1998 and 2002 (Siripitayakunkit et al., 2006).

¹ Disability-Adjusted Life Years (DALY): one DALY is one lost year of healthy life, calculated from the formula – DALYs = years lost to pre-mature death + years lost to illness or disability.

Table 1.1 DALY attributable to major diseases by gender, Thailand, 2004

No.	Male			Female		
	Disease	DALYs	Percent	Disease	DALYs	Percent
1	HIV/AIDS	645,426	12.1	Cerebrovascular disease	307,131	7.9
2	Road traffic injuries	600,004	11.3	HIV/AIDS	290,711	7.5
3	Alcohol abuse	329,068	6.2	Diabetes	267,549	6.9
4	Cerebrovascular diseases	305,105	5.7	Depression	191,490	4.9
5	Liver cancer	294,868	5.5	Liver cancer	140,480	3.6
6	Ischemic heart disease	178,011	3.3	Road traffic injuries	135,832	3.5
7	Chronic obstructive pulmonary disease	175,549	3.3	Ischemic heart disease	117,790	3.0
8	Diabetes	168,702	3.2	Knee osteoarthritis	117,042	3.0
9	Depression	136,895	2.6	Chronic obstructive pulmonary disease	112,663	2.9
10	Cirrhosis	133,046	2.5	Cataract	110,572	2.8

Sources: Working Group on Burden of Disease and Risk Factors in Thailand (2006) (Wibulpolprasert, 2008:173)

Regarding diabetic complications, a survey of 9,419 patients with diabetes from 11 hospitals in Bangkok and other provinces estimated the prevalence of blindness at 23.3%; chronic renal failure at 34.9%; and other complications, including high blood lipids, high blood pressure, coronary heart disease, and stroke at 73.7%, 63.6, 8.2%, and 4.4% respectively (Rotaree, 2004). Although many risk factors for developing type 2 diabetes in young people and adults are similar (e.g. increased abdominal fat, limited physical activity, insulin resistance, genetic factors, and ethnicity), a transition period from at risk or pre-diabetes to the development of type 2 diabetes may be only a few years in adolescents, while taking decades in adults (Goran et al., 2003a; Weiss, 2007). The short transition time between pre-diabetes and diabetes in adolescents is possibly confounded by increased insulin resistance in puberty (Goran et al., 2003a). Hence, despite being asymptomatic initially, many young people with type 2 diabetes in

adulthood may develop some of the complications leading to premature disability or death, if not treated immediately and appropriately (American Diabetes Association, 2000). A review study by Dean and Sellers (2007) indicated that young patients in the US (among Pima Indians), Japan, and Canada had all developed early kidney disease. As widely accepted, obese youths with pre-diabetes and type 2 diabetes have a high risk of cardiovascular disease in adulthood (Goran et al., 2003a; Jolliffe and Janssen, 2006; Aekplakorn et al., 2007; Dean and Sellers, 2007; Nathan and Moran, 2008). An Australian study, comparing the prevalence of diabetic complications in youths with type 2 diabetes and those with type 1 diabetes, reported that higher blood pressure and microalbuminuria² were frequent in youths with type 2 diabetes, despite a shorter duration of disease (Maiké et al., 2006). This confers a serious concern to health care providers and parents in terms of the long-term care of youths with the disease, and/or its complications, and the financial burden of treatment and care.

Cost burden of diabetes care

The long-term care and treatment for diabetes and its complications is costly, affecting the total income of individual families and the national economy. In 2007, total medical costs of diabetes in the US accounted for \$174 billion, including \$116 billion in direct costs and \$58 billion in indirect costs: disability, unemployment, and premature mortality (National Institute of Diabetes and Digestive and Kidney Diseases, 2008). In 1995, the direct health care costs for type 2 diabetes in the US were 1.25 times and 2.7 times greater than those for heart diseases and hypertension respectively (Kumanyika et al., 2002). Similarly, a study on the financial expenditure of Thai patients with diabetes

² A condition of having a small amount of protein leakage into the urine which indicates an early stage of diabetic kidney disease.

in 1998 estimated that the cost per person per year for diabetes was 127 times higher than that for general patients (6,017.50 versus 47.20 baht/year)³ (Putsuk, 1999). Diabetes costs, as a result of hospitalisation and self-management at home, affect not only individuals and families, but also the whole country. For new patients, admission to a public hospital ranges from 20,000 to 40,000 baht (AUD 667 – 1,333) per person (The Pediatric Endocrine Society of Thailand, 2007). The follow-up expenses for patients who visit a public hospital every 2-3 months per year are over 30,000 – 50,000 baht (AUD 1,000 – 1,667) and over 100,000 baht (AUD 3,333) if admitted to a private hospital (ibid.). According to the burden of diabetes care, primary prevention efforts for the general population or high-risk people (i.e. those who are pre-diabetic and/or obese) are necessary. Lifestyle modification, such as increasing physical activity, controlling weight and avoiding unhealthy behaviours, rather than drug treatment, is an effective and low-cost way to prevent or delay diabetes and its complications (American Diabetes Association, 2004). This requires families, community, health care providers, public and private organizations, and government agencies to be involved.

Epidemiology of youth-onset type 2 diabetes

Compared with adults, epidemiological data on type 2 diabetes among children and adolescents in many countries, including Thailand, have been limited; and most are case series or clinical-based studies, except in the US, Sweden, Australia, Japan, Taiwan, Singapore and Hongkong where population-based studies have been conducted (Kitagawa et al., 1998; Likitmaskul et al., 2003; Wei et al., 2003b; Alberti et al., 2004; Kaufman, 2005; Pinhas-Hameil and Zeitler, 2005; Santiprabhob et al., 2007).

³ AUD 200.60 versus 1.50 AUD/year; 1 AUD = 30 baht

Population-based and clinic- or case-based studies, summarised in Tables 1.2 and 1.3, present the increasing prevalence and incidence of type 2 diabetes among young people in selected countries.

From the tables, it is clear that type 2 diabetes is affecting youths, particularly females, across many countries. The exception is Thailand, as I discuss later in the section *Gender and age*. Here, based on case series in Thailand, type 2 diabetes among young people with all diabetes sharply increased from 5% in 1987-1996 to 17.9% in 1997-1999 (Likitmaskul et al., 2003). A recent study by Santiprabhob et al. (2007) also indicated that the number of new cases with type 2 diabetes had increased by 28% between 2003 and 2004.

Epidemiological data on type 2 diabetes in many countries are likely to underestimate the number of people with the disease, and many cases are undiagnosed because of lack of symptoms and type misclassification (Dabelea et al., 1998; Aekplakorn et al., 2003; Goran et al., 2003a; Ritchie et al., 2003; Bloomgarden, 2004). Teenagers with either pre-diabetes or type 2 diabetes are frequently asymptomatic and undiagnosed for years (Alberti et al., 2004; Weiss, 2007). They are often diagnosed by accident, for example, during a blood examination for a health check-up or for specific health problems (e.g. recurrent fungal infection of the vagina, menstrual disorders, excessive weight gain, or high blood lipids, blood glucose or blood pressure). A Canadian study reported that 56% of youth with type 2 diabetes with the absence of symptoms were diagnosed through blood examination (Zdravkovic et al., 2004). In individuals with both type 1 and type 2 characteristics – “hybrid” or “double” diabetes (Kaufman and Shaw, 2007) - it is difficult to distinguish the two diabetic types, and consequently, the wrong diagnosis can occur in some cases (Kitagawa et al., 1994).

Table 1.2 Epidemiology of youth type 2 diabetes from population-based studies

Author	Study area/population	Study period	Age (years)	Incidence (/100,000 person-year)	Prevalence (%)		
					Total	Male	Female
Dabelea et al. (1998)	Arizona, US / Pima Indians	1967-1996	10-14 15-19	NA	NA	0-1.4 2.4-3.8	0.7-2.9 2.7-5.3
Dean et al. (1998)	Manitoba, Canada/ Native Canadians	1996-1997	4-19 10-19	NA	1.1 NA	NA	NA 3.6
Kitakawa et al. (1998)	Tokyo, Japan	1976-1995	6-12 13-15	0.2 - 2 7.3 – 13.9	NA	NA	NA
Fagot-Campana et al. (2000)	Arizona, US / Pima Indians	1967-1996	10-14 15-19	NA	2.2 5.1	NA	NA
Wei et al. (2003)	Taipei, Taiwan	1999	6-18	Girls 15.3 Boys 9.0	NA	NA	NA

NA = Not available

Table 1.3 Epidemiology of youth type 2 diabetes from clinic-based studies

Author	Study area/ population	Study period	Age (years)	% of T2DM cases among new patients	Incidence (/100,000 person- year)
Pinhas-Hamile et al. (1996)	Ohio, US / Whites, African- Americans	1982-1994	10-19	NA	0.7-7.2
Macaluso et al. (2002)	Florida, US / Hispanics, African- Americans	1994-1998	5-19	9.4-20	NA
Lipton et al. (2002)	Chicaco, US / African-Americans, Latinos	1985-1994	0-17	NA	2.6-3.2
Likitmaskul et al. (2003)	Bangkok, Thailand/ Thais	1987-1996 1997-1999	≤ 14	5 17.9	NA
McMahon et al. (2004)	WA/ Indigenous, non-Indigenous	1990-2002	≤ 17	27	NA
Hotu et al. (2004)	New Zealand/ Pacific Islanders (Maori)	1996-2002	14-20	1.8-11	NA
Santiprabhob et al. (2007)	Bangkok, Thailand/ Thais	2003-2004	12-17	28	NA

NA = Not available

In parallel with type 2 diabetes, obesity is now an emerging health problem among children and adolescents worldwide (Rosenbloom et al., 1999; Copeland et al., 2005), including Thailand (Likitmaskul et al., 2003). A US longitudinal cohort study investigated the prevalence of overweight among 8,270 children in different ethnic groups, aged 4-12 years, between 1986 and 1998. The results showed a higher number of overweight children in 1998 than in 1986, accounting for 21.8%, 21.5%, 12.3% among Hispanic, African American, and non-Hispanic population groups, respectively (Strauss and Pollock, 2001). A report from the American Diabetes Association (2000) also indicates that up to 85% of children and adolescents with type 2 diabetes are either overweight (BMI 25-30 kg/m²) or obese (BMI >30 kg/m²). In Thailand, youth type 2 diabetes prevalence has increased with the prevalence of obesity among children aged 5-15 years in Bangkok, which rose from 5.8% to 13.3% between 1990 and 1996 (Likitmaskul et al., 2003). This is associated with Westernisation, urbanisation, and rapid socioeconomic changes affecting Thai people's lifestyle: Western fast food outlets are more available and easily accessible; Western fast foods sold by food vendors along streets are rather cheap because of using low quality meat high in fat, and thus for people with medium to low socioeconomic status, these foods are affordable and accessible (Likitmaskul et al., 2003; Mahachoklertwattana, 2006; Tuchinda, 2006). A comparative study of obese school-age children in three provinces - Bangkok, Saraburi (100 km from Bangkok), and Sakonnakorn (600 km from Bangkok) - showed a lower number of obese children who lived further away from the city, accounting for 31%, 30%, and 9%, respectively (Jirapinyo et al., 2005), supporting arguments that children living in the city and its proximity are more likely to be exposed to aspects of Westernisation and urbanisation than those in remote areas, and in turn obese.

Diabetes self-management

There is inconsistent definition and terminology of self-management (Barlow et al., 2002; Schilling et al., 2002; Lorig and Holman, 2003). The term self-management is sometimes used in combination with other terms: self-care or self-care management, compliance and adherence, making it difficult to conceptualise this term (Sritanyarat, 1996; Schilling et al., 2002). For example, Sritanyarat (1996) illustrates that self-care has been defined variously, as a goal, a strategy, and a process; this is similar to the concept of self-management as provided by Schilling et al. (2002). However, some authors argue that self-management is more complicated than self-care. The latter term is used to refer to the performance of general care at home, including among people with diabetes, while self-management refers to daily tasks related to chronic illness, requiring individual skills in coping with the illness to reduce the impact of disease on physical and psychological aspects of the person's life (Barlow et al., 2002; Lorig and Holman, 2003; Glasgow et al., 2004). Lorig and Holman (2003) suggest that four skills are involved in self-management: problem solving, decision making, seeking resources or knowledge, and taking action (i.e. changing behaviour), with self-efficacy playing a key role particularly in problem solving and decision making (Hill-Briggs and Gemmell, 2007; Viklund and Wikblad, 2009). Additionally, self-management, in a new concept of "lifestyle" medicine, focuses on the patient-physician partnership and 'active' patients, with most responsibility falling on patients (Egger et al., 2009).

The other two terms, compliance and adherence, may be defined either as synonymous with or distinct from self-management. Schilling et al. (2002) argues that both terms focus on the idea of controlling a disease, like diabetes control, based on routine behaviour and activities. At the same time, the idea of self-management captures the process of managing diabetes, for example, to maintain blood sugar levels within

acceptable ranges (Schilling et al., 2002). Compliance and adherence derive from the concepts of acute illness treatment, and they are often also used interchangeably (Anderson and Funnell, 2000). However, the two terms are different in some respects: the term “compliance” implies that patients obey the doctor’s instructions, and use prescriptions assigned by a doctor (Brawley and Culos-Reed, 2000), while adherence is used in a sense that patients understand, accept and take part in setting up their treatment plans with their healthcare providers (Brawley and Culos-Reed, 2000; Kyngas et al., 2000). In my study, I have applied the two terms interchangeably, as diabetes treatment, particularly for young Thai patients, integrates both concepts.

Diabetes self-management refers to goals and activities or practices, including self-monitoring of blood glucose, lifestyle modification (i.e. dietary control and regular exercise) and medication (Chang et al., 2005). In terms of activity, self-management of type 1 diabetes focuses on insulin injection and self-monitoring of blood glucose; this is not necessary for pre-diabetes and type 2 diabetes. Therefore, in my study, diabetes self-management activities refer to three main activities: dietary control, exercise, and oral medication. Self-management is viewed as a complicated and dynamic process. Self-management of diabetes changes over time as people manage fluctuations in blood glucose levels and are cared for when complications develop (Price, 1993). Therefore, parents’ or primary caregivers’ involvement is needed, particularly among younger children.

As a chronic and lifestyle-related disease, diabetes requires long-term self-management at home; patients and families, rather than healthcare providers, take responsibility. Strategies to improve diabetes self-management among young people include improving diabetes-related knowledge, increasing peer support, improving communication with school teachers, and expanding the role of family members

(Mulvaney et al., 2006). These strategies acknowledge that patients with diabetes adhere poorly to diabetes self-management (Weissberg-Benchell et al., 1995; Altobelli et al., 2000; Clark, 2004; Tilden et al., 2005; Vijan et al., 2005; Lawton et al., 2006). A systematic review by Cramer (2004) demonstrated that adolescents aged 10-20 years were likely to have the poorest adherence and to have the highest HbA1c levels (>7%) when compared with individuals with diabetes of different ages. Non-adherence to medication is one of the most serious problems in diabetes management, particularly in type 2 diabetes (Clark, 2004; Mulvaney et al., 2006), and results in direct and indirect additional expenditures (e.g. extra visits to physicians, unnecessary admission to hospital, and extra payments for overtime work for healthcare staff).

Many studies on self-management also identify that non-adherence to self-management is a serious problem in adolescents with either type 1 or type 2 diabetes (American Diabetes Association, 2000; Mulvaney et al., 2006; Schneider et al., 2007; Rothman et al., 2008). Weight reduction and blood glycaemic control are major goals of paediatric treatment and the self-management of pre-diabetes and type 2 diabetes. These medical requirements seem to be difficult for many young patients to comply with, as a result of various underlying factors (the desire for more independence, family conflicts, peer pressure and the influence of others with diabetes) (Guthrie et al., 2003; Pinhas-Hamiel and Zeitler, 2003; Mulvaney et al., 2008). Individual factors strongly impact on diabetes self-management, regardless of genetic factors, and these include gender and age differences, and psychological factors (i.e. perceptions, beliefs, attitudes, emotional stress and depression) (Hunt et al., 1998; Evans et al., 2005; Lustman and Clouse, 2005; Santiprabhob et al., 2007). Social factors, mainly familial factors, are the major focus of my study because most young participants are dependent upon and live in the family, and diabetes self-management practices consequently involve the family. The

key familial factors, including parental involvement with diabetes activities and role modelling for 'healthy' behaviour in the family, positively affect children's disease management outcomes (Altobelli et al., 2000; Anderson, 2004; Anderson et al., 2005). Peer factors have both negative and positive effects on young people with diabetes, depending on the characteristics of those peers (Kyngas et al., 1998; Skinner et al., 2000; Toljamo and Hentinen, 2001b; McCarroll et al., 2009). If the peer group understands and encourages the adolescent with diabetes to eat healthy food and increase exercising, their physical and mental health outcomes are likely to improve. Positive peer factors appear to be helpful for the development of health promotion programs, such as peer groups to encourage people who are overweight to eat more healthy food and to increase exercising (Skinner et al., 2000; McCarroll et al., 2009).

Compared with type 1 diabetes, there have been few publications on adolescents with type 2 diabetes with regard to illness perspectives, self-management patterns, and barriers to self-management. Despite the similarity of self-management in relation to food and exercise, the findings related to adolescents with type 2 diabetes are different from those found in type 1. It is possible that adolescents with type 2 diabetes deal with double problems – diabetes and obesity, and the influence of other obese family members and/or those with diabetes on their self-management practices (Mulvaney et al., 2008). These issues have not been studied in Thailand, and my study aims to fill that gap.

Research related to the study

The research studies on health risks and lifestyle among Thai children presented below focus on diet and lifestyle factors associated with overweight or obesity and mainly use quantitative approaches (Thamronglouthaphun, 2003; Un-Em, 2007; Luangkaew, 2008). For instance, Luangkaew (2008) conducted a cross-sectional study aiming to investigate dietary patterns and health-related lifestyles among primary school children in urban Khon Kaen Province. Questionnaires were used to collect general information and data on diet and health-related lifestyles. Descriptive statistics, using STATA and NINUCAL programs, were employed for the data analysis. The overall findings in this study demonstrate that students (both girls and boys) in *Isan* (the northeastern part of Thailand) area have the same dietary pattern: commonly eating either rice or sticky rice and side dishes as the main food for breakfast and dinner; but they also eat potato chips or French fries 4-6 times a week. A gender difference is related to frequencies of having meals; boys usually have three meals a day, while girls usually have five. Regarding activity performance, both genders exercise only 1-2 times a week, for about 25-35 minutes. The majority of these students are likely to have more fat than needed, but also less calcium, iron and vitamin A intake than dietary reference intake. The findings of this study imply unhealthy diet consumption and inadequate exercise as health-related risk behaviours associated with childhood obesity. Similarly, a quantitative study of preschool children in the Bangkok surrounding area, Nonthaburi Province, shows that non-breast feeding during the first four months of life, the mother's body mass index (BMI) $>23 \text{ kg/m}^2$, and fatty food consumption of children (e.g. eating fried sausages and prawn crackers once or more times a day) are important risk factors for developing childhood obesity (Un-Em, 2007). Mass media influences diet in urbanised settings.

Thamronglouthaphun (2003) studied the impact of watching TV food advertisements, among primary schoolchildren in urban Chiang Mai Province. The major findings suggest that the schoolchildren spend most of their leisure time watching TV, particularly on the weekend; 45.4% of them spend more than six hours watching TV. The author demonstrates that such sedentary behaviour impacts the children's physical, mental and social health. Regarding the physical health impact, children have a chance to consume snacks both at home and in school, more frequently on weekends than on weekdays, and lack exercise. Consequently, they are at high risk of having health problems, i.e. oral health problems, lack of essential nutrition, and hazards from additives such as monosodium glutamate. The mental health impact is related to family conflict, leading to stress in both children and parents. However, buying snacks for children is one way of showing parents' affection. The social health impact includes spending too much money on snacks, conflicts between children and families or families and school, and changing children's lifestyle according to advertisements. TV advertisements repeatedly presented ideas about desirable lifestyles, leading to children's demands for such products and subsequent consumption.

These Thai studies were all conducted with preschool and primary school children living outside Bangkok, using mainly quantitative methods (surveys). They all demonstrate the extent to which Thailand, like many developed and developing countries, is facing a growing problem of childhood obesity. Factors contributing to obesity during childhood have not been unanimous, however: some studies indicate familial factors (i.e. either higher or lower income, maternal obesity, mother's age or education), while others argue for the greater importance of individual factors (i.e. eating too much food, bigger bites, and eating fried food and snacks) as the contributing factors (Un-Em, 2007; Luangkaew, 2008).

Many qualitative studies related to treatment-seeking of chronic illness focus on circumstances leading to diagnosis (Knafl et al., 1995; Demissie et al., 2002; Peel et al., 2004; Watkins and Plant, 2004; Arnold and McGowan, 2007; Mahendradhata et al., 2008; Manderson et al., 2008). These studies show that various signs and symptoms (from asymptomatic to severe) lead people to visit hospitals. Most adults experience a delay in diagnosis because they are committed to their family and work, and do not immediately seek medical advice upon noticing unusual symptoms. Once diagnosed, however, adult patients and caregivers are usually very concerned about the disease and adhere to strict diabetes control at the beginning of the diagnosis, although later, when they become more familiar with their illness, they loosen the restrictions associated with diabetes control (Peel et al., 2004).

Peel et al (2004) propose three main “routes” to diagnosis – the “suspected diabetes” route, “illness” route, and “routine” route. These authors demonstrate that, at least for their Scottish participants, these routes have different effects on adults’ feelings at the time of their diagnosis. Those diagnosed through the “routine” route (who were asymptomatic and diagnosed through routine blood check-ups) described the most varied emotional reactions to their diagnosis, ranging from “not affected” to feeling “shocked”. The respondents of the “suspected diabetes” route were more likely to have negative emotional reactions in relation to diabetes than those in “illness” route, who already had another chronic health problem before being diagnosed with pre-diabetes; they perceived diabetes as less serious than other illnesses they had experienced.

An Australian study on self-management of type 2 diabetes has been conducted with adults with type 2 diabetes from different ethnic groups, including Anglo-Celtic, Turkish and Arabic-background Australians, using focus groups for data collection (Furler et al., 2008). This study focuses on emotional aspects of living with diabetes.

Major emotional responses reported in the group discussions include expressions of “shock” at the diagnosis, fear of the future, or the important need to deal with emotional highs and lows as a part of self-management of diabetes. These emotional responses affected diabetes self-management. For example, adults in the English-speaking group addressed resentment, anxiety and uncertainty about their future life with diabetes, resulting in deteriorating health and removing the enjoyment of life. In the Turkish- and Arabic-speaking groups, stress was reported as a cause of developing their diabetes. Participants in the English-speaking group described their self-management as a process of coping with loss, while those in the Turkish- and Arabic-speaking groups were more concerned with staying calm. This study indicated that health professionals need to provide different support to patients from different cultures. Health professionals can play a role in helping Anglo-Celtic patients to increase self-confidence and self-discipline to control their diet, for example, while they can play a bigger role in reducing stress among the Turkish- and Arabic-speaking patients. All the studies presented here were conducted among adults, and there is little research on the same issues in young populations (Knafl et al., 1995).

Many publications on lay perceptions/understandings of illness discuss aspects of causes, signs and symptoms, pathophysiology, severity and treatment (Eisenberg, 1977; Kleinman et al., 1978; Price, 1993; Cohen et al., 1994; Sritanyarat, 1996; Hunt and Arar, 2001; Tuomilehto et al., 2001; Jezewski and Poss, 2002; Poss and Jezewski, 2002; Arcury et al., 2004; Broom and Whittaker, 2004; Lawton et al., 2007; Naemiratch and Manderson, 2007). These studies have been conducted with different populations – Australians, Latinos and Mexican Americans, South Asians, and Thais. This literature demonstrates considerable discrepancies of the viewpoints between patients with diabetes and their health professionals. For example, adult patients focus

on the social issues and the impact of the illness on their life, while healthcare providers are more concerned about pathophysiological problems and the impact on body functions. Studies on lay understandings of their condition or illness usually refer to illness narratives in terms of meaning, causes, time of onset, signs and symptoms, pathophysiology and treatment (Kleinman, 1988). Adult patients have their own understandings of health and illness partly based on cultural notions of illness, and ideas of its cause and management that derive from traditional or folk medicine, but their self-management practices involve both modern and traditional medicines. Youths' explanatory models of diabetes have not yet been investigated.

Research on illness management styles and psychosocial barriers to illness management has been conducted with adult patients with chronic illness, including diabetes (Becker and Maiman, 1975; Coates and Boore, 1998; Glasgow et al., 2001; Kokanovic and Manderson, 2006; Sanjaithum, 2006; Garcia de Alba et al., 2007; Furler et al., 2008). Methods used in these studies include both quantitative approaches (e.g. telephone surveys, self reports and questionnaires) to gain data on various factors influencing self-management of the illness (Becker and Maiman, 1975; Coates and Boore, 1998; Glasgow et al., 2001; Sanjaithum, 2006), and qualitative approaches (e.g. in-depth interview and focus group) to collect data on patterns of illness management (Kokanovic and Manderson, 2006; Garcia de Alba et al., 2007; Furler et al., 2008). Research on psychosocial determinants of adherence, which are frequently addressed, include certain health beliefs (e.g. perceived vulnerability to and seriousness of the disease), self-efficacy of self-care, health-related motivation, social support and doctor-patient relationships. These studies basically apply different behavioural models as a theoretical framework to analyse people's health beliefs and behaviours in relation to their condition or illness, and to identify possible factors affecting such beliefs and

behaviours. In Chapter 3 and in Chapter 9 below, I return to barriers to self-management with behavioural models.

The self-management studies presented here are based on a small sample with a short follow-up period (4-6 months). Major findings of the qualitative studies address poor adherence with self-management of the illness, particularly among women in ethnic minority or immigrant groups, due to their responsibility for the family as a primary caregiver, and to socioeconomic priority. Although people are aware of the seriousness of the illness and possible complications, successful self-management of diabetes has been rarely reported.

Two studies explore self-management behaviours among adolescents with type 2 diabetes (Lipton et al., 2003; Rothman et al., 2008), using quantitative methods (i.e. a telephone survey and self-reports) to collect data from minorities, primarily African Americans. The major findings demonstrate that young patients mostly adhere to self-management in medication and monitoring blood glucose, while they have poor diet control, such as frequent overeating, eating fast food and drinking sugary drinks. African American youths are more likely to have poor health behaviours (i.e. smoking, eating fast food, exercising less and spending much considerable time watching TV) and higher glycated hemoglobin than are Caucasian youths (Rothman et al., 2008). Most young African American patients reported that having diabetes affected their life and family in some way: there were difficulties in access to health care, particularly for those who are 20 years of age or older and have no health insurance; and a negative effect on getting employment and on the employment of their parents/guardians (Lipton et al., 2003). The two studies have limitations of methods used (i.e. self-report), such as recall bias and inability to know actual behaviours rather than reported behaviours.

In conclusion, my research with adolescents with type 2 diabetes aims to explore the understanding of diabetes of Thai adolescents with pre-diabetes or type 2 diabetes and their lifestyle prior to their diagnosis, as well as self-management of their illness. Given the increasing prevalence of youth with type 2 diabetes associated with lifestyle-related health risks, it was critical to undertake this study. The sooner we have in-depth information on young people, the earlier we may reduce the risk in children and adolescents of developing pre-diabetes, of pre-diabetes developing into type 2 diabetes, and of those with type 2 diabetes developing diabetic complications.

CHAPTER 2

DISEASE AND HEALTHCARE ASPECTS

In this chapter, I describe the aetiology, characteristics and risk factors, diagnosis and treatment of type 2 diabetes, and factors associated with diabetes self-management. I provide a summary of Thailand's background and patterns of economic and demographic change, describe the healthcare delivery system, and the diabetes care system for young people focusing on diabetes education and the diabetes health promotion campaign.

Aetiologies, characteristics and risk factors

As in adults, type 2 diabetes in children and adolescents is caused by co-abnormalities of pancreatic β -cells (insulin secreting cells) and insulin resistance (non-sensitive cells to insulin), which result in high blood sugar levels ≥ 126 (mg/dl) (hyperglycaemia) (American Diabetes Association, 2000; Kaufman, 2003). Patients may develop complications, including renal failure (nephropathy), blindness (retinopathy), nerve damage, particularly in the lower legs and feet (neuropathy), and coronary heart disease (American Diabetes Association, 2000; Alberti et al., 2004; Bloomgarden, 2004). Symptoms of this disease include the presence of glucose in urine (glucosuria), excessive hunger (polyphagia), excessive thirst (polydipsia), fatigue, and frequent urination (polyuria). However, these symptoms are misinterpreted frequently by parents as indicative of normal physiological changes during puberty (Gupta and O'Gorman Hughes, 1996:149). For example, an increased desire for food may be attributed to adolescents needing this for their physical growth. Polyuria may occur due to the intake of large quantities of fresh water or other drinks. In addition, hyperpigmentation around

the neck or armpits is common in obese youths without diabetes (Hale, 2004). The misinterpretation of these symptoms may delay diagnosis, contributing to the number of undiagnosed cases and an underestimation of its prevalence. The most common characteristics of young people with type 2 diabetes are overweight or obesity, acanthosis nigricans – a sign of insulin resistance which presents as darker skin around the neck and armpits (90% have this condition), and having at least one first- or second-degree relative with diabetes (Fagot-Campagna et al., 2000; Likitmaskul et al., 2005; Matsui et al., 2005; Pinhas-Hamiel and Zeitler, 2007).

Many studies indicate risk factors for youth type 2 diabetes, including genetics: family history of type 2 diabetes (first or second degree relatives) and ethnicity; demographic factors: gender (girls have a higher risk than boys) and age (puberty period); and environmental factors of obesity, lifestyle (diet and physical activity), birth weight, maternal obesity and fetal growth factors (Fall et al., 1998; American Diabetes Association, 2000; Forsen et al., 2000; Fagot-Campagna et al., 2001; Macaluso et al., 2002; Bloomgarden, 2004; Singh et al., 2004). These risk factors leading to the development of type 2 diabetes and/or diabetic complications are discussed in the following paragraphs.

Family history and ethnicity

Most children and adolescents with type 2 diabetes have at least one family member with diabetes, particularly parents or siblings. According to Pinhas-Hamiel and Zeitler (2004), approximately 60-80% of young patients have a first-degree relative with type 2 diabetes. Other studies report 74 - 100% of patients with a first – or second – degree relative with type 2 diabetes (American Diabetes Association, 2000; Likitmaskul et al., 2005). Although family history is strongly associated with type 2 diabetes both in adults and young people, the relationship between paternal and maternal history of type 2

diabetes and patients' gender is debatable. For example, a study in Chinese adults with type 2 diabetes suggested that while males with younger-onset type 2 diabetes had a positive paternal history of diabetes, females with younger-onset had both a paternal and maternal family history of diabetes (Lee et al., 2001).

Ethnicity is relevant in countries which have distinct indigenous or immigrant populations, and where there is diversity in countries of origin. The high prevalence of type 2 diabetes appears more often in minority populations, such as Pima Indians, African Americans, Mexican Americans, Hispanic/Latino Americans, Native Canadians, Indigenous Australians and Pacific Islanders (Table 1.2 and 1.3). Even so, type 2 diabetes among paediatric patients appears to be prevalent in all ethnic groups – those discussed above, but also Japanese, Taiwanese, Thais, Ashkenazi and Sephardic Jews, and Caucasians (Likitmaskul et al., 2003; Wei et al., 2003b; Pinhas-Hamiel and Zeitler, 2007). A retrospective study in Canada between 1994 and 2002, for example, reported a nearly sixfold increase of type 2 diabetes incidence in multi-ethnic teenagers – South-East Asians, African Canadians, Hispanics, Indigenous people and Caucasians (Zdravkovic et al., 2004). Most participants were female and obese, and had a strong family history of type 2 diabetes. Therefore, ethnicity may not be a strong predictive factor for at risk individuals. As noted in the US, UK and Australia, ethnic minority groups in developed countries have low socioeconomic status and low education, and thus it is not surprising that lifestyle-related diseases, such as obesity and type 2 diabetes, have high prevalence as poorer people have limited choices in the availability, affordability and accessibility of healthy food. In contrast, Asian people in developing countries (e.g. China, India, and Thailand) with high socioeconomic status are more likely to be obese and/or develop type 2 diabetes than those with low socioeconomic status, because of the increased consumption of Western fast foods, and sedentary

lifestyle, associated with modernisation and high technology (Mo-suwan et al., 2000; Sakamoto et al., 2001).

Birth weight, maternal obesity, and fetal growth factors

Children with either a low (<2,500 g) or high birth weight (\geq 4,000 g) are at increased risk of developing type 2 diabetes (Wei et al., 2003a; Alberti et al., 2004; Singh et al., 2004). Recent studies demonstrate that children born with low birth weight, followed by a rapid increase in weight and/or height during childhood, are especially likely to develop type 2 diabetes later in adulthood (Hales and Barker, 2001; Wei et al., 2003a). Based on the thrifty phenotype hypothesis, Hales and Barker (2001) have suggested that fetal under-nutrition leads to insulin resistance, indicating that children with low birth weight are sensitive to developing type 2 diabetes and being obese when older, especially if they consume high fat foods or do not engage in sufficient physical activity. While poor fetal growth is influenced by environmental effects rather than genetic factors, children born with high birth weight (\geq 4000 g) may have some genetic factors because they have mothers with diabetes and/or who are obese, and first degree relatives with type 2 diabetes (Wei et al., 2003a). A study in South India suggests that in urban populations, children may have high birth weights because of maternal obesity (usually accompanied with having high blood sugar), leading to fetal over-nutrition, childhood obesity, insulin deficiency, and the development of type 2 diabetes later in youth or adulthood (Fall et al., 1998).

Gender and age

As suggested already, gender and puberty are important contributing factors to an increased risk of type 2 diabetes in the young. Pinhas-Hamiel et al. (1999) revealed overall a slightly higher prevalence of type 2 diabetes in American girls than in boys

(1.75:1.60), but gender discrepancy may occur because males remain undiagnosed as they visit medical services less often than females (Pinhas-Hamiel and Zeitler, 2004). However, two Thai studies provide incongruent results (Likitmaskul et al., 2003; Santiprabhob et al., 2007): The former study in 1987-1999 found a higher prevalence of diabetic boys than girls, while there was a higher prevalence of girls than boys in the latter (2003-2004) study. This is possibly because of selection bias in the earlier study, as in the study by Likitmaskul et al (2003), predominantly young male patients visited the paediatric diabetes clinic. In general, the Thai data reflect a global trend of gender prevalence (female), concordant with other studies shown in Tables 1.2 and 1.3.

Murphy (2005) suggests that sex-linked genes related to insulin resistance may also be more prevalent in girls than boys, although the nature of these sex-linked genes is not clear. Another assumption is that physiological development during puberty, such as the increase of the growth hormone (secreted by the pituitary glands), accelerates overt type 2 diabetes, especially in overweight children with a genetic predisposition to diabetes (Fagot-Campagna et al., 2000). The onset age of youth type 2 diabetes is around 10 (Hale, 2004), and approximately 40% of young people with type 2 diabetes are between the ages of 10 and 19 (Fagot-Campagna et al., 2000). A study of complication rates in younger-onset and older-onset adults with type 2 diabetes concluded that the younger the person who acquires type 2 diabetes, the more aggressively they develop complications and the greater their risk of microalbuminuria and myocardial infarction (a macrovascular complication) (Hillier and Pedula, 2003). Although this study was conducted in young people older than 17 years, it can be assumed that younger people with type 2 diabetes are also very likely to develop diabetic complications in early adulthood.

Adolescence is referred to as a period of health risk, as young people may experiment with different behaviours (Heaven, 1996; Kleinert, 2007; Patton and Viner, 2007). In addition to facing physiological problems (e.g. hormonal fluctuations), adolescents may engage in behaviours considered to be problematic (e.g. drug use, eating disorders, inappropriate drinking, and smoking). According to theories of psychosocial risk (Guthrie et al., 2003; Sawyer et al., 2007), predisposing factors of problematic behaviours include personal backgrounds (e.g. educational level), personality (e.g. values, beliefs, personal control), and perceived environment (e.g. parental control, role of social models, and peer approval). These factors may directly affect adolescents' health status (Jessor et al., 1991; Kleinert, 2007; Patton and Viner, 2007). Adolescents with chronic illness are doubly vulnerable when compared with healthy peers, not only from puberty and associated risky behaviours, but also due to their illness conditions (Guthrie et al., 2003; Sawyer et al., 2007). For example, people with diabetes who smoke tend to be depressed, are at increased risk for stroke and heart attack, and have poor health outcomes such as increased blood sugar and blood lipids (Masson et al., 1992; Solberg et al., 2004). Adolescents with chronic illnesses need to embark on life-long self-management (Kyngas et al., 2000). Non-adherence is a major problem for long-term self-management, and chronic illness demands many changes in personal lifestyle and behaviours (Dashiff, 2003; Pinhas-Hamiel and Zeitler, 2003; Clark, 2004; Janse et al., 2005). Adolescents with chronic illness need considerable understanding and support from their family and other social groups to encourage adherence to disease management (Hunt et al., 1998; Kyngas et al., 2000; Mulvaney et al., 2006).

Obesity

Obesity is the most outstanding risk factor for developing pre-diabetes and type 2 diabetes (Pinhas-Hamiel et al., 1996; Hales and Barker, 2001; Copeland et al., 2005). This is because obesity stimulates the development of insulin resistance, which accelerates glucose production and the breakdown of fat cells in the liver. As a result, hyperglycaemia and hyperlipidemia occur, and in turn both high blood glucose and fatty acid (a derivative of the breakdown of fat cells) increase insulin resistance. Adolescents with type 2 diabetes are markedly obese (body mass index 35-39 kg/m²), with the characteristics of “apple-like” or abdominal obesity (Pinhas-Hamiel et al., 1996). Visceral obesity is associated with a high risk of cardiovascular disease due to the increase of blood pressure and lipid accumulation, especially abdominal fat (Dietz, 1998; Goran et al., 2003a; Henkin et al., 2003; Alexander et al., 2009). As a “twin” disease, causes and risk factors of childhood obesity and type 2 diabetes are similar, including genetic and environmental factors (i.e. individual behaviours, family’s parenting styles, and lifestyle) (Ebbeling et al., 2002). Therefore, management of both diseases (such as weight reduction and diet control) are similar and benefit each other.

Diet and physical activity

“Passive consumption” is a phenomenon where exposure to advertisements of fast food, sweets, and soft drinks instill cravings that overcome the desire for foods such as fruits and vegetables (Ebbeling et al., 2002). This phenomenon appears to be the same in various populations, including Japanese children (Kitagawa et al., 1998) and Thai people of all ages (Tuchinda, 2004). One study on eating behaviours in Japan revealed

that youths with type 2 diabetes, who had ketonuria,⁴ had 1.5 times more excess energy intake and 1.4-2.4 times higher carbohydrate and fat intake than those without ketonuria (Matsui et al., 2005). Lack of physical activity and sedentary lifestyle (e.g. watching television), with the consumption of snacks, sweets and soft drinks, results in an imbalance in energy intake and energy expenditure, leading to childhood obesity (Hale, 2004; Copeland et al., 2005; Peungposop, 2008; Schwartz and Chadha, 2008). Research suggests that family members share with teenagers with type 2 diabetes various physical features (e.g. abdominal obesity), lifestyle and health behaviours, such as high fat and low fibre food intake, binge-eating disorders, lack of exercise, and sedentary lifestyle (Pinhas-Hamiel et al., 1999; Anderson et al., 2005). Hence, in seeking to address underlying factors associated with disease, youths with type 2 diabetes must be understood within the family context.

According to all risk factors above, socio-environmental factors, leading to obesity, diet and inactive lifestyle, and maternal and fetal growth factors, are potentially modifiable and can be protective, while genetic and demographic factors cannot be changed (Fagot-Campagna et al., 1999). Therefore, my study is concerned with socio-environmental factors, particularly childhood obesity associated with the family's parenting style, health behaviours and lifestyle; it investigates how these factors impact on youths who have developed their illness.

⁴ A condition of having ketones (which are strong acids) in urine, a sign of developing diabetic ketoacidosis – a severe complication of diabetes.

Diagnostic tests

Pre-diabetes and type 2 diabetes use the same screening test and the same initial treatment (American Diabetes Association, 2004), and because it is thought of as an early stage of diabetes, therefore, pre-diabetes is targeted for prevention or early intervention programs. Both have the same goal of treatment: to reduce the complications of diabetes and risk factors for cardiovascular disease, including insulin resistance, obesity and high blood lipids (Jolliffe and Janssen, 2006; Kim et al., 2006; Nathan and Moran, 2008). However, there are some differences between the two conditions. Type 2 diabetes requires additional tests and procedures, such as eye examination, HbA1c⁵ measurement, and the measurement of urine protein to detect diabetes complications, that are not necessary for pre-diabetes. Self-monitoring of blood glucose is usually suggested to people with diabetes but not pre-diabetes; those with pre-diabetes are labelled as “at risk.” This at-risk group can, in theory, return to being “normal” or “healthy,” while those with diabetes are labeled as “diabetic” with an emphasis on prevention and delay of complications (American Diabetes Association, 2004).

Pre-diabetes is composed of two different categories: “impaired fasting glucose: IFG” and “impaired glucose tolerance: IGT.” Both are risk factors for developing type 2 diabetes and cardiovascular disease (Unwin et al., 2002; American Diabetes Association, 2008a). The term “impaired fasting glucose” and “impaired glucose

⁵Haemoglobin A1c or HbA1c is a glycosylated haemoglobin which results from the combination of haemoglobin and glucose in the blood. The measurement of HbA1c is useful for patients with diabetes to control their diabetes as a predictor of complication. The recommended level of HbA1c among young people with type 2 diabetes is below 7% according to the American Diabetes Association (2000).

tolerance” are named in correlation with two diagnostic tests – fasting plasma glucose test⁶ (FPG) and oral glucose tolerance test⁷ (OGTT), respectively. According to a report of an expert consensus workshop in the UK (2001), IFG differs from IGT and is not interchangeable as they determine different abnormalities of glucose regulation: IFG represents the increase of glucose produced by hepatic cells and the abnormality in early insulin secretion; IGT is characterised by insulin resistance (Unwin et al., 2002). IGT is more strongly associated with hypertension and hyperlipidemia than IFG, and it is also more prevalent than IFG in most populations due to the increasing prevalence of obesity which is strongly associated with insulin resistance (Arslanian, 2002; Goran et al., 2003a; Likitmaskul et al., 2005; Schwartz and Chadha, 2008). It tends to indicate that overweight and obese people are more likely to have IGT due to the increase of insulin resistance. Throughout this thesis, however, I use the term pre-diabetes, whether individuals have either IFG or IGT or both.

The determination of pre-diabetes and type 2 diabetes generally depends on two diagnostic tests, FPG and OGTT (Table 2.1), according to the American Diabetes Association (ADA) criteria (Engelgau, 2004; American Diabetes Association, 2005, 2008a, 2008b). An oral glucose tolerance test has higher sensitivity than fasting plasma glucose test to indicate high risk for pre-diabetes; therefore, OGTT can detect pre-diabetes in people who have fasting blood glucose within a normal or borderline range (Shaw et al., 1999). However, the fasting plasma glucose test rather than the oral glucose tolerance test is still used widely to predict diabetes because it is easier and

⁶ FPG is a test for blood glucose measurement after food and other drinks, but not water, for at least eight hours (American Diabetes Association, 2000).

⁷ OGTT is a 2-hour 75-g test of plasma glucose level by drinking a glucose solution in a dose of 1.75 g/kilogram of body weight (maximum of 75 g) and blood samples are collected every 30 minutes for 120 minutes to measure plasma glucose (Sinha et al., 2002).

faster (American Diabetes Association, 2008a). The ADA also recommends that because of the lower sensitivity of FPG test, people who are suspected for diabetes but have normal FPG or impaired fasting glucose (IFG) should be tested with OGTT to identify IGT or type 2 diabetes, respectively (ibid.). The criteria for classification of pre-diabetes and type 2 diabetes through the measurement of blood glucose with the two diagnostic tests, according to the updated ADA guideline, are demonstrated in Table 2.1 (American Diabetes Association, 2008a). The process from diagnosis to treatment is summarised in Figure 2.1.

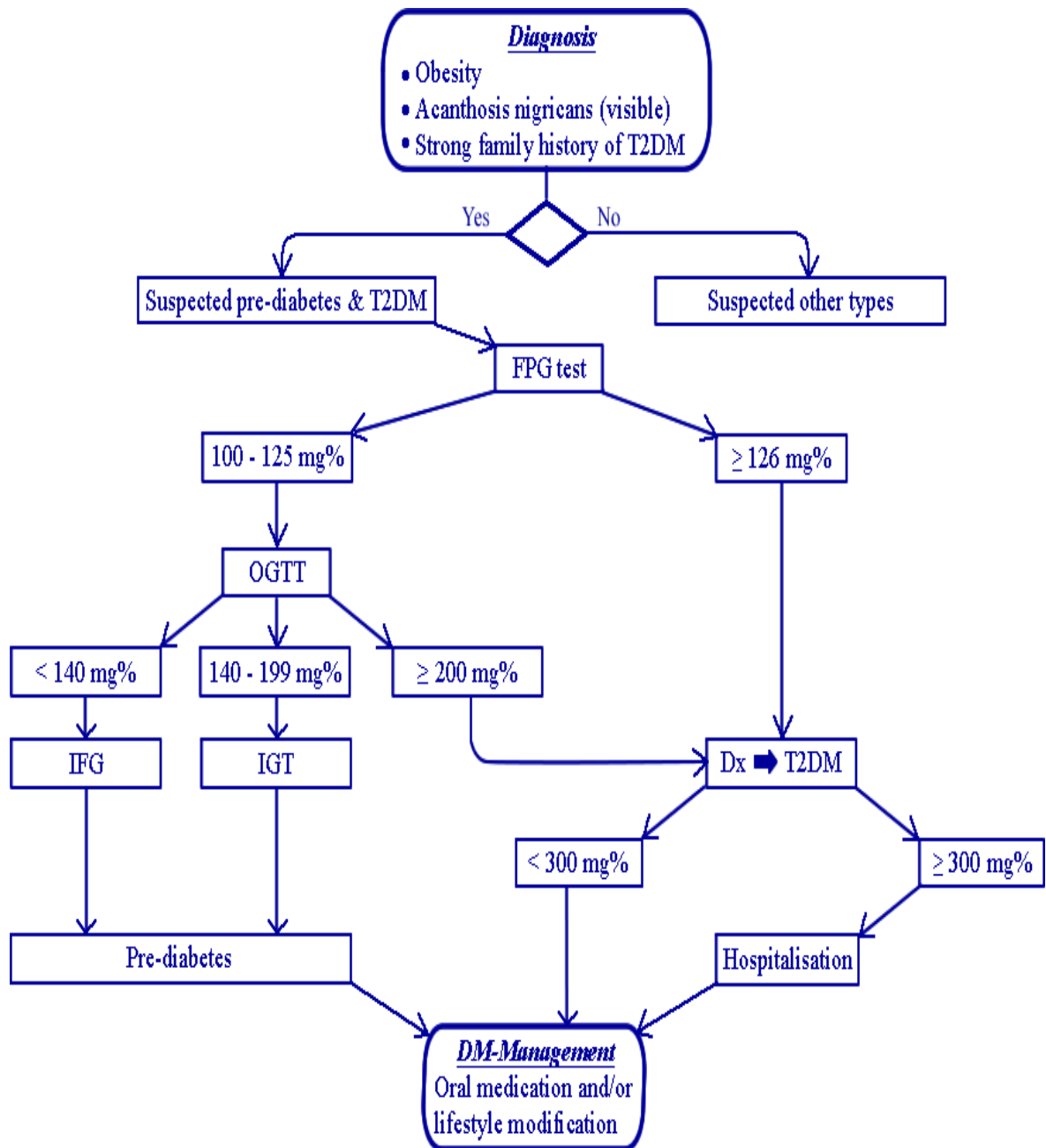
Table 2.1 ADA-diagnosis of pre-diabetes and type 2 diabetes

Diagnosis	FPG test Glucose level (mg/dl)	OGTT Glucose level (mg/dl)
Normal	< 100	< 140
Pre-diabetes	100 – 125 (IFG)	140 – 199 (IGT)
Type 2 diabetes	≥ 126	≥ 200

FPG = Fasting plasma glucose; OGTT = Oral glucose tolerance test

IFG = Impaired fasting glucose; IGT = Impaired glucose tolerance

Up to now, the two diagnostic criteria - the ADA and the World Health Organization (WHO) – are still incongruent. Because of the different criteria, there is no global standard guideline for determining diabetes; physicians use different criteria based on their judgement and this sometimes can make people confused about their diagnosis. In Thailand, several diagnostic cut-offs of diabetes are used by practitioners. These cut-offs are derived from the ADA and WHO guidelines. Currently, the two organisations have adjusted the cut-off of fasting plasma glucose level from ≥ 140 to ≥ 126 mg/dl (World Health Organization, 1999; The Expert Committee on the Diagnosis and Classification of Diabetes Mellitus, 2003).



FPG = Fasting plasma glucose; OGTT = Oral glucose tolerance test;
 IFG = Impaired fasting glucose; IGT = Impaired glucose tolerance;
 Dx = diagnosis; T2DM = Type 2 diabetes

Figure 2.1 Diagnostic tests of pre-diabetes and type 2 diabetes

However, the two guidelines differ in the cut-offs for impaired fasting glucose in that ADA uses the lower range: 100 – 125 mg/dl (Engelgau, 2004), while WHO advocates for the value of 110 – 125 mg/dl (World Health Organization, 1999). Although many physicians in Thailand and the Diabetes Association of Thailand use the WHO criteria, in practice, this depends on physicians' considerations. However, based on my interviews with health professionals, paediatric endocrinologists among university hospitals over the country prefer to use the ADA criteria as this means that a small number of young patients with (pre)diabetes will receive early interventions to delay the development of type 2 diabetes (among those with pre-diabetes) and/or other complications. Other hospitals throughout the country, particularly community hospitals and those in rural areas, use the WHO criteria. This is possible because many hospitals take into consideration the increase of hospital budget and staff workload in providing early intervention to a larger number of people (either young or old) with pre-diabetes and diabetes if they use the ADA cut-off.

Treatment of type 2 diabetes

Major biomedical treatment goals of type 2 diabetes among children and adolescents are weight reduction and the control of fasting blood glucose levels (American Diabetes Association Task Force, 2002). Initially asymptomatic patients are treated with diet control and exercise, and if unsuccessful, oral hypoglycaemic drugs (i.e. metformin) are introduced. Patients who have hyperglycemia (blood glucose > 250 mg/dl) and/or

ketoacidosis⁸ are initially treated with insulin. One side effect of insulin, causing considerable concern to patients, is weight gain (Daaboul and Siverstein, 2004).

To date, the US Food and Drug Administration (FDA) has only approved metformin, which does not have the same effect, for safe use in young patients (10-16 years) (McFarlane et al., 2003; Daaboul and Siverstein, 2004; Chan et al., 2007). In Thailand, combined medicines are more frequently prescribed than a single medicine (69% vs. 31%) to adults with type 2 diabetes. Metformin and sulfonylurea are the combined drugs, most frequently prescribed to adults with type 2 diabetes (60.2%), followed by the combination of insulin injection and metformin (10.4%) and the combination of three drugs – insulin injection, metformin and sulfonylurea (8.2%), and the remaining treatment involves other combinations (Suwanwalaikorn, 2007). In terms of treatment for the young, only Metformin is used in Europe, America, and in countries of Asia and Pacific as the first drug of choice (Chan et al., 2007), and other oral agents are still in an experimental phase.

However, metformin is not recommended for children below 10 years, because of the proven association between fatty liver disease and this drug (Daaboul and Siverstein, 2004). The optimum daily dose for blood glucose control in general is about 2,000 mg. Metformin, a form of biguanides, has many benefits: lowering blood glucose level through the inhibition of glucose production in the liver; its use in combination with other drugs, including insulin, is not expensive; and it reduces risk for cardiovascular disease (Chan et al., 2007). A US study, by the Diabetes Prevention Program Research Group, revealed that metformin can reduce progression of pre-

⁸ This is a serious condition caused by the blood sugar level > 300 mg% and accumulation of ketones (by products of fat breakdown due to lack of insulin). Diabetic ketoacidosis is found in patients with type 1 diabetes more frequently than those with type 2 diabetes.

diabetes to diabetes by 31%, compared to placebo, but is less effective in decreasing risk than lifestyle-based treatment (58%), compared to placebo (Knowler et al., 2002). Unlike sulfonylureas, thiazolidinediones and insulin, metformin can reduce body weight, and so benefits people who are overweight and obese, including those with type 2 diabetes (McFarlane et al., 2003; Chan et al., 2007). The Asian-Pacific Type 2 Diabetes Policy Group has recently updated the use of metformin in non-overweight patients (Asian-Pacific Type 2 Diabetes Policy Group, 2005). Side effects of metformin are generally not severe, and usually are related to digestive disturbances such as diarrhoea, nausea, dyspepsia or anorexia (McFarlane et al., 2003; Chan et al., 2007). However, it is not recommended for patients with impaired renal function, liver disease, or septic shock (Asian-Pacific Type 2 Diabetes Policy Group, 2005).

Physicians basically advise young patients with pre-diabetes and type 2 diabetes to control diet and exercise, without prescribing medication, if their blood sugar is not very high. If this approach is not successful and blood sugar is still high, then oral medication (i.e. metformin or glucophage) is prescribed with dose differences depending on blood glucose levels. Patients are asked to visit doctors and be tested for follow-up blood glycaemic control (HbA1c) every two or three months, and have check-ups for complications (e.g. renal function, microalbumin in urine, chest screen and eye examination) every one or two years. Some patients who fail to follow the doctors' advice and so fail to decrease blood sugar may need insulin injections. This may also be used in other cases, such as when there is a co-incidence of having high blood sugar together with high fever, stress or due to an operation. In general, doctors provide general knowledge to young patients and their caregivers, and then other health providers such as nutritionists, dieticians and nurse educators advise them about food control and exercise. Information about diabetes self-management, which doctors

provide to young patients and their caregivers, is usually brief and understood easily: exercising three days a week, at least 30 minutes per day. They also explain eating appropriate food that will enable the child's development and meet the child's nutritional and energy needs.

There is currently no standard guideline for diagnosis and treatment of diabetes in Thailand, therefore, diagnosis and treatment varies among clinicians, particularly in different hospitals (Naemiratch, 2004, pp.120). Each hospital establishes its treatment guidelines, based on international guidelines such as the American Diabetes Association (ADA) or World Health Organization (WHO). According to a paediatric endocrinologist who participated in my study, for example, Chulalongkorn Hospital in Bangkok uses the ADA guideline as a reference. Sponsored by the National Health Security Office, a working committee of the two organizations, the Diabetes Association of Thailand and the Endocrine Society of Thailand, have established a *Practice Guideline for Diabetes 2008* (Thai version) with the purpose of providing qualified and effective diabetes care and treatment. They claim that this will decrease the burden of care and treatment, and so lower the financial and social costs of diabetes (Diabetes Association of Thailand and Endocrine Society of Thailand, 2008). This guideline includes risk evaluation for developing diabetes; screening tests and diagnosis; lifestyle modification; diabetes education for self-management; treatment – oral medications and insulin injection; follow-ups and evaluation of treatment; screening for diabetes complications; prevention and treatment of complications; role of health service settings and indicators; and qualified pharmacies or chemists for diabetes services. This book provides guidelines for children and adolescents with type 1 diabetes, those with type 2 diabetes and pre-diabetes, and adults with type 2 diabetes. Tables and flow charts in this book provide readers with easily understandable

information on the diagnosis and treatment of each type of diabetes. This practice book is probably the first diabetes guideline for Thailand, and is not regulatory of practice. It is intended as a tool for the improvement of diabetes services, although it has not yet been used as a standard practice for the whole country. Healthcare providers can provide diagnosis and treatment, which may differ from this guideline because they are faced with different situations and with the resource limitations of various hospitals. Individual treatment regimens need to consider patients' requirements and abilities to manage their illness, rather than expose all patients to the same regimens.

Lifestyle modification is primarily recommended as a part of treatment and self-management to prevent or delay developing diabetes and its complications in later life among young patients with pre-diabetes and type 2 diabetes (American Diabetes Association, 2000). As among adults, effective prevention for the development of youth type 2 diabetes focuses on lifestyle or behavioural changes, including increased exercise and physical activity, modified diet and weight reduction. Worldwide studies provide evidence that reducing 7-10% of body weight and increasing exercise to a moderate level could prevent the development of type 2 diabetes among adults with pre-diabetes (Tuomilehto et al., 2001; The Diabetes Prevention Program Research Group, 2002). Another study of US adults at high risk for diabetes suggested that changing lifestyle was more effective than using metformin in terms of reducing the incidence of diabetes (58 vs. 31% as compared with placebo, respectively) (Knowler et al., 2002). Many intervention studies have also reported the effectiveness of intervention programs; for example, school children improved their diabetes-related knowledge and decreased their fat intake after they had attended health education programs (Holcomb et al., 1998; Trevino et al., 1998). Huang and Goran (2003) have argued that some intervention studies are poorly designed (e.g. people are not assigned to a randomised or control

group), making it difficult to assess the actual effectiveness of the programs. Therefore, a well-designed and longitudinal intervention program and its assessment are needed (Huang and Goran, 2003). However, disease prevention is better than treatment in terms of individual quality of life and cost, and so healthy lifestyle is significant not only for young patients with pre-diabetes and type 2 diabetes or other lifestyle-related diseases, but also for healthy people.

Factors affecting treatment and self-management

Diabetes studies on self-management among adolescents with type 2 diabetes have been limited, particularly in Thailand. Therefore research on factors influencing diabetes self-management, conducted either with adults with type 2 diabetes or with adolescents with type 1 diabetes and other chronic illnesses, have been included in this review. The studies comprise three major components and factors which affect diabetes self management: individual factors, families and friends, and health care providers.

Individual factors

Individual factors include demographic (i.e. gender, age, and education) and cognitive and psychological factors (i.e. perceptions of diabetes and treatment, diabetes identity, and depression) (Kyngas et al., 2000; Chang et al., 2005). As already indicated, available data on physical activity suggest that adolescents tend to decrease playing sport and being active when compared with children, and the decline continues into adulthood (Sallis and Patrick, 1994). This downward trend is common in the majority of girls who are not sufficiently active (Kohl and Hobbs, 1998; Cleland et al., 2008). A Thai study of the effects of a school-based exercise program on obese school-age children found different responses in boys and girls (Mo-suwan et al., 1998). The study suggested that girls were more likely to reduce their weight than boys after they

completed the intervention program. One explanation was related to gender differences of physiology in response to energy expenditure. In other words, as girls in Mo-suwan et al's (1998) study primarily never exercised and performed fewer physical activities, once the exercise program was integrated into school activities, girls' physical responses (e.g. metabolic increase) were possibly more sensitive than boys'. Another explanation was that girls may follow the program more strictly than boys. A diabetes study among adult patients similarly showed a gender difference in the self-management of diabetes, with women and men providing different reasons for non-adherence to their treatment (Hunt et al., 1998). The study indicated that as a caregiver in the family, women with type 2 diabetes did not comply with their medical regimens despite concern about their own diabetes, while men had poor adherence to self-management because the regimens and recommendations to alter their lifestyle conflicted with their social activities outside the home.

A study of Thai adolescents with type 1 diabetes identified that puberty, long duration of diabetes, and lack of continuous and repeated education on self-management skills were barriers to controlling blood glucose (Santiprabhob et al., 2007). The study confirmed that patients in puberty and those with long duration of diabetes had the poorest blood glucose control. These adolescents were more independent, less supported by the family, and had other priorities in their lives (e.g. study, friends, and intimate relationships) than young children (ibid.).

Psychological studies of chronic illnesses have strongly documented that depression is a common risk factor for diabetes (both type 1 and type 2), heart disease and stroke (Evans et al., 2005; Clarke and Currie, 2009). Depression in adults with type 2 diabetes is frequently associated with poor blood glucose control and poor adherence to treatment regimens (Evans et al., 2005; Lustman and Clouse, 2005) and is also a

barrier to self-management and quality of life (Glasgow et al., 2001). In turn, high blood glycaemic outcome exacerbates depression (Lustman and Clouse, 2005). A US study of parents' perspectives indicated that their children with diabetes viewed themselves to be different from others in their food consumption (e.g. types and quantities of food they ate), and had emotional and behavioural reactions, including depression, anger, lying, hiding food, and expressing feelings of hopelessness and helplessness (Mulvaney et al., 2006). These parents also reported that their children did not want to disclose diabetes-related restrictions when eating out with peers; consequently, they ate whatever their friends ate, including fatty food, soft drinks and sweets (ibid.).

Depression is also common in children and their parents who live with diabetes and are obese (Anderson et al., 2005). It is complicated for young people because it is not well recognised as occurring in youth. Depression in chronically ill adolescents may be caused by parental factors, including parental depression, parental illness, child's coping within the family environment, parent-child conflict, and lack of parental warmth and emotional support (Sudhir et al., 2003; Sander and McCarty, 2005). Obese children and adolescents commonly get depressed when teased by their friends, and they frequently present with sadness when attending a weight loss program (Braet, 2005). Using drug therapy to treat depressive symptoms with chronic illness may not be effective or advisable among children and adolescents, because of concerns about drug toxicity and vulnerability associated with their age. A systematic review of the literature suggested the effectiveness of psychological interventions in the improvement of blood glucose and reduction of psychologic distress among children and adolescents with type 1 diabetes, but not in adults for either physical or psychological outcomes (Winkley et al., 2006). The study also supported family-based rather than individual treatment. Antidepressant therapy is effective for treating depressive symptoms in adults with

diabetes, but its effectiveness in improvement of blood glycaemic results is still questionable (Evans et al., 2005).

Family members and friends

Family support is considered to be a crucial factor for adherence to diabetes self-management (Anderson et al., 2005; Chesla and Chun, 2005; Mulvaney et al., 2006), while patient-family conflict, commonly related to food choices and blood glucose monitoring (Mulvaney et al., 2006), is related to poor adherence (Wen et al., 2004; Leonard et al., 2005; Tilden et al., 2005; Wiebe et al., 2005). A qualitative study on helpful and non-helpful support for diabetes management explored the perspectives of adolescents with type 1 diabetes and their parents in the US. It found that perceived directive guidance (e.g. providing advice, information, or instruction) was non-helpful when it was either too frequent or too rare, or not needed (Hanna and Guthrie, 2001). However, parents believed that guidance was helpful when direct instructions were transferred to indirect suggestions, such as having discussions, reasoning, and using jokes. This study reflects the importance of parents' communication supporting children's management of their illness. Furthermore, types of diabetes activities in which parents take part may not be helpful for diabetes management, if parents are only involved in diabetes activities outside the house, such as telling teachers and/or relatives about diabetes, and explaining absences from school to teachers (Anderson et al., 2005).

While studies have focused on mothers' roles and responsibilities in the management of children's illness (Pelletier et al., 1994; Knafl and Zoeller, 2000; Anderson et al., 2005; Wiebe et al., 2005; Beveridge et al., 2006; Athasari, 2007; Palmer et al., 2008), few studies have investigated fathers' involvement (Knafl and Zoeller, 2000; Seiffge-Krenke, 2002; Dashiff et al., 2008; Palmer et al., 2008). This ignores a father's role as household head – the usual status in Thailand – on self-care

management among children in different cultural contexts (Sudhir et al., 2003). One case study in India described a young woman with type 1 diabetes, who felt depressed and unwanted in the family because of lack of cooperation from her father, who was upset that the long-term treatment posed severe financial pressure on the family. Although the mother was more supportive, her decisions depended on her husband. With obvious poor emotional support, the daughter demonstrated a vicious cycle of illness in terms of non-compliance with self-management and treatment regimens, increased diabetic symptoms, and depression (Sudhir et al., 2003). This study suggests the value of considering the relevance of the position of men in other Asian cultures, including among Thai and Chinese.

The influence of fathers over their children may positively benefit the children's health outcomes if fathers are actively involved in disease management. Although mothers are generally reported to be the primary caregiver and are more involved in children's disease management than are fathers, family studies indicate that father's perceptions, knowledge, behaviour, and contribution to the family are associated with disease management outcomes (Knafl and Zoeller, 2000; Dashiff et al., 2008; Palmer et al., 2008). Dashiff et al. (2008) suggest that encouraging the father's involvement with diabetes management might support children's developmental and health outcomes, and might alleviate mothers' stress and anxiety associated with the burden of caregiving and the workload outside the home. Hence, parental involvement, not mother or father alone, is most beneficial for children's diabetes management.

Family members who have type 2 diabetes and/or those who are obese can have a positive or negative impact on young patients' self-management. For example, parents with diabetes, who themselves have good diabetes control, provide a positive role model for self-management for their children. When family members are obese and lack

healthy behaviours, it is difficult to encourage appropriate behaviours in children in terms of diet and exercise (Mulvaney et al., 2006; Mulvaney et al., 2008; Lehmkuhl et al., 2009). Lack of a role model of healthy living within the family is the strongest barrier to medical treatment of youths with type 2 diabetes, according to healthcare providers (Clark and Hampson, 2003).

The peer group is one of the most important influences in a teenager's life and, in general, it is assumed that members will share the same ideas, behave in the same manner, and follow group rules (Kyngas et al., 2000). It may be problematic for adolescents with chronic illness to be accepted as a member of a peer group if their modified lifestyle is not congruent with that of their friends. One US study confirms that adolescents with chronic illness, including diabetes, asthma and obesity, have less peer contacts and less social interaction, compared with their healthy peers (McCarroll et al., 2009). The authors indicated that physical limitations because of such illnesses and social stigma, or stereotyped beliefs about people with chronic illness, may inhibit children's peer relationships and social activities. Adolescents with diabetes who are obese in particular are more likely to be depressed, angry or less self-confident when teased about their weight by peers (Mulvaney et al., 2006). Peer pressure can have a negative effect on chronically ill adolescents, making them isolated, stressed and depressed (Kyngas et al., 2000; Grey et al., 2002; Guthrie et al., 2003; Lehmkuhl et al., 2009). However, there is evidence suggesting that peer involvement in illness management tasks can help children with diabetes adhere to their diabetes regimen, for example, reminding them to check blood glucose and have insulin injections or warning them to avoid sweetened foods, drinks and snacks (Mulvaney et al., 2008; Lehmkuhl et al., 2009).

Social support from various people, such as friends and relatives, is meaningful and helpful for diabetes self-management, but may be less helpful if not relevant to a patient's need (Carter-Edwards et al., 2004). Although patients' family, friends and co-workers cared and tried to be helpful, patients perceived that sometimes this support was not adequate (ibid.). This was possibly due to the lack of understanding of what patients really needed and what it was like to live with diabetes. However, Mulvaney et al. (2006) suggest that strategies to improve diabetes self-management among young people should consider the improvement of diabetes-related knowledge, communication with schoolteachers, and increased peer and family support. Overall, young people with diabetes, in addition to self-management of their disease, require family and social support (Anderson et al., 1997; Kaufman, 1998; Altobelli et al., 2000).

Health care providers

Health care providers are essential for successful diabetes care and treatment. Goals of diabetes treatment can be achieved when patients and their health care providers have a good mutual relationship, understanding and acceptance of different perspectives, good communication, and patients and their family participate in diabetes management. This is regarded as patient-centred care and examples of this practice include: a physician using simple language to assist patients to understand the information and advice better; showing empathy so patients feel comfortable about sharing personal experiences; and encouraging their participation in planning their diabetes regimens. For example, a quasi-experimental study of Thai adults with type 2 diabetes indicated that patient-centred care provided positive health outcomes, including a reduction of blood glucose levels and diabetes symptoms, improvement of eating and exercising behaviours, and greater compliance (Prueksaritanond et al., 2004).

As widely reported, one of the barriers to patients' non-adherence to medical treatment is conflict between healthcare providers and patients and the family (Weissberg-Benchell et al., 1995; Hunt and Arar, 2001; Pinhas-Hamiel and Zeitler, 2003; Fagerli et al., 2005). Conflicts may occur because of physician-related factors, including: doctors' lack of understanding of the patient's difficulties in their daily life; doctors spending inadequate time communicating with patients due to many patients waiting for the examination; and doctors' negative statements such as blaming the patient and complaining about the lack of treatment compliance. Health care providers may ignore patients' perspectives during treatment, attending to the disease or emphasising blood glucose results rather than the patient (Hunt and Arar, 2001). Consequently, patients respond negatively to their disease management (e.g. missing a doctor's appointment or using alternative treatments instead of prescribed drugs).

Providers have usually assumed that non-adherence to treatment recommendations is due to patients' lack of knowledge and motivation, and therefore have focused on education strategies. However, many patients have the knowledge of and motivation for diabetes management, but fail to follow treatment regimens due to familial responsibilities and financial problems (Hunt and Arar, 2001). Patients are more likely to comply with medical regimens if they perceive these to be effective for their illness (Kyngas et al., 2000). However, this compliance has a negative effect because patients may be less likely to change their lifestyle and behaviours (Kaufman, 1998). Although knowledge on illness and treatment is necessary for patients' adherence to self-management, it is often not sufficient to encourage behavioural changes (Gillibrand and Flynn, 2001; Hunt and Arar, 2001; Zoffmann and Kirkevold, 2005).

According to physicians' expectations, the responsibility to control blood sugar levels via adherence to medical regimens belongs to patients; those who fail are seen as unco-operative and are likely to be stigmatised by family members and friends in terms of lacking self-responsibility (Broom and Whittaker, 2004). Thai patients may ignore physician requests until a few days before meeting physicians, then intentionally decrease their fasting blood sugar levels through intensive dieting, adjusting food, and exercising (Naemiratch and Manderson, 2006). These patients changed their behaviours temporarily because they were afraid of doctors' complaints or anger about not being responsible, and they desired to please their doctors.

Healthcare system in Thailand

Socio-demographic background of Thailand

Thailand is the third largest country in Southeast Asia, with a total area of approximately 514,000 square kilometres and 63 million people, of whom nearly 9 million live in Bangkok. Ninety-three percent are ethnic Thai; the minorities include Chinese, Burmese, Malay and Lao. The majority of the population is Buddhist, followed by Muslims and Christians (Wibulpolprasert, 2008). Over the past three decades, Thailand has faced economic, demographic, social, nutritional and health transitions (Kosulwat, 2002; Wibulpolprasert, 2008). The economic structure has changed from agricultural to industrial, resulting in increased migration from countryside to city, and a shift from agriculture to a service and manufacturing industry, i.e. office or factory-work. The age-structure of the population has shifted to adults predominating, with the proportion of elderly rising while that of children is falling (Figure 2.2).

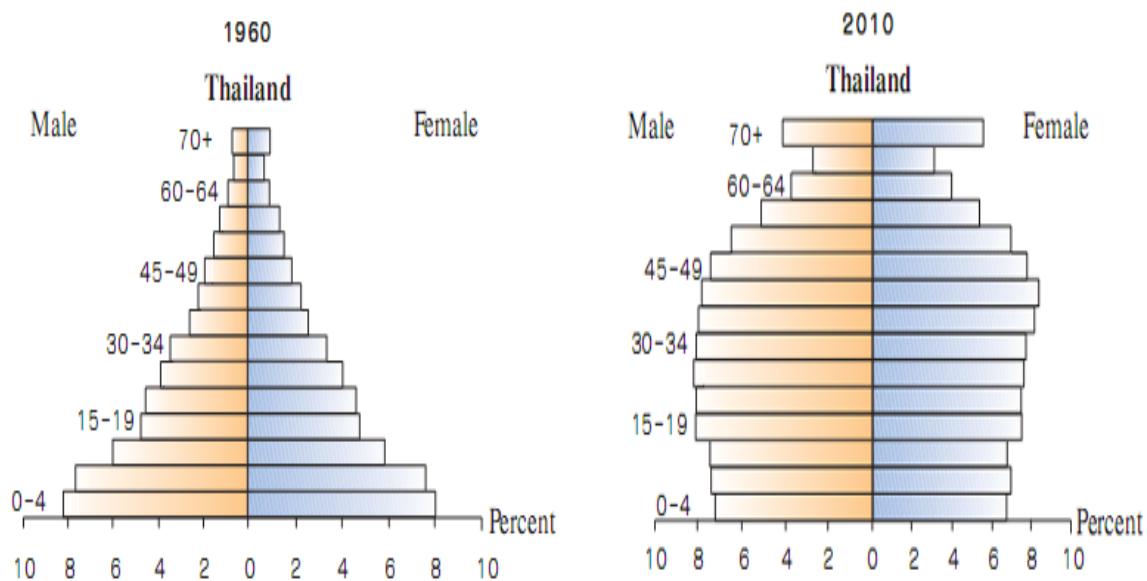


Figure 2.2 Age structure of the Thai population in 1960 and 2010

Source: Wibulpolprasert, 2008:60

The health transition has led to a change from communicable diseases as the main causes of morbidity and mortality, to chronic illnesses, such as cancer, heart disease, diabetes and obesity (Kosulwat, 2002). Overall causes of disability-adjusted life years (DALY) lost for Thai people in 2004 were from non-communicable diseases, three times as much as those from communicable diseases, and the burden of non-communicable disease was more prevalent among older people than younger (Wibulpolprasert, 2008:171).

The family structure has shifted from extended to nuclear. Child-rearing patterns have also changed, with an increasing role in childcare played by non-family members. A 2002 survey by the National Statistical Office revealed that approximately 50% of children aged 3-5 years were reared at a nursery, a child development centre or a pre-elementary school. Another survey conducted by Real Parenting in 2006 indicated that approximately 30% of 388 parents, with children aged 2-12 years in Bangkok, raised children by themselves (Wibulpolprasert, 2008:66). Similarly, between 1992 and 2006,

the pre-elementary school attendance rate among 3-5 years old children rose from 39.3% to 75% (Figure 2.3).

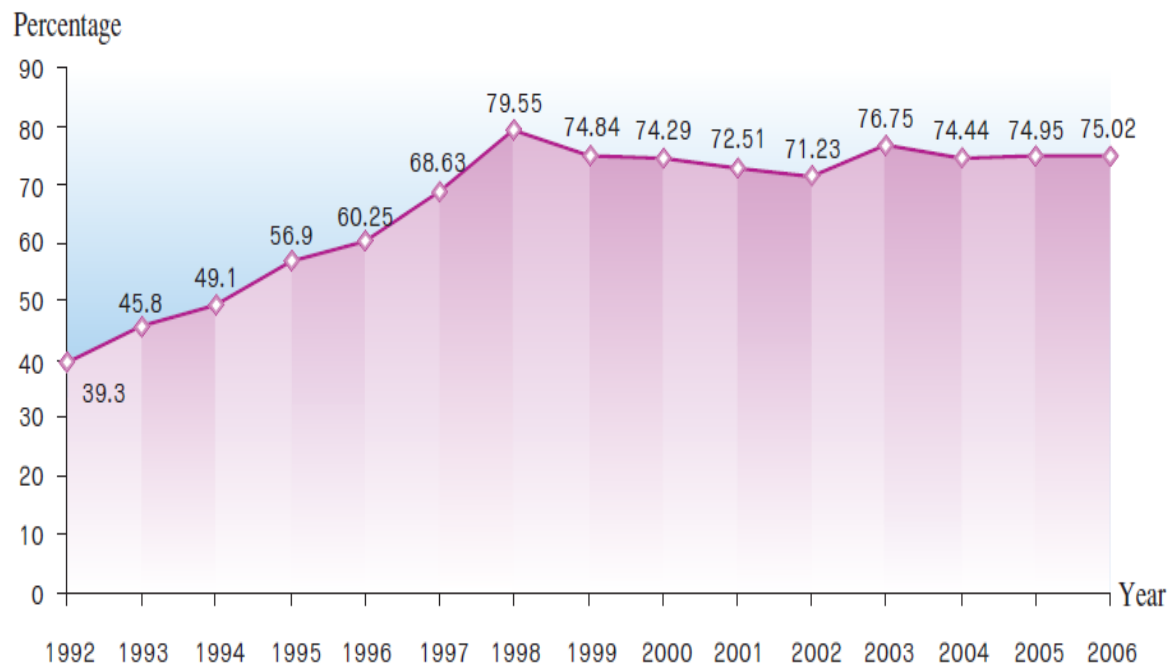


Figure 2.3 Pre-elementary school attendance rate, Thailand, 1992-2006

Source: Wibulpolprasert, 2008:66

Despite modernisation, industrialisation and globalisation, a hierarchical structure still exists in contemporary Thai society; namely, younger people are expected to respect older people and some professions are considered to have a higher rank than others (Naemiratch and Manderson, 2006). Food consumption and dietary patterns have changed from home-made meals to ready-to-cook and instant foods, eating at home to eating out, and from consuming traditional foods (i.e. mainly rice, fish and vegetables) to consuming Western foods (i.e. animal products and high fat foods). Nutritional problems have altered from under-nutrition to over-nutrition, although malnutrition still characterises particular groups (i.e. poor people including those living in urban slums). These transitions have resulted in the increased prevalence of

overweight and obesity among Thai young people in the past two decades (Kosulwat, 2002). Such prevalence will potentially impact the Thai healthcare system, which faces increased healthcare costs, is characterised by a lack of efficiency, and has insufficient numbers of health professionals (Nitayarumphong and Pannarunothai, 1997).

Healthcare delivery system

In contemporary Thailand, the public sector plays a major role in providing health services to people in all areas but particularly in rural areas, while the private sector plays a crucial role in providing health services in urban areas (Wibulpolprasert, 2008). The public sector is divided into central administration and provincial administration. Healthcare in Bangkok is under the supervision of the Bangkok Metropolitan Administration (BMA). The Ministry of Public Health (MoPH) is the key healthcare provider responsible for funding 62% of all hospitals, followed by the private sector (25%), and other state organizations such as university and state enterprises (13%) (Kespichayawattana and Jitapunkul, 2009). State hospitals under the MoPH include specialised hospitals, regional hospitals, general hospitals, community hospitals, and sub-district health centres. Other state hospitals belong to other ministries: medical school hospitals (university hospitals) are under the Ministry of Education; military hospitals are under the Ministry of Defence. Most hospitals in Bangkok are private hospitals, followed by those under other ministries, while most hospitals in regional centres are under the MoPH, followed by private hospitals (see Figure 2.4).

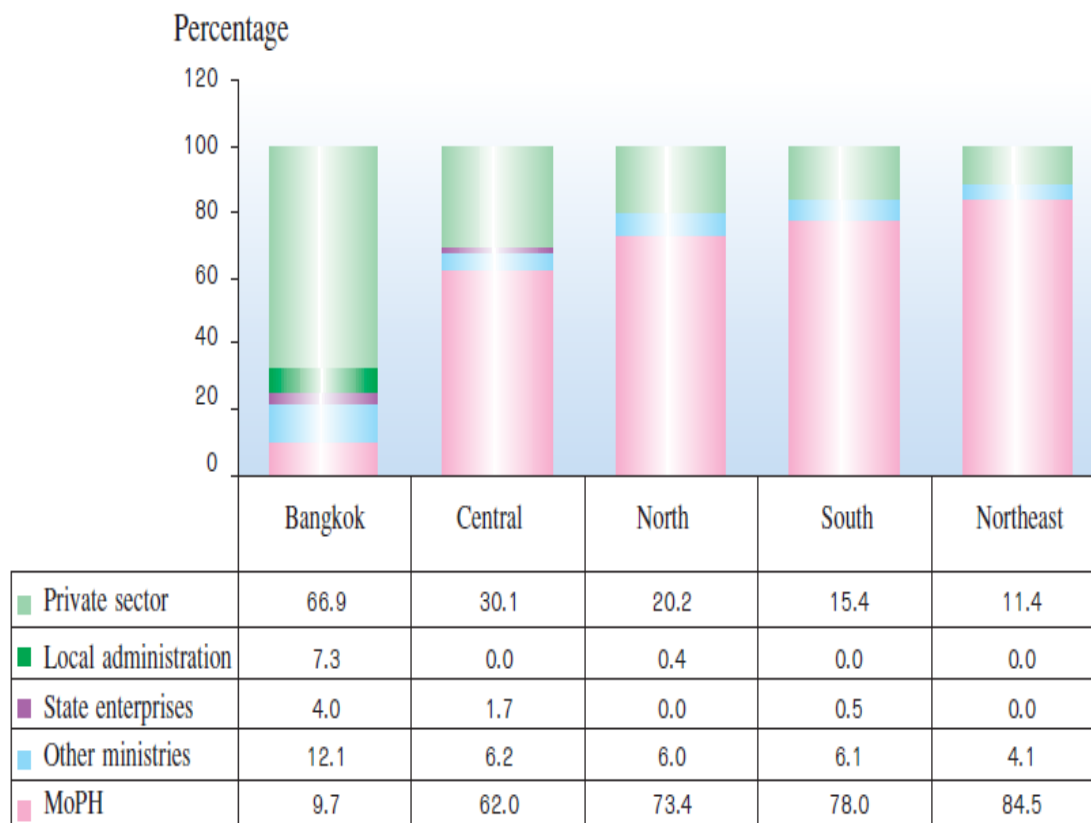


Figure 2.4 Proportions of hospitals by agency and region in 2005

Source: Wibulpolprasert, 2008:297

As illustrated in Figure 2.5, between 1998 and 2005, the proportion of doctors by agency had changed slightly. Most doctors throughout the country work for the MoPH. The remainder is distributed among other agencies: the private sector, other ministries, local government and state enterprises (e.g. Electricity Generating Authority of Thailand and Thailand Tobacco Monopoly Hospital).

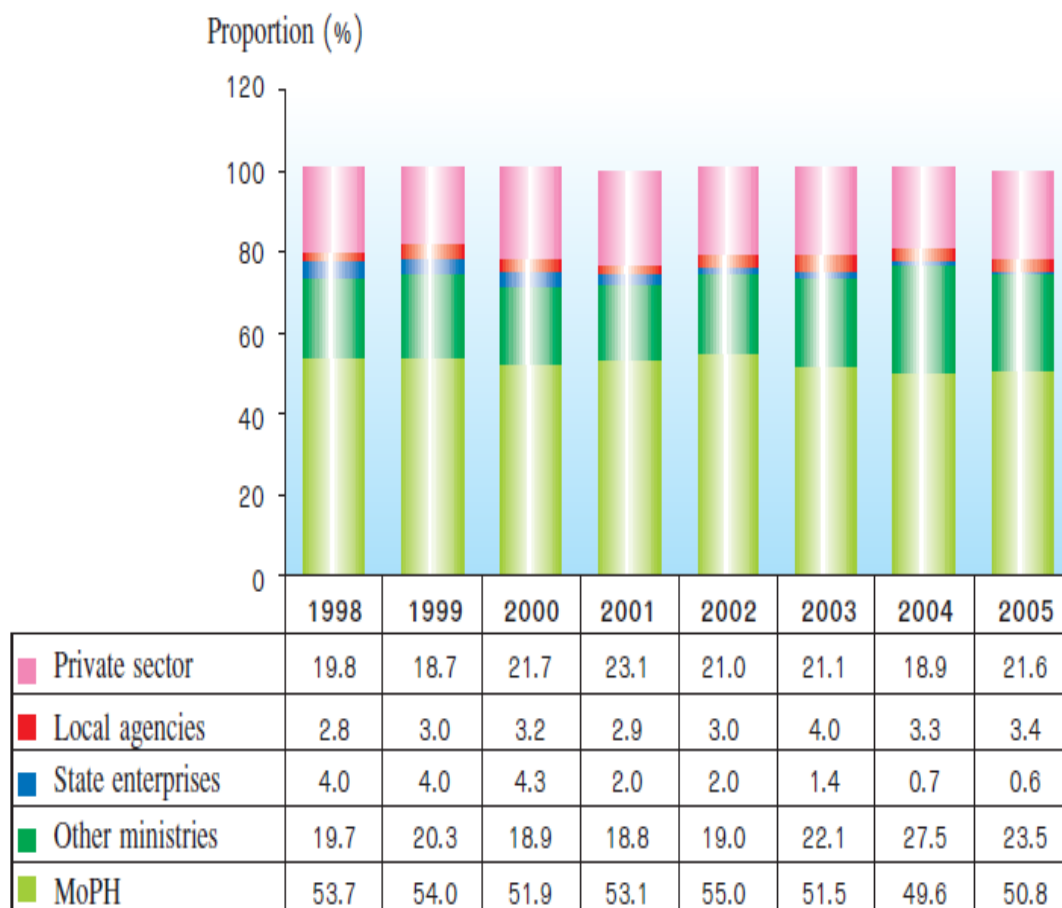


Figure 2.5 Proportion of doctors by agency, 1998-2005

Source: Wibulpolprasert, 2008:261

The ratio of population to doctors in Bangkok fluctuated between 1998 and 2005; it increased from 762:1 (1998) to 952:1 (2002), and then declined to 867:1 in 2005, as shown in Figure 2.6. According to the 7th Meeting of the Office of the Civil Service Commission in 2008, a report of the Ministry of Public Health indicated that the updated ratio of population to doctor for the whole country was 5,750:1. This ratio is slightly higher than the standard ratio recommended by WHO, which is 5,000:1 (Office of the Civil Service Commission, 2009). Although the ratio of population to doctor in all regions, except the northeast, appears not to be a problem, in fact, Thailand still faces a lack of doctors in rural areas especially (Wibulpolprasert, 1999).



Figure 2.6 Population to doctors ratio by region, 1998-2005

Source: Wibulpolprasert, 2008:275

Additionally, the lack of specialists, such as paediatric endocrinologists, in general hospitals in other provinces results in the high workload of these specialists in Bangkok. As illustrated in Figure 2.7, the overall trend in population to hospital bed ratio in Bangkok increased slightly from 199:1 in 1998 to 223:1 in 2005, while the ratio in the northeast had decreased slightly.

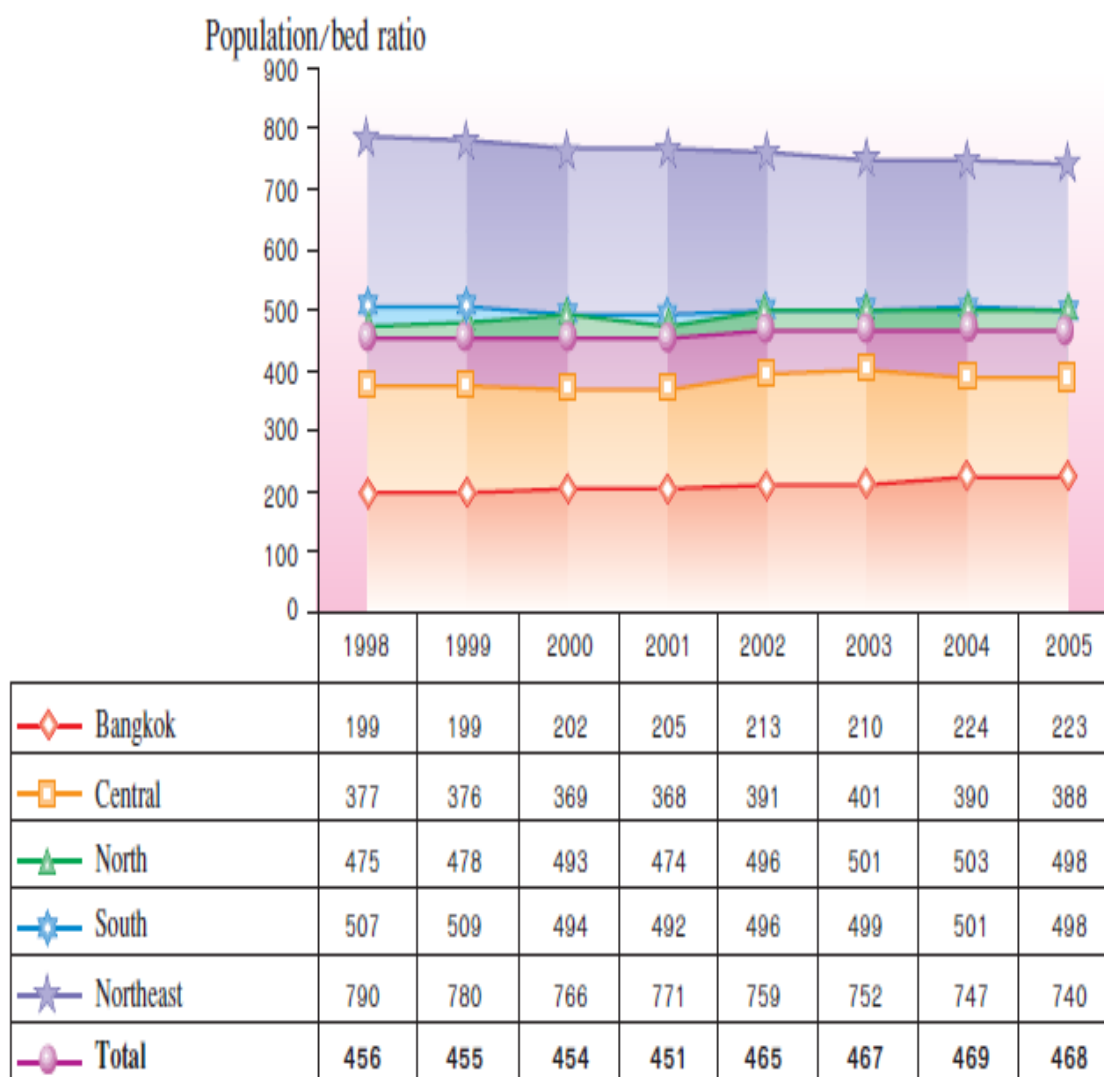


Figure 2.7 Population to hospital beds ratio by region, 1998-2005

Source: Wibulpolprasert, 2008:299

The structure of the healthcare delivery system in Thailand is shown in Figure 2.8. There are three levels of health services - primary, secondary and tertiary services. In provincial areas, community health centres, under the supervision of MoPH, provide primary care needs for rural communities; in the area of Bangkok such services are arranged by the Bangkok Metropolitan Administration generally for the poor, elderly and disabled; most other people attend hospitals (either public or private) and private clinics..

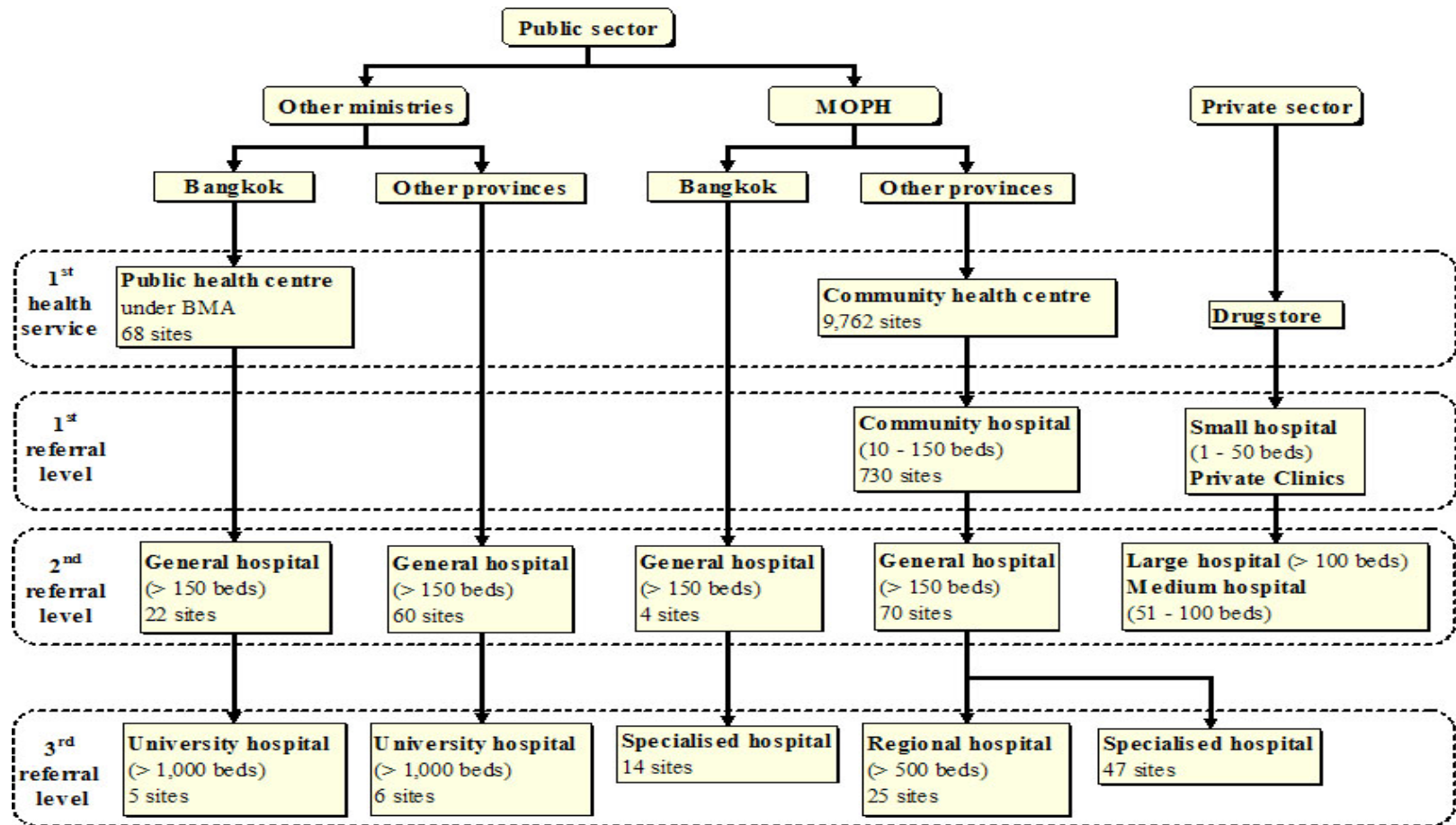


Figure 2.8 Healthcare delivery system in Thailand

Source: Wibulpolprasert, 2008:289-290

BMA = Bangkok Metropolitan Administration; MoPH = Ministry of Public Health

The health centres to population ratio has improved nationwide, from 1:10,064 in 1979 to 1:5,106 in 2006 (Wibulpolprasert, 2008). The health centres comprise minimally of a health worker who assists a technical nurse to care for patients, a midwife responsible for providing primary care to pregnant women, and providing an annual gynecological examination to all women, and a technical nurse, providing primary care services such as screening and diagnosing simple diseases, and providing education/information related to health and health promotion. Community hospitals are the first referral level for patients from community health centres. These hospitals also provide primary health services which are based on curative rather than preventive care (Kespichayawattana and Jitapunkul, 2009).

Secondary health services emphasise curative care and are run by community hospitals, general hospitals and regional hospitals; they include various disciplinary health personnel (such as nurses, pharmacists, physiotherapists, medical technologists, and laboratory technicians), physicians and some medical specialists. Community hospitals (with 10 – 150 inpatient beds) are located in districts and sub-districts. General hospitals (with over 200 inpatient beds) are the second referral level and take patients referred from community hospitals.

Tertiary health services are provided by various disciplinary health personnel, general physicians and a number of medical specialists. General hospitals, regional hospitals, university hospitals, specialised hospitals and large private hospitals facilitate these services. Most university hospitals (with over 2,000 inpatient beds), located in Bangkok and the major regional cities (Hat Yai, Khon Kaen and Chiang Mai), include medical specialists in all fields, and provide tertiary care. Hospitals under the MoPH are mostly located in provincial centres and comprise medical specialists in some, but not all fields, providing secondary and tertiary care levels. Again, the emphasis is on

curative care. Specialised hospitals such as the neurological hospital, psychiatric hospitals and dermatology centres are located both in Bangkok and in regional centres.

In the private sector, there are three categories of health services located both in Bangkok and provincial areas: drugstores or pharmacies, clinics without inpatient beds, and private hospitals with inpatient beds. The majority of large private hospitals (over 200 beds) are located in Bangkok. These usually lack full-time specialists in certain areas, such as paediatric endocrinologists, although they have specialists in other areas such as orthopaedics, endocrinologists, surgeons, and obstetricians (Wibulpolprasert, 2008:295). Most medium-size private hospitals (51 – 100 beds) are also concentrated in urban areas.

Diabetes care system for children and adolescents

Children and adolescents aged up to 18 years usually access specialist care through evaluation and referral by general practitioners or paediatricians. Most paediatric endocrinologists work in university hospitals, predominantly located in Bangkok but also in other large provincial centres. Young people with pre-diabetes and diabetes are referred to a paediatric endocrinologist when they are admitted to a university hospital, but in public and private hospitals, where these specialists are not available, young people may be referred either to an endocrinologist or a paediatrician. According to the Thailand Diabetes Registry Project (2006), around 58% of young people of all diabetes types, diagnosed before the age of 18 years, were under the care of paediatric endocrinologists, while the rest (42%) were treated by endocrinologists (Likitmaskul et al., 2006). At present, there are only 25 paediatric endocrinologists countrywide, and most of them work full-time in university hospitals (Nitiyanant et al., 2007), although some may also work part-time in private hospitals.

Almost all university hospitals in Bangkok have multi-disciplinary diabetes care teams for young patients, including paediatric endocrinologists, nurse educators, dieticians, and psychologists and/or psychiatrists. The two university hospitals – Siriraj Hospital and Ramathibodi Hospital – have a diabetes hot-line service; only Ramathibodi Hospital, which has a comprehensive diabetes service, has a home visit service (Nitiyanant et al., 2007:77). However, Thailand lacks specialists and specific hospital services for children and adolescents with diabetes, despite the separation of the healthcare system and services for children and adults. For example, there are fewer paediatric endocrinologists and paediatric nutritionists than those who provide services to the adults, and type 2 diabetes camps for adolescents are not as common as those held for the adults.

Diabetes education

Diabetes education for children and adolescents with diabetes, and their families, is provided mainly in university hospitals and in some regional hospitals. Although in general young patients gain diabetes-related knowledge from school (such as from biology class and physical education class), the curriculs provide general information of diabetes, which is neither comprehensive nor current (as discussed later in Chapter 6). Hospital based-services for young people with diabetes emphasise the provision of diabetes education through diabetes classes, diabetes clubs and diabetes camps. Young people who are newly diagnosed with diabetes (either type 1 or type 2), and their families, are commonly provided with a basic knowledge of diabetes self-management (e.g. insulin injection, self-monitoring of blood glucose, and appropriate food for patients with diabetes) by paediatric endocrinologists, nurse educators and nutritionists (Nitiyanant et al., 2007:74). The diabetes care team, mainly nurse educators and nutritionists and/or dieticians, provides diabetes education when following-up young

patients and their families every three months, through small group sessions before young patients meet their doctors in the out-patients department of the diabetes clinic. Unlike type 1 diabetes, young patients with pre-diabetes or type 2 diabetes and their caregivers are less likely to participate in the group sessions. In addition, overall parents who set up a self-help group have children with type 1 diabetes.

The diabetes camp is another channel to obtain education about diabetes for young patients and is one example of peer support that appears to be effective in diabetes self-management (Santiprabhob et al., 2005). Diabetes camps in Thailand have been limited to some groups only. A well-known diabetes camp for children and adolescents has been arranged every two years by Siriraj Hospital since 1990. The camp has focused on young people with type 1 diabetes. At the time being of my data collection, the most recent diabetes camp (2007), in which I participated, was open not only to young patients but also their families. Diabetes camps operating by Siriraj Hospital aim to educate young people with mainly type 1 diabetes about diabetes self-management and to enhance their self-confidence and social relationships, but there are still no diabetes camps for type 2 diabetes (Jirapinyo et al., 1995; Santiprabhob et al., 2005), despite its rising prevalence.

Santiprabhob et al. (2005) investigated the effectiveness of the Siriraj diabetes camp and found that young patients improved their diabetes knowledge, accepted that they were diabetic, and had better mental health. Although their blood glycaemic results improved for only a short period, the other benefits derived from the program could be useful also for adolescents with type 2 diabetes to improve their knowledge and understanding of the importance of diabetes self-management. According to this research, type 1 diabetes camp would be a practical model for Siriraj hospital or other

hospitals so that they can extend or apply this model to young patients with type 2 diabetes and/or obesity.

Healthy lifestyle campaigns for children and adolescents

Successful child-care and school-based health promotion programs have been undertaken in some countries, such as Australia, the UK, the US and Singapore (Lee, 2000; International Diabetes Institute, 2005; James and Keer, 2005). In Australia, there is a health promotion program “T for Teddy,” providing both education and social activities for Australian toddlers and children (International Diabetes Institute, 2005). The program was initiated in 2005 to create community awareness of type 2 diabetes - a global health alert. The program activities included providing knowledge about the importance of eating fruit and vegetables, drinking water and exercise through games and activities, using a teddy bear as a child’s best friend to develop very young children’s commitment to taking care of themselves, as they would care for their teddy bear. This is an early prevention program among young children, developed on the premise that early interventions are most effective and sustainable. The UK “Fizzy” program aims to reduce sweetened soft drink intake and weight in obese students (James and Keer, 2005). The “Trim and Fit” program in Singapore integrates nutrition education in the school curriculum, improves school food, ensures the availability of water coolers, and provides rewards for students with improved health outcomes. Most interventions are about education on nutrition and exercise; a few focus on behavioural change through changes of policies (e.g. water fountains and food in canteens) (Lee, 2007).

Diabetes health promotion campaigns among children and adolescents in Thailand more generally have been sparse. For example, “Sweet Enough Campaign” or *Dek thai mai kin waan* (Thai children do not eat sweets or sweet food), was launched by

a network of multi-disciplinary scholars, including dentists, paediatricians, nutritionists and researchers in 2002, with funding support from the Thai Health Promotion Foundation or “ThaiHealth.” The rationale for initiating this project was related to the increasing prevalence of obesity and tooth decay among children and adolescents due to increased sugar consumption. The campaign focused on decreased sweets consumption among young people and has created public awareness of the silent danger of eating sweets. Activities of the campaign include providing knowledge about food and nutrition and the effects of eating sweets. This is done by employing brochures, booklets, websites (Maikinwan.com, and Noynoi.com) and a television program, using the cartoon of a pink ant, named *Noynoi* (Figure 2.9), to communicate with children.

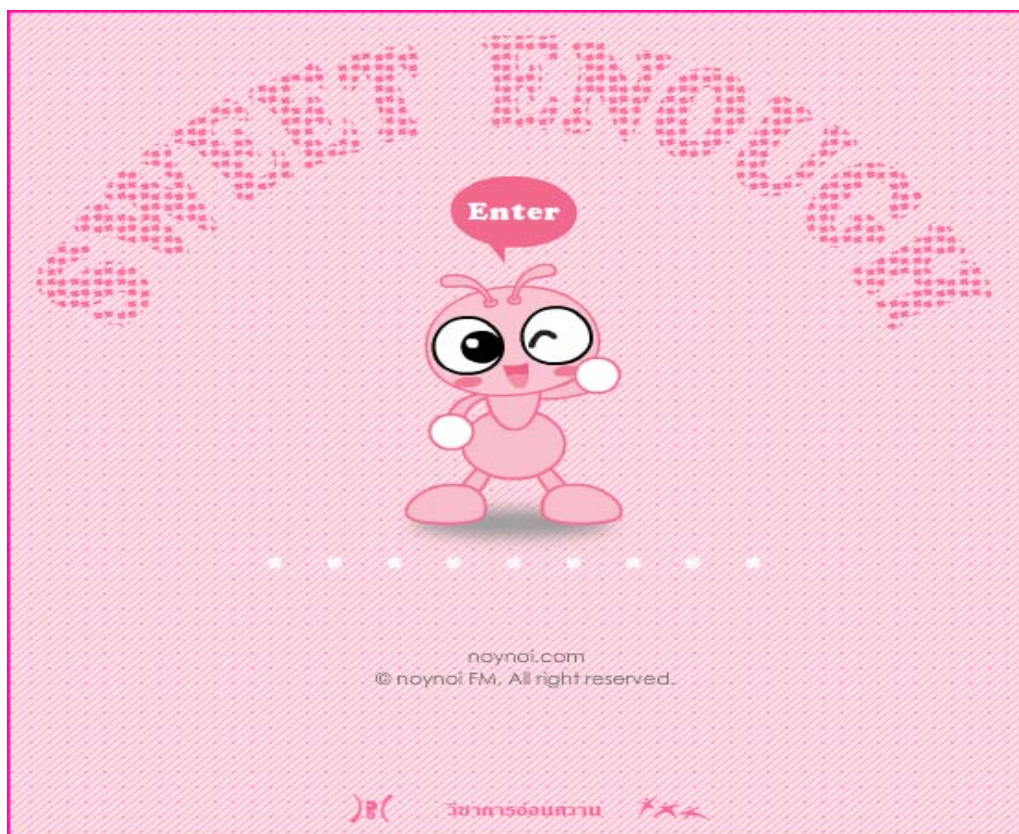


Figure 2.9 The mascot of the Sweet Enough Network, the pink ant, *Noynoi*

Source: Sweet Enough Network (2004) from the website <http://www.noynoi.com>

The Sweet Enough Network focuses on health promotion among children and adolescents to encourage less sugar consumption or “No added sugar.” The mascot, the pink ant, has been produced as a souvenir, such as a brooch, a T-shirt and a doll, and is sold on days of family activities. In addition, the Sweet Enough Network has worked on policy since 2004 and has ensured that a regulation has been passed prohibiting adding sugar to formula milk for children aged 6 months to 3 years (The Thailand Food and Drug Administration, 2005). At present, the campaign continues to provide education and works on involving communities and schools to be involved in projects, such as no soft drinks in school, selling healthy food in schools, and growing vegetables in schools. These projects under the Sweet Enough Campaign have involved schools predominantly in the Bangkok Metropolitan Administration. The Sweet Enough Campaign is well known among Thai families and has continued to produce projects targeting school-based programs, but this campaign has focused on food and nutrition issues and not on exercise and physical activity.

This chapter has provided an overview of the aetiology, characteristics and risk factors of diabetes, as well as policy, structural, and institutional factors affecting the management of this illness and the role of the Thai health system and community groups in addressing type 2 diabetes. In the following chapter, I discuss adolescents with diabetes in relation to lifestyle, health beliefs and behaviours, and present theoretical models used to explore belief and understand behavioural modification and change.

CHAPTER 3

ADOLESCENTS WITH DIABETES

In this chapter, I define adolescence, discuss adolescents' health and lifestyle risks, describe the theoretical framework I employ in this thesis, and discuss research on type 2 diabetes in Thailand which applies these theoretical models. I consider several health-related theoretical models - the health belief model, the theory of planned behaviour, self-efficacy, locus of control, and explanatory models - and review these in relation to various diabetes studies.

Definition of adolescence

Adolescence is a transitional period from childhood to adulthood, and from parental dependence to personal independence. It is considered as a stage of developmental change, anatomically, physiologically, and psychosocially (Kyngas et al., 2000; Almino et al., 2009). The age range provided to refer to this period of change varies. For example, the USA Center for Disease Control (CDC) defines adolescence from the age of 10 to 24; and the USA Maternal Child Health Bureau (MCHB) defines adolescence from the age of 11 to 21 (Adolescent Health Programs, 2008). The United Nations Population Fund defines an adolescent as a person aged between 10 and 19 years (UNFPA, 1998). Thailand classifies adolescence as the age between 13-18 years (Punyaratabandhu et al., 2005). However, at present, Thai adolescence is generally considered (by educators) to begin with puberty (i.e. menstruation among girls, and having voice change and beard growth among boys), starting from the age of 11-12 (Center Study on Leisure, 2006). In this study, I define adolescence to include young

people 12 – 19 years, to ensure that my young participants reached puberty or were older.

In the Thai language, *wairun* is commonly used countrywide, and literally means either young people (adolescents) or young age (adolescence), according to Thai monolingual dictionaries (Thai Royal Institute, 1999). This term is a combination of two words, *wai* (age), as a prefix, and *run* (young). *Dek wairun* is a compound word of *dek* (a child) and *wairun*, clearly indicating adolescents or teenagers, based on a Thai notion that people in this age have not yet passed childhood. The term *dek* also implies psychological and intellectual immaturity. Thai people often use *wairun* interchangeably to refer to adolescents and adolescence. They also often shorten the term from *dek wairun* to *wairun* when they mention teenagers. *Wairun*, as a category that has been socially constructed over time, is related to three main activities: *kin*, *teaw* and *len* (eat, travel and play), implying that people in this age, like younger children, are not expected to work or are not fully responsible other than for studying. *Wai-numsao* usually refers to older age adolescents studying at the university, placing them between *wairun* and *waitum-ngan* (working age). Working symbolises adulthood, therefore, a marker to identify *wairun* is studying, as represented by the term *wairun-wairian* (*wairian* means studying age).

Wairun is frequently used metaphorically to reflect the outstanding characteristics and feelings of young people in either a positive or a negative sense. On the one hand, Thais most often describe children and teenagers as energetic, joyful and curious, as *wai-canong*, *wai-son*, *wai-joh* and *wai-jaab*, or of school age and focused on studying as *wai-laorian*. These terms capture a sense of liveliness, fun and curiosity. In addition, *wairun* may be perceived as *wai-rackyam* or *wai-kumdud*, referring to a period of flowers blossoming, and is often used to refer to girls (aged around 12-14 years)

rather than boys. People compare adolescence to spring time. On the other hand, adults and older people often perceive *wairun* as *wai hualiw-huatore* (a critical age), *wai duerun* (a stubborn age) and *wai-untarai* (a dangerous age), which infers health risks, problematic behaviours (e.g. aggression, violence, confusion and carelessness), and difficulties that adults face in dealing with young people. *Wairun* in this sense is concordant with a period of health risk or a time of 'storm and stress' (Heaven, 1996). The negative construction of *wairun* is seen as an inhibiting factor in the self-management among adolescents with diabetes (discussed in further chapters).

Thai adolescents' health and lifestyle risks

In 2004, there were approximately 10.7 million (16.5%) adolescents (10 – 19 years) in the total population of Thailand (about 64.3 million), with the ratio of male to female 1:1 (Adolescent Health and Development, 2007). Based on the National Education Act (2002), school attendance is compulsory until Grade 9, and Thai children are provided with free education for at least 12 years; thus most Thai children and adolescents are literate. Most young people aged 9-14 years (70%) live with both parents and are dependent on the family. Those who do not live with their parents are often raised by relatives such as grandparents; this has been a long-term common practice among Thai people as the kinship system in Thailand is quite strong (Adolescent Health and Development, 2007).

Unhealthy food consumption

The traditional Thai diet comprises rice with vegetable and fish side dishes as the main sources of carbohydrate, fibre, vitamins, minerals and protein (Ganjanasuntorn, 2002; Kosulwat, 2002). Traditional Thai food also contains various kinds of herbs and spices, such as garlic, lemongrass, ginger, chilli and basil, which are believed to promote health

(Ganjanasuntorn, 2002). Rice, a carbohydrate staple, is consumed daily with a variety of dishes served at the same time, allowing different dishes to complement each other (Kosulwat, 2002). Thai people value rice as the “bone” of the body, and every grain of rice is believed to be part of the body of Mother Rice (*Mae Posop*); this image of *Mae Posop* recurs in informal conversations and home-based teaching. Therefore, eating all rice placed on a plate shows respect for Mother Rice, and gratitude to concern for Thai farmers who put their effort into growing rice for them (Yasmeen, 2000). Although fish and vegetables are the major components of side dishes, occasionally meat and poultry, such as chicken, pork and beef, are consumed. The source of fat in traditional foods commonly comes from pork fat, coconut milk and animal cooking oil. Although vegetable oils now generally replace animal fat, vegetable cooking oil - including palm oil and coconut oil – contain high saturated fats which are associated with the risk of heart disease (Mendis et al., 2001; Kabagambe et al., 2005).

Over the past three decades, Thailand has experienced a nutrition and health transition associated with rapid socio-economic growth affected by increased urbanisation and Westernisation (Kosulwat, 2002; Tuchinda, 2006). Most people in Bangkok and urban areas in other provinces now consume more meat, fat and dairy products, and less fruits and vegetables, than people living in rural areas, and more than in the past (Kosulwat, 2002; Tuchinda, 2004). Side dishes with high energy density, such as meat and coconut cream-based curries, are frequently consumed (Ganjanasuntorn, 2002). Thai teenagers especially have turned away from traditional Thai or local food; instead, they opt for Western fast food, sold through retail outlets such as Pizza Hut, KFC (Kentucky Fried Chicken), Burger King and McDonalds, and consume other instant foods such as instant noodles and ready-to-eat meals (Bunjaroonsilp, 2004). Thai children and adolescents are also likely to consume

commercially manufactured desserts, snacks, and soft drinks containing high amounts of sugar and carbohydrate, while socialising and watching television (Tuchinda, 2004).

Tuchinda (2004) has suggested that eating sweets or sweetened foods has led to fatness and dental problems such as tooth decay, and this is a major health problem among Thai children, reflecting the tendency towards higher sugar consumption among Thai people all over the country. Thai people have increased sugar intake continuously over 13 years, from 12.7 to 27.9 kg per person between 1985 and 1998 (*ibid.*). The last national food and nutrition survey in 2003 conducted by the Nutrition Division, Ministry of Public Health, revealed that Thai people have increased their consumption of marketed sweetened drinks, rather than drinking water and milk, accounting for approximately an eight fold increase in the daily consumption of sugar – from 6.8 to 52.5 grams per day per person (Chanyachailert, 2008). Approximately 23% of 900 students aged 12-18 years who study in Bangkok and the three proximal provinces (Nonthaburi, Pathumthani and Nakhon Pathom) take soft drinks everyday, and about 15-17% of students take soft-drinks and fruit juices on a regular basis (Nutrition Division, 2006). A study of 1,982 children (11-15 years) in southern Thailand in 2006 reported that 95% of students eat high fat and carbohydrate snacks on a regular basis (Tangwitoon, 2007). Another study of school-age children in Khon Kaen Province explored dietary patterns and health-related lifestyle and found that almost 50% took soft drinks 4-6 times a week, with French fries or potato chips being the most popular snacks (Luangkaew, 2008).

A study of school-age children in US suggested that the consumption of sugar-sweetened drinks during childhood is associated with weight gain in adolescence (Ludwig et al., 2001). The Joint WHO/FAO Expert Consultation recommends the amount of added sugar should be less than 10% of total daily energy intake in order to

reduce weight gain (Nishida et al., 2004). Thai scholars also recommend limiting sugar consumption to up to six teaspoons or 24 grams a day (1 teaspoon = 4 grams) for Thai adults and youth (14-25 years), and up to four teaspoons or 16 grams a day for children (6-13 years) (Chanyachailert, 2008). However, in reality, Thai people have been increasingly consuming the amount of added sugar per day, from 8.7 teaspoons in 1983 to 20 teaspoons in 2001, through its use in commercial foods, soft drinks, and in sweet food (ibid.). This is concordant with the 2001-2004 US study, which indicated increased added sugar intake among young people, with the highest intake at 34 teaspoons per day (549 calories), among those aged 14-18 years (Johnson et al., 2009). The authors point out that the adverse effects of high sugar consumption are cardiac risk factors including insulin resistance, abdominal obesity and high blood pressure. Overall, this unhealthy eating behaviour contributes to the development of diabetes, high blood pressure, and heart and kidney disease. Changing such behaviour, especially when older, is not easy because young people may become addicted to sweet and salty drinks and snacks.

Sedentary lifestyle

The lifestyle of young people in urban Thailand is critical because of their routine sedentary activities: they are overloaded with study during school days and spend leisure time watching television and playing online games, particularly during school holidays (Tripathi, 2008). Some children spend an extensive period of time studying both in regular classes and in private educational institutes after class and/or on weekends, consistent with parents' emphasis on educational attainment rather than health as the first priority. Parents push their children to study more, rather than encouraging their children to play sport or do other physical activities (ibid.). A Thai study indicated that children spent an average 3-5 hours a day on weekends watching television (Mo-suwan et al., 2004). The study also found that children who watch

television over three hours a day have a 1.8 higher risk of obesity than those who watch less. Another study of 97 school-age children in Chiang Mai found that approximately 45% of all students spent over six hours watching television on the weekend (Thamrongloughaphun, 2003). These findings are concordant with a US study (Andersen et al., 1998) which indicated that children who watch television over two hours each day had greater body fat and a higher body mass index than those who watch less than two hours a day. Mo-suwan et al. (2004) also suggested that children were at greater risk of obesity if their parents viewed television with them. Parental influence, therefore, is an important factor in developing inactive behaviour for children (Un-Em, 2007). During the school holidays, many young people (80 – 90%) in Thailand are sedentary: they study, sleep late and wake up in the afternoon; then they have lunch, play online games, have dinner and play online games again until late at night (Tripathi, 2008). This report indicates that Thai children lack exercise and undertake few outdoor activities with either their families or friends. Parents or other family members rarely participate in children's activities and fail to (or lack time to) encourage them to exercise more during vacation, when the latter have more free time.

Childhood obesity

Childhood obesity has become an emerging global health concern, and leads to serious health problems such as sleep apnoea, type 2 diabetes and cardiovascular disease in adulthood (Mo-suwan and Geater, 1996; Sakamoto et al., 2001; Baur, 2002; Ebbeling et al., 2002; Hannon et al., 2005; Jolliffe and Janssen, 2006; Mahachoklertwattana, 2006; Kelishadi, 2007; Lee, 2007; Shaw, 2007; Schwartz and Chadha, 2008). In recent years, many developing countries, including Thailand, have recognised childhood obesity as an important health problem because of an increasing number of young people with several cardiac risk factors, including pre-diabetes, insulin resistance, high

blood pressure, and high blood lipids (Sakamoto et al., 2001; Jolliffe and Janssen, 2006). This was confirmed by a US study reporting that obese children from the age of six years had a 50% chance of becoming obese adults, and obese adolescents had a 70% to 80% chance of being obese in adulthood (Whitaker et al., 1997).

Thailand has the same phenomenon. A 2005 survey in Thailand conducted in 342 primary schools reported that 12% of children was obese and 5% was overweight, with a greater prevalence among boys than girls. A study in Saraburi Province indicated a greater number of obese children in urban (22.7%) than rural areas (7.4%) (Sakamoto et al., 2001). In general, the proportion of children defined as overweight or obese reflected the pattern of economic development and urbanisation in Thailand: Bangkok had the highest prevalence of obese (15.5%) and overweight children (7%), followed by the central, northern, southern, and northeast regions (14.4, 11.9, 10.9 and 8.3%) (Thailand Health Research Network, 2007). A five-year-longitudinal study in southern Thailand suggested that children who were overweight during childhood had a greater chance to become overweight adolescents than their non-overweight peers, and girls had twice the risk as boys (Mo-suwan et al., 2000). Approximately 30-80% of obese children remained obese when adults and developed complications such as diabetes, high blood pressure and heart disease (California Center for Public Health Advocacy, 2002; Mo-suwan, 2008).

In developed countries, lower socioeconomic status is a predictive factor for obese children, while higher socioeconomic status impacts on childhood obesity in developing countries (Mo-suwan et al., 2000; Sakamoto et al., 2001). Sakamoto et al. (2001) claim that the mechanism of how socioeconomic status affects childhood obesity in developing countries is unclear. Many studies incongruently report factors contributing to obesity during childhood. For example, some findings indicate that

higher family income is associated with childhood obesity (Mo-suwan and Geater, 1996; Mo-suwan et al., 2000; Sakamoto et al., 2001; Peungposop, 2008). Un-Em (2007) disagrees with this, and has suggested the greater importance of individual factors, such as eating a large amount of food, bigger bites, fast chewing and swallowing, and often eating fried food and snacks. The author also argues the importance of familial factors, including feeding an infant with formula milk during early four months and maternal obesity influence childhood obesity. Mother's age, education and marital status, family income and lifestyle (food consumption and activities) were not related to childhood obesity. A recent study of school-age children in Bangkok revealed that risk factors of over-nutrition included being male, a single child or last child, or having many siblings (more than three), having light to moderate physical activities, short duration of breastfeeding, infrequent health promotion activities at school, higher family income, caregiver's occupation, and unhealthy role models (Peungposop, 2008).

Studies in the northeast and Bangkok confirm that boys are more likely to be overweight or obese than girls (Langendijk et al., 2003; Peungposop, 2008). In northeast Thailand, this may be due to a cultural bias towards obesity being perceived as more acceptable in boys than girls (Langendijk et al., 2003). Similarly, a study of Thai adolescents in the central region suggested that male rather than female adolescents were exposed to over-nutrition, in contrast to studies in developed countries (Un-Em, 2007). This incongruence occurs because of different contexts and environments. For example, young Thai men appear to be more concerned about masculinity and consume food to increase their body size, while young women were more concerned with slim body shape and so tried to avoid eating high fat foods to avoid being fat (Un-Em, 2007). Hence, concern about body image may be a protective factor for obesity among young women in Thailand.

A 2005 study of over-nutrition in children and the school environment, by the Thai National Health Foundation, revealed that 342 schools had unhealthy environments both inside and around the schools. Children were able to buy food and drinks, such as *khao man kai* (rice with oil and boiled chicken meat), *khao khaamoo* (rice with pork meat, tendon and boiled egg), and *nam waan* (sweetened drinks), although these were high in fats, salt and sugar (National Health Foundation, 2009). The schools also provided sweet snacks such as ice-cream bars (82%) and savory snacks such as potato chips (55%) (Boocha, 2007). Around school areas, many food vendors sold soft drinks (82%), ice-cream (79%), and fried food such as fried chicken and fried meatballs (77%) (ibid.).

Community environment is an underlining factor for youth obesity. Parents now permit their children more autonomy at home, although they still limit their freedom outside home (Rutherford, 2009). This is because parents are concerned about safety outside the house, and limit the extent to which their children play and stay at home, or hang around shopping malls and in other public indoor places. Un-Em (2007) reported lack of playgrounds for child activities in communities where both obese and non-obese children lived. Additionally, parents often use food as a reward to motivate children (Rutherford, 2009). For example, parents may buy fried chicken from a KFC outlet for their children when they get high marks at school.

The expansion of and competition among food industries and food advertisements have also affected obesity among younger populations by encouraging the high consumption of high fat and sugary food, soft drinks and fruit juices. Changes in the purchase and consumption of food have occurred parallel to ubiquitous food advertisements, so that urban Thai children are exposed to them everyday, whether they are at home or go out. They passively absorb advertisements about snacks, sweets, soft

drinks and Western fast foods (hamburgers, hot dogs, doughnuts, and pizza) appearing on the mass media and in public space, such as on television, giant billboards along the streets, bus stations, skyscrapers, LCD monitors in sky-trains and sky-train stations, and on painted vehicles such as buses. These food images (Figure 3.1-3.3), which are seen repeatedly and so are internalised, can stimulate children's demands to buy these foods (Chucharoen, 2007). Parents, equating meeting their children's demands as displays of love, capitulate and buy unhealthy foods. A study of snack advertisements on children's television programs found that these advertisements were displayed 44 times/hour on Channel 9 at weekends; this channel programmed many cartoons to attract children (Thamrongloughaphun, 2003). Children in this study purchased snacks in response to television advertisements and the marketing promotion of toys included with food and snacks.



Figure 3.1 Hamburger advertisement at a sky-train station



Figure 3.2 A food billboard



Figure 3.3 Pepsi image at Siam Square

Theoretical framework

While the theoretical models used in my study mostly originate from ‘Western’ studies, they have been widely adopted and modified in non-Western studies, and in studies with non-English speaking populations in Australia. This is because of their flexibility which may make them more adaptable to predicting a variety of behaviours (Nejad et al., 2005). Many theoretical frameworks are of relevance to my study:

- 1) The Health Belief Model
- 2) The Theory of Planned Behaviour
- 3) Self-efficacy
- 4) Locus of control
- 5) Explanatory models
- 6) Baumrind’s parenting style model
- 7) Knafl’s family management style

I discuss them in detail below.

The Health Belief Model

The Health Belief Model (Becker, 1974; Rosenstock, 1974) is used widely to explain or predict health behaviours on the basis of people’s belief in the avoidance of health threats. The model originally comprised four components: perceived susceptibility, perceived severity, perceived benefits and perceived barriers. If people perceive that they are vulnerable to a disease such as cancer or diabetes because of genetic predisposition and family history of the disease, perceive that the disease is serious, and perceive that treatment can improve their health outcomes, they are likely to increase health-promoting behaviours. In contrast, people who perceive difficulties in managing their illness may present poor health behaviours. These four factors, related to

individual's perceptions, are influenced by mediating factors, including demographic (e.g. gender, age and education) and social (e.g. family and peer influence) factors (Redding et al., 2000). Cues to action (i.e. internal and external stimuli to perform the health behaviour) and the concept of motivation were added to the model when further modified. The most recent modified model included self-efficacy as a key factor (Redding et al., 2000; Sigurdardottir, 2005).

Health belief models have been used worldwide in research related to different diseases, including diabetes (Cerkoney, 1980; Bond et al., 1992; Aalto, 1997; Ratanasuwan et al., 2005), obesity (O'Connell, 1985), breast cancer (Calnan, 1984; Austin et al., 2002), AIDS (Iriyama et al., 2007), and asthma (Becker et al., 1978). For example, Aalto (1997) applied the health belief model and other behavioural models such as locus of control, self-efficacy and social support, to explain adherence behaviours to medical regimens among adults with type 1 diabetes. The findings suggested that women more actively performed self-monitoring of blood glucose, as a consequence of a higher perceived threat of complications than men. The study also found that perceived benefits of diet adherence and self-monitoring of blood glucose were strongly associated with adherence behaviours. Self-monitoring seemed also to be affected by internal factors, such as internal cues or perceived capability in self-testing blood glucose, while dieting related to external social influences (Aalto, 1997). Similarly, Thai adults with type 2 diabetes who perceived the disease to be severe, and perceived the benefit of diet control, tended to strictly control their diet (Sawatsri, 2007).

The Health Belief Model has also been used in research on health beliefs, perceived self-efficacy, and breast self-examination among Thai migrants in Brisbane (Jirojwong and MacLennan, 2003). This study identified the impact of

sociodemographic factors on women's regular use of breast self-examination. Closed-ended questions were used for data collection. The health belief model determinants include perceived severity of and susceptibility to a disease, benefits of a health action, barriers to undertaking the action, cues or triggers to undertake the action, and self-efficacy to overcome barriers and to perform breast self-examination.

Compared to other behavioural models, such as the theory of planned behaviour, the health belief model is more flexible to predict behaviours; individuals' independent variables contribute to the prediction of health behaviours (Nejad et al., 2005). Because of its flexibility, the health belief model has been applied in many studies related to diabetes such as diet, exercise and medication use (Becker et al., 1977; Becker et al., 1978; O'Connell, 1985; Garcia and Mann, 2003) to explain and predict health behaviour, sick-role and illness behaviour (Brown, 1999). For example, patients' perceptions of disease susceptibility and severity, and the benefits of and barriers to medical treatment, determine patients' behaviour in adherence to medical treatment. A study of control and adherence to medical treatment among Thai adults with type 2 diabetes indicated that many participants did not follow up doctors' appointments when their symptoms were not present, and would only seek treatment when visible symptoms appeared (Naemiratch and Manderson, 2006). Patients in Naemiratch and Manderson's study did not adhere to their regular check-ups because they did not perceive their illness to be serious. A second study of health beliefs about diabetes in southern Thailand (Ratanasuwan et al., 2005) found that adult patients' beliefs were influenced by abstract matters (i.e. religion, culture, taboos and peer pressure) that could not be assessed statistically. Treatment methods, which did not take account of or fit with patients' beliefs, failed due to patients' non-compliance with doctors' advice.

A study of young Mexican-Americans with type 2 diabetes suggested that young patients' perceptions of barriers to effectiveness of treatment and of non-susceptibility negatively affected their medication use (Danne et al., 2001). Young patients believed they were not sick because they had not been admitted to a hospital. They decided to stop therapy without advice from their physicians because they did not see obvious positive effects and they perceived negative side effects of medication such as gaining weight. Another barrier to medical treatment is patients' use of non-prescribed medicine, such as herbal and folk medicines. These are often attractive because biomedical approaches pay less attention to patients' daily life and religious beliefs (Moss and McDowell, 2005). Parents who hold such beliefs may be less supportive of a medical approach and treatments provided to their children.

Various barriers exist in exercise as part of self-management, such as lack of time, opportunity and access to facilities; priority of family demands; unsafe neighbourhood; lack of familiarity with outdoor activities; and co-existing health problems such as asthma. In one UK study, Pakistani and Indian adults with type 2 diabetes also believed that they would endanger their bodies further if they exercised (Lawton et al., 2006). In Thailand, health belief models are widely used in research on diabetes self-management (i.e. medication, food and eating, and exercise) in relation to behavioural changes and factors affecting those changes. However, as noted, no such research has been conducted on adolescents with type 2 diabetes. My study aims to fill this gap.

The Theory of Planned Behaviour

The Theory of Planned Behaviour was developed by Ajzen (1991) from the Theory of Reasoned Action (Fishbein and Ajzen, 1975), which argued that people make a decision to perform a certain behaviour when they undertake the process of critical thought. Because of the original theory's limitations in predicting actual behaviour, the theory of planned behaviour included perceived behavioural control (Ajzen, 1991). The latter model added setting up specific goals of performing actual behaviours, strategic plans, and self-confidence in achieving the behavioural performance. The major variables in this model include attitudes towards the action, subjective norms, perceived behavioural control, and intentions, which affect specific behaviour. Intention refers to a person's goal to achieve something, with the commitment of time and energy to perform the behaviour. Attitude towards the behaviour is the person's judgment of liking or disliking the behaviour, and is determined by behavioural beliefs about positive or negative outcomes of that behaviour. Subjective norms refer to the individual's perception of social pressure or influence, and are determined by normative beliefs which are related to powerful others' expectations. Perceived behavioural control is the individual's perception of ease or difficulty to perform the behaviour, and is determined by control beliefs. Perceived behavioural control in the modified model is conceptually similar to self-efficacy, and both involve people's assessment of their ability to conduct a specific behaviour (Garcia and Mann, 2003). In the modified model, perceived behavioural control and intention are proximal determinants of actual behaviour.

The theory of planned behaviour has been used to examine beliefs that lead to people carrying out behaviour such as physical activity and eating fruits or vegetables (Gratton et al., 2007; Blue et al., 2008). Although this model has been applied in

intervention studies to promote health behaviour in adults, few studies have been undertaken involving youths (Fila and Smith, 2006; Gratton et al., 2007). For example, in a US study among urban Native American youths (Fila and Smith, 2006), the model provided a theoretical framework (intention, attitude, subjective norm, barriers, self-efficacy and perceived behavioural control) in order to predict healthy eating behaviours. The study indicated that healthy eating behaviour was influenced by subjective norms and perceived behavioural controls among boys, while among girls attitude, self-efficacy, subjective norms and age predicted such behaviour. The authors argue that the study results can inform healthy eating promotion programs, with gender separate activities to reduce perceived barriers in girls and enhance intention and self-efficacy in boys. However, the research did not find an association between intentions and healthy eating behaviour. Lack of association between intention and healthy eating behaviour was also a feature of a UK study (Gratton et al., 2007), which identified other possible factors such as (un)willingness to eat fruit and vegetables, which may strongly affect children's diet consumption.

An Australian study comparing the health belief model and the theory of planned behaviour in predicting dieting and fasting behaviour suggested that intention and indirect perceived control were the best predictors of these behaviours (e.g. low fat dieting), while the perceived benefits of dieting and the perceived susceptibility of weight gain in the health belief model were strong predictors of intention and behaviour. The perceived barriers of fasting (i.e. being harmful for the human body or being in a bad mood), but not dieting, were also predictive (Nejad et al., 2005). This study supported using both behavioural models to predict potentially risky health behaviours.

Self-efficacy

Self-efficacy (Bandura, 1977) is defined as a person's confidence to implement and maintain behavioural change to the full extent; it is seen as a key determinant in predicting an individual's actual behaviour and expecting the achievement of consequences due to behavioural performances. For example, it does not only associate exercise behaviour but also predicts planned exercise - jogging one hour a day for four days a week, for example - and evaluates the achieved consequences of jogging (Rosenstock et al., 1988; Kohl and Hobbs, 1998). This model is based on the notion that people who have self-efficacy are likely to be able to deal with problems, view problems as challenging, create a problem-solving skill, and so change behaviours (Guthrie et al., 2003; Bean et al., 2007; Sawyer et al., 2007; Braitman et al., 2008). Self-efficacy is included in other behavioural models, such as the health belief model, the theory of planned behaviour and social learning behaviour. Four main factors enhance self-efficacy: performance accomplishments, modelling (e.g. observation of others' behaviours), powerful others (e.g. parents, friends, and physicians), and physiological state (Rosenstock et al., 1988). Studies consistently suggest that self-efficacy is used to predict adherence to self-care practices efficiently, such as glucose monitoring, diet control and exercise, and the result of blood glycaemic levels among adolescents and adults with diabetes (Bernal et al., 2000; Johnston-Brooks et al., 2002; Boonkerd, 2003; Braitman et al., 2008). There is a positive correlation between self-efficacy and diabetes self-management (Braitman et al., 2008). Type 2 diabetes studies in Thailand similarly supported the significance of enhancing self-efficacy among adult patients through health promotion programs (Boonkerd, 2003). Self-efficacy could more effectively predict intentions and actual behaviours than the health belief model or the theory of planned behaviour alone (Garcia and Mann, 2003).

Locus of control

Locus of control refers to individuals' perception of their ability to control events affecting them (Rotter, 1966). Those who have a high internal locus of control believe that events occur because of their own behaviours and actions. By contrast, those with a high external locus of control believe that events are primarily caused by powerful others, fate and chance. Locus of control is different from self-efficacy in that the former links to people's beliefs about the outcomes of their actions, i.e. whether they can affect the outcomes or that they are outside their control, while the latter engages in beliefs about self-ability to carry out behaviours (Rosenstock et al., 1988). Studies of locus of control in relation to health behaviour have focused most on internal locus of control (i.e. outcome expectations): people who have internal locus of control are more likely to intend to or participate in health promoting programs (Norman and Bennett, 1996; Blair and Robert, 2003). As a corollary, a study of adults with type 2 diabetes suggested that patients who had external locus of control tended to control their diabetes poorly (Gillibrand and Flynn, 2001). However, other studies indicate inconsistent behaviour in controlling diabetes because people intended to restrict their food and/or exercise when their doctor's appointment was approaching or diabetes symptoms appeared (Naemiratch and Manderson, 2006). Locus of control lacks a dimension of health value (i.e. the belief of the importance of health which affects individual's health behaviour) and does not measure the value or the importance of health, and so health locus of control is better used in combination with other behavioural models (Rosenstock et al., 1988; Norman and Bennett, 1996).

Explanatory models

Explanatory models, largely framed by culture, are beliefs or opinions about health and specific illnesses according to the perspectives of patients, families, and physicians (Kleinman, 1988). These explanatory models are significant and useful for physicians in planning strategies and clinical management when patient and family perspectives are taken into consideration. In the context of illness, the models would suggest that patients and families incorporate various models, including biomedical understandings of an illness incorporated into a lay explanatory model (Weinman and Petrie, 1997; Griva et al., 2000; Bean et al., 2007; White et al., 2009). Explanatory models change over time because ideas and beliefs derive from many diverse inputs: scientific and medical knowledge from mass media and official sources; information related to illness and death from family, friends, teachers and neighbours; and popular news such as politicians, film performers and athletes suffering and dying from illnesses (Davison et al., 1991). Patient models of their illness therefore are individual and commonly associated with their notions and beliefs, bound with cultural and social contexts.

When lay explanatory models are ignored or rejected by health professionals, a gap between patients and healthcare providers, in relation to different perspectives of illness disease and health, occurs (Kleinman et al., 1978; Hampson et al., 1990; Gillibrand and Flynn, 2001; Karasz et al., 2003; Naemiratch and Manderson, 2006). Even though differences in lay and provider models exist, through different emphasis in different domains, healthcare providers' messages related to health and illness influences patients' explanatory models (Cohen et al., 1994). For example, patients with diabetes most often mention difficulties with lifestyle modification in relation to diet, while medical staff may believe that patients place the greatest emphasis on the development of complications and that would motivate patients to follow medical

advice (Naemiratch, 2004; Naemiratch and Manderson, 2006). Health professionals may not be aware of patients' viewpoints and so in providing medical advice, give priority to the impact of diabetes on patients' physical bodies but not on patients' daily life (Cohen et al., 1994; Broom and Whittaker, 2004; Naemiratch and Manderson, 2007). Therefore, patients' food consumption and exercise behaviours may remain unchanged despite regular diabetes education from health staff, because it is not relevant to their needs.

Lay explanatory models of treatment may also conflict with doctors' models, leading to patients and their families modifying medical treatment, and this affects patient health-related behaviours, including health seeking, health screening, and behavioural and lifestyle modification (Cohen et al., 1994; Chavez et al., 2001; Peterson et al., 2002; Poss et al., 2003; Naemiratch and Manderson, 2007). For example, patients may perceive that doctors will not accept their beliefs and behaviours in using traditional and herbal medicines, and may advise them against using those remedies (Kosachunhanun and Chimplee, 2007). Therefore, without informing their healthcare providers about such treatments, patients may decide to use both the Western medication and traditional remedies or alternative medicines, as they believe that mixing both formulas is highly effective (Asawarat, 1993; Poss et al., 2003; Markovic et al., 2006). Some patients combine both prescribed medicines and herbs without telling their doctors, because of their concerns about excessive drug intake; they skip a tablet each day, for example, and replace it with a herb, as they perceive herbs as a supplement, having fewer side effects (Asawarat, 1993; Naemiratch and Manderson, 2007).

Explanatory models are applied in all chronic illnesses, including diabetes, asthma and cancers (Hampson et al., 1990; Chavez et al., 2001; Skinner and Hampson,

2001; Peterson et al., 2002; Naemiratch and Manderson, 2007; Wray et al., 2007; Mulvaney et al., 2008; White et al., 2009) and mapping out this model helps researchers and health professionals understand why patients and their families manage these illnesses in their own ways, different from the management strategy advised by their healthcare providers.

The Explanatory Model (Kleinman, 1980) has been used widely in medical anthropological and related research, including in a study on lay explanations of type 2 diabetes in Bangkok (Naemiratch and Manderson, 2007). This study found that lay notions of *kam*, based on the Buddhist beliefs, influence adults' understanding of *kammaphan* (or heredity in English) and *pluttikam* (behaviour). Adults in this study believed that they had diabetes because they may have performed bad or wrong things (*kam*) in a past life or it might be a consequence of their parents' bad conduct (*kam*) passing on to them. Another study, among Latinos living in the US (Weller et al., 1999), suggested that some Latinos who have type 2 diabetes explained diabetes causation based on humoral or hot/cold theories (i.e. changes in the weather, getting wet or bathing too much, and imbalance of 'hot' and 'cold' elements). In contrast, immigrant Latinos with no diabetes believed that strong emotions or *susto* (i.e. fright, a lot of pressure, fear, extreme unhappiness or grief and trauma) are possible causes of having diabetes (Arcury et al., 2004).

Like other chronic diseases, diabetes does not affect only patients but also their family members. Therefore, the importance of understanding family explanatory models of diabetes facilitates health professionals to develop treatment strategies relevant to the individuals' problems (Peterson et al., 2002; Athaseri, 2007; White et al., 2009). Many studies have linked patient models of illness to diabetes self-management or treatment, and have reported that patients who believe they can control their diabetes have better

self-management in relation to diet, exercise and medication (Hampson et al., 1990; Skinner and Hampson, 1998; Skinner et al., 2000; Skinner and Hampson, 2001; Naemiratch and Manderson, 2008). These studies have been conducted among adults with type 2 diabetes and adolescents with type 1 diabetes. However, a few studies in adolescents with type 2 diabetes, related to barriers to their self-management activities, suggest also that psychosocial and familial factors particularly influence self-management (Anderson et al., 2005; Mulvaney et al., 2008)

Based on the literature discussed so far, a combination of behavioural models and lay explanatory models were proposed for my study. The combined behavioural theories include the Health Belief Model (Rosenstock, 1974), Theory of Planned Behaviour (Ajzen, 1991), self-efficacy (Bandura, 1977) and locus of control (Lefcourt, 1982). These theories have been used in a way to understand and explain health-related behaviours, such as food consumption, exercise and adherence to medication (Paisley et al., 1995; Godin and Kok, 1996; Brawley and Culos-Reed, 2000; Griva et al., 2000; Gratton et al., 2007; Blue et al., 2008), seeking behaviour for treatment and diagnosis, and health promoting behaviour (Suthirat, 2002; Schreiner, 2005; Gellar et al., 2007; Khun and Manderson, 2007; Manderson et al., 2008). For example, the combined behavioural models, such as perception of disease severity and perception of benefits and barriers, self-efficacy, intention, and internal and external motivation, can be used to explain why some young patients can or cannot achieve diabetes self-management, or why they do or do not change their lifestyle to one advised by their health providers. In addition, lay explanatory models provide young patients and/or their caregivers with viewpoints and understandings of health, illness and their illness condition, which are based on their knowledge and their social context. Given the value of the conceptual framework of explanatory models in explaining the limited success of health education,

and the lack of fit between knowledge and behaviour, a study which uses an explanatory model framework to understand young patients' perspectives of the illness and experiences of living with the illness is appropriate for my study. Finally, I use the combined behavioural models and explanatory models to assist me in answering my research questions related to illness perceptions and self-management.

Baumrind's parenting style model

Like the behavioural models and explanatory models explained above, I decided to use Baumrind's model to guide my data analysis, particularly on the parenting data. This model contains four core parenting styles (i.e. authoritarian, authoritative, permissive, and neglecting) which resemble the Thai parenting styles, although in detail, there are some differences in terms of culture/settings (i.e. authoritarian parenting style among Thai people accepts punishment such as smacking; this is not accepted in most Western countries, see pp.181 below). Baumrind's model is widely used or referenced in non-Western research, including Thai studies related to child-rearing or parenting and parenting styles (Rhee et al., 2006; Nanthamongkolchai et al., 2007; Sherifali et al., 2009). These previous studies use the model as a framework or criteria to classifying patterns of parenting, with some modification to fit their own data. Similarly, I applied this model as an *a priori* categoric framework to analyse data on how the four parenting styles affected childhood overweight/obesity through lifestyle prior to diagnosis. However, I adopted and partly modified the parenting styles as presented in Chapter 5 (Table 5.4).

Knafl's family management style model

Based on the original family management style framework proposed by Knafl and Deatrick in 1990 and a comprehensive review of research on parents' responses to children with a chronic illness (Knafl et al., 1996), the refined framework (Knafl and Deatrick, 2003) supports the validity of three conceptual dimensions of family management styles: the definition of the situation, management behaviours, and perceived consequences. The authors describe family members' perceptions of their situation affecting management behaviours of the illness in everyday life. Perceived consequences of the illness can affect both perceptions and management behaviours. They also define sociocultural context in relation to financial resources, social support, and interactions with health professionals.

A Thai qualitative study (Athaseri, 2007), applying the Knafl and Deatrick's family management style as a theoretical framework, aimed to explore mothers' perceptions of type 1 diabetes, their experience of having a school-age child with this disease, and the impact of the illness on management behaviours within the family. The theoretical model in this study included three conceptual dimensions: 1) the definition of the situation, 2) management behaviours, and 3) perceived consequences. Mothers reported three illness management styles: "Normalization," "Enduring," and "Suffering." Normalization was the most common pattern to cope with the chronic illness situation in everyday life. This pattern was referred to as a set of strategies - accepting the child's illness, viewing the child as normal, being comfortable to talk to others about the child's illness, and developing adherence to type 1 diabetes regimens. Mothers identified the meaning of "normal" after their child had diabetes as "normal" in a new situation, different from "normal" prior to the diagnosis. The study illustrated that families with a child with chronic illness perceived the illness not as severe, but as

manageable or controllable. Thus the idea of “normalization” was incorporated into their management strategy.

In my study, I modified the Knafl and Deatrick’s family management style as follows: two main components of the diabetes management style include perceptions of living with diabetes and management behaviours. Perceived impacts of the illness and some aspects of the sociocultural context, such as parents’ involvement, were also included in the two components. Within the two components, on the basis of this theoretical model, a priori themes (Ryan and Bernard, 2003) were also determined. This ensured that I identified data relevant to these themes. All thematic categories, a priori themes, and inductive sub-themes were demonstrated in Chapter 8 (Table 8.1).

Research on self-management of type 2 diabetes in Thailand

In the last two decades, diabetes self-management studies have been conducted in Thailand particularly by postgraduate students and researchers in social science and related fields, such as nursing, sociology, public health and anthropology. I retrieved all Thai language theses by accessing online theses - using the key words “diabetes,” “self-care” and “self management” - and seeking hard copies of the original theses. There have been many theses on self-management among Thai adults and older people with type 2 diabetes. The studies have included specific focus on factors affecting blood glucose levels (Phunyathera, 1998; Pumsang, 2000; Tansakul, 2000; Tantiwarasakool, 2003; Thonguthaisiri, 2007) and self-management practices, including diet (Sanpaung, 2000; Sanjaithum, 2006; Sawatsri, 2007), exercise (Totemsuck, 2000) and medication use (Chaimun, 2009), and on all three practices (Kaewpralome, 1995; Yainontad, 2000). Most studies were conducted in other provinces, not in Bangkok. All of these studies used quantitative methods and applied different behavioural theories to develop

questionnaires and explain the findings. The theory most often used was the health belief model. The findings of these studies are summarised below.

1. Psychological factors, which strongly predict self-management behaviours, include perceived benefits and barriers to self-care and perceived severity of diabetes (Sanpaung, 2000; Totemsuck, 2000; Sawatsri, 2007). For example, perceived benefits, barriers, and self-efficacy significantly influenced dietary consumption and medication use (Tansakul, 2000; Totemsuck, 2000).
2. Demographic factors such as income, education and gender were associated with self-management (Kaewpralome, 1995; Yainontad, 2000; Sanjaithum, 2006; Chaimun, 2009), although Totemsuck (2000) suggested that neither these factors nor duration of diabetes affected exercise behaviour.
3. Social factors such as social support strongly affected self-management practices (Kaewpralome, 1995; Yainontad, 2000).
4. Self-management was not associated with blood glucose level (Tansakul, 2000; Tantiwarasakool, 2003). Factors influencing blood glucose control included missing doctor's appointments and duration of diabetes (3-5 years) (Tansakul, 2000). Demographic and social factors (i.e. age, gender, education, marital status, income, occupation, duration of diabetes and social support) had no relationship with blood glucose level (Phunyathera, 1998). Knowledge of, attitudes towards, and practices for controlling diabetes had a positive effect on blood glucose outcomes. However, one study reported that except for marital status (being married), demographic factors were not associated with blood glucose levels (Pumsang, 2000). The author found that married adult patients had unacceptable high glycaemic levels (i.e. HbA1c is over 7%).

Additionally, there are a large number of theses on the development and/or evaluation of intervention programs on self-management (Sombat, 1996; Cennoy, 1998; Limchareon, 1998; Tantarux, 1999; Besuwan, 2000; Sanaun, 2000; Masawang, 2001; Muangkae, 2001; Chairat, 2002; Jintanameeratt, 2002; Boonkerd, 2003; Thongrain, 2003; Saiwong, 2004; Chaimun, 2009). Most are based on research conducted in study sites outside Bangkok. These quasi-experimental studies, using questionnaires (pre-test/post-test and control/sample group), have examined the effectiveness of various intervention programs that aimed to improve patients' knowledge, health behaviours, and self-care management, such as health education, health promotion, and self-care promotion. Most interventions were education programs which were provided by nurse educators and nurses, or by self-learning through teaching instruments such as video, brochures and handouts. The overall findings of these studies indicate that after participating in the intervention programs, participants usually had better knowledge of self-management and/or the disease; better blood glucose results; more effective self-management practices; improved health behaviours; and better stress management than the control groups which were not given any intervention. All intervention studies assigned short duration programs, ranging from three days to twelve weeks. One study reported that the effectiveness of intervention was limited, possibly due to the short duration of the program (Chairat, 2002). None mentioned a follow-up for assessing the sustainability of the intervention.

In addition to these studies, eight qualitative studies on type 2 diabetes among Thai adults have explored demographic and psychosocial factors affecting self-management practices; patterns of diet, exercise, drug intake behaviours and social support; and the process of self-care and diabetes control (Manokulanun, 1992; Asawarat, 1993; Kongumnerd, 1993; Keeratiyutawong, 1994; Sritanyarat, 1996;

Numpetch, 1999; Naemiratch, 2004; Phungprasard, 2006). Only two of these studies involved fieldwork in Bangkok (Kongumnerd, 1993; Naemiratch, 2004). The overall findings revealed that many patients did not adhere to self-management and rarely exercised. Prunpraserd (2006) indicated that people rarely or never reported exercise as they misunderstood that doing household tasks and walking were a form of exercise (see Sallis and Patrick [1994]'s definition of exercise). Some patients claimed that they had a heavy workload and no free time to exercise, or they had other priority tasks (e.g. taking care of ill family members or having other health problems). In terms of gender, men had poorer adherence to medication and diet control than women, as women were more concerned about developing diabetic complications (Manokulanun, 1992).

Many adults with diabetes were likely to use a combination of traditional and prescribed medicine at the same time (Asawarat, 1993; Phungprasard, 2006). A study in Ayutthaya Province proposed three patterns of medication use: 1) using a prescribed drug alone, 2) using both herbal and prescribed drugs with strong beliefs in the effectiveness of herbal drugs, and 3) using herbal and prescribed drugs variably (Asawarat, 1993). Patients' perceptions in effectiveness of medicine are various and determine their behaviour of medication use. Patients who preferred to follow the prescription alone had a concept of illness similar to that of biomedical theory, experienced the effectiveness of prescribed drugs, were satisfied with health care services, and thus used only prescribed drugs. Adult patients in Khon Kaen Province who complied with a medical regimen also indicated their trust in the effectiveness of prescription rather than traditional medicine (Phungprasard, 2006). Some patients who believed in the greater effectiveness of prescribed compared with herbal drugs, still also

used herbal drugs such as Thai herbs (e.g. *thongphanchang*)⁹ alleged to reduce blood sugar, because they wanted to maintain interpersonal relationships with the persons who recommended those herbs (Asawarat, 1993). Patients strongly believed in herbal drugs still used prescribed medicine, although inconsistently. Asawarat (1993)'s study also identified factors affecting patients' medication behaviours including personal factors (i.e. socioeconomic status, age, condition of illness, perception and beliefs about illness, experience of drug use) and family support. For example, patients who did not comply with doctors' recommendations provided many reasons: forgetting to take medicines, adjusting the dose and stopping medication use without consulting the doctor because of financial problems, and using prescribed drugs in combination with herbal drugs, as they perceived that their diabetes could be cured by doing so (Phungprasard, 2006).

Relationships and beliefs in illness management within the family also appear to affect patients' self-care practices (Kongumnerd, 1993). Good family relationship (i.e. family closeness) and congruent beliefs between patients and the family appear to enhance patients' self-care practices through strict diet control and the use of prescribed drugs only. On the other hand, contradictory beliefs between patients and the family with or without family closeness had a negative impact on patients' self-care relating to diet control and medication use. Consequently, patients in the latter group had poor diet control and emotional problems (i.e. tension and anxiety), and were likely to use herbal drugs in combination with prescribed drugs. Patients in this study were likely to exercise irregularly as they were not interested in this.

⁹ *Thongphanchang*, scientifically named *Rhinacathus nasutus* (L.) Kurz, Acanthaceae, is used to inhibit itching, caused by sunburns, allergic reaction and insect bites (Wongsatit, 2005).

Cultural aspects may influence patients' self-management such as diet control (Phungprasard, 2006). The study in adults with diabetes living in a slum community in Khon Kaen Province identified several barriers to patients' diet control: eating out, attending parties and various traditional and cultural events, and living in environments where seasonal fruit was readily available and there were food shops in the community. For people from *Isan* (northeast Thailand), sticky rice is eaten as a staple food. In Prunpraserd (2006)'s study, *Isan* preference to eat sticky rice was a barrier to following doctors' advice (eating plain rice instead of sticky rice), as these patients found this very difficult and interrupted ordinary everyday behaviour.

Of all qualitative research above, two studies clearly identify research designs: grounded theory (Sritanyarat, 1996) and ethnography (Naemiratch, 2004). The former studied self-care processes among 32 adults with either type 1 or type 2 diabetes in Khon Kaen Province. The findings revealed four processes of self-care management: 1) "learning about diabetes" – found in pre-diagnostic and diagnostic phases; 2) "trial and error" – found in managing diabetes; 3) "sacrifice" – found in managing diabetes; and 4) "going on with life" – found in managing and living with diabetes. "Going on with life" was the last process of self-care after patients had adapted to living with diabetes, learnt about the disease, sought diabetes-related information and alternative treatments, and changed behaviours and developed new lifestyles. Self-care strategies used by participants "going on with life" included keeping routines or living a normal life (i.e. complying with doctor's advice and appointments, while maintaining normal lifestyles), negotiation, self-regulation not including monitoring food intake (i.e. self-monitoring of blood glucose and symptom observations), managing complications, and planning for uncertainty (i.e. planning for complications and death). Patients in Sritanyarat (1996)'s study reported that these strategies were routine, and involved minimal changes or

modifications in lifestyles. Patients in this study, and those in Prunpraserd (2006)'s study, reported how they coped with the emotional impact of the disease and its management. Patients are stressed because of their fear of disease complications and severity; they dealt with stress by trying to think as little as possible about the disease as their doctor had told them that "thinking too much" could make their diabetes worse. In Thai culture, this strategy "Don't think too much" is bounded with Buddhist philosophy, and is similar to "*thumjai*" as referred in Naemiratch (2004)'s and Athaseri (2007)'s theses.

The latter study, Naemiratch (2004), explored patients' daily life, lay explanations of diabetes, and self-care management in Bangkok. The theoretical approach used in this study drew on ideas of explanatory models, Buddhist philosophy and its application to the everyday life of participants, and chronic illness as a life disruption. The findings illustrated that many patients tried to find a way to live with their illness, based on different perceptions and experiences of the illness. For example, people without symptoms could control or accommodate the disease as part of their everyday life through several strategies. In contrast, patients with serious symptoms or complications were likely to perceive themselves as sick and saw diabetes as controlling their lives. Patients usually acted more strictly to control their diabetes when symptoms appeared. They were also more likely to adhere to medical advice prior to a medical appointment (Naemiratch and Manderson, 2006).

As described above, most quantitative (Sombat, 1996; Phunyathera, 1998; Totemsuck, 2000; Sanjaithum, 2006; Chaimun, 2009) and qualitative (Asawarat, 1993; Ganjanasuntorn, 2002; Athaseri, 2007; Thonguthaisiri, 2007) studies in Thailand involved fieldwork in rural or urban areas outside Bangkok, and among adults with low to moderate socioeconomic status and educational levels. Demographic and

psychosocial factors had positive (Kaewpralome, 1995; Yainontad, 2000) or no effects (Phunyathera, 1998; Totemsuck, 2000) on adults' self-management. Inability to self-manage their illness effectively was the main problem. Although several studies, applying behavioural models or explanatory models, have been conducted with adults with type 2 diabetes or have explored family management style with children with type 1 diabetes, my aim is to extend our knowledge by focusing on young people's and primary caregivers' perspectives, attitudes and beliefs. I employ a grounded theory for data collection and analysis in order to develop a preliminary understanding of an understudied phenomenon in Thailand.

CHAPTER 4

METHODOLOGY

In this chapter, I introduce the aims, research questions and the research design, then describe the setting of the study, the fieldwork including the preparatory phase (hospital contacts and applying for ethics approvals), and the data collection phase: qualitative methods and instruments (in-depth interviews, observation and document reviews), and the use of a quantitative method (i.e. an opportunistic survey). I then discuss data analysis, ethical considerations, and the study limitations.

Aims and research questions

My research aim was to explore the behaviours and lifestyles of Thai urban adolescents with pre-diabetes and type 2 diabetes, both prior to their diagnosis and subsequently.

The research questions are set out below:

1. What are the (pre)diabetes-related lifestyle health risks of contemporary adolescents in urban Thailand, and which factors impact on these adolescents?
2. Under which circumstances are adolescents with pre-diabetes and diabetes diagnosed with their condition or illness? What was the illness/condition disclosure process like from the adolescents' and parents' perspective? What did these young people and their caregivers know about their illness or condition (when they were diagnosed?)
3. What is adolescents' experience of their illness?
4. How do adolescents with pre-diabetes, diabetes, and their primary caregivers manage the illness/condition? Which barriers affect adolescents' self-management styles?

In accordance with my research questions, I gathered data through in-depth interviews with adolescents with pre-diabetes or type 2 diabetes living in Bangkok and its surroundings. I also interviewed their primary caregivers, who play a key role in taking care of these young participants. A survey with healthy adolescents was used to supplement the qualitative data. Having conducted a review of a range of relevant theoretical models, I decided to use the combined behavioural models (i.e. Health Belief Models, Theory of Planned Behaviour, self-efficacy and locus of control), the Explanatory Model, Knafl's family management style model, and Baumrind's parenting style model to assist me in answering my research question related to eating and exercising behaviours prior to diagnosis (research question 1), and to self-management behaviours and factors affecting self-management (research question 4). I employed the framework of explanatory models to answer the research questions 2 and 3, related to health and illness perspectives and illness experiences of young participants and their primary caregivers. While the existing models were my starting point for data analysis, my iterative approach ensured that I modified these models so they fitted the data.

Research design

The aim of qualitative research is to understand the meaning of phenomena in natural settings and to capture people's viewpoints and experiences, rather than to measure something or do experiments in laboratory settings (Pope and Mays, 1995). In diabetes research, for example, a randomised controlled trial study has focused on developing innovative treatment such as a new combined drug therapy (The Diabetes Control and Complications Trial Research Group, 1993), while a qualitative study – using grounded theory – has contributed to understanding individuals' life experiences of living with the illness, illness beliefs and self-care behaviours (Sritanyarat, 1996). Although the

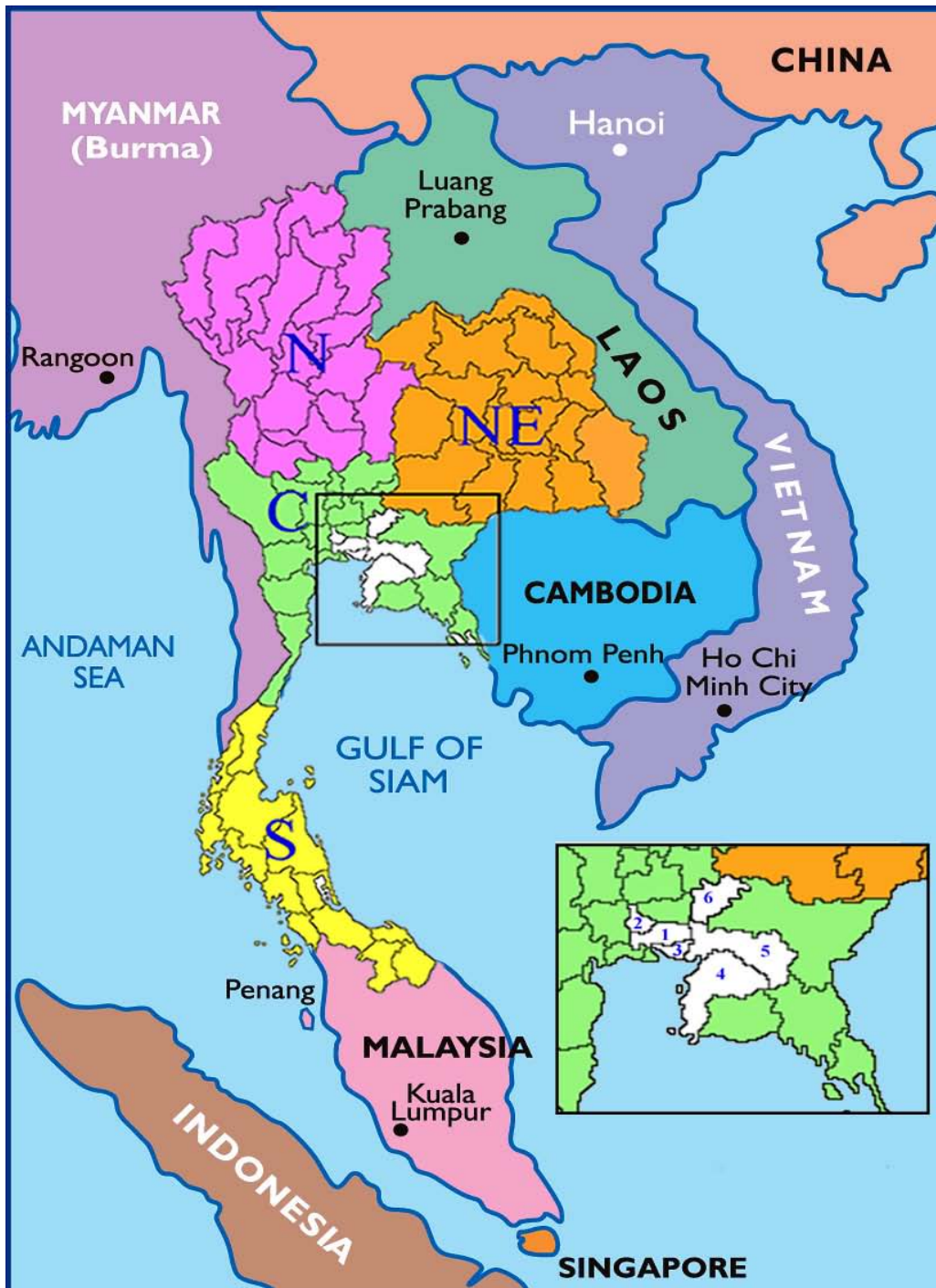
findings from any small scale study cannot be generalised, they build unique interpretations of the phenomena (Creswell, 1994) and deliver to the research questions such as “What is the meaning of X?, how does X affect Y?, and why?” rather than “How many Xs are there?” (Pope and Mays, 1995). My research aims fit the qualitative approach: to explore health-related behaviours and lifestyles of adolescents with pre-diabetes and type 2 diabetes, both prior to and post the diagnosis; and to investigate individuals’ illness perceptions and self-management behaviours.

This study primarily uses grounded theory as a systematic method of qualitative research, rather than as a philosophy or theoretical standpoint (Polit and Beck, 2006). Grounded theory was initially introduced in the 1960s by two sociologists, Anselm Strauss and Barney Glaser, who applied a symbolic interaction theoretical framework to study health related phenomena. It is regarded as a methodology of particular value for the study of social processes and patterns, and for understanding meanings provided by particular groups, through their social interactions and their world (Strauss and Corbin, 1990). The outstanding characteristics of this approach are: the researcher is a research tool; the research process (sampling of study participants, data collection and data analysis) occurs simultaneously; and the emerging theory is grounded in the primary and supplemented by secondary data. Grounded theory is also an inductive approach, focusing on theory generation through grounded theory data which are systematically gathered and analysed (*ibid.*). Inductive conclusions are built from the study of a specific small sample group, in which participants provide rich information through narrative (Chantavanich, 1989; Podhisita, 1991). A sample size in a qualitative study relies on data saturation, which indicates that no new information appears in the data (Guest et al., 2006). Unlike quantitative work, it is difficult to determine an exact sample size in qualitative research. The acceptable number of informants in a grounded

theory or ethnography-based study is between 25 and 50 (Polit and Beck, 2006). However, a smaller sample size, often less than 25, is possible if the research aim is to describe shared perceptions, beliefs, or behaviours among a relatively homogeneous group (Guest et al., 2006). In my study, I worked with 63 study participants in total (16 adolescents with pre-diabetes and diabetes, 25 parents, 12 other family members, and 10 healthcare providers); this proved sufficient numbers as I achieved data saturation.

Study areas: geography, growth and religious belief

Bangkok, locally named Krung Thep (“City of Angels”), has been the capital of Thailand for over 200 years, and today is characterised as a hectic, modern and heterogeneous city. It has many tall office buildings, huge shopping malls, air-conditioned condominiums and mansions, concrete shop-houses, townhouses, housing estate developments, and international food outlets offering American, Japanese, Italian, Korean and Chinese food. These sit alongside glittering palaces and temples, traditional wooden houses, and slums. Geographically, Bangkok is located in the central region of Thailand, on the banks of Chao Praya River, the main river of Thailand. The city covers a total area of 1,568.737 sq.km. The total population, according to the 2002 household registration, was 5.78 million, which was 10% of the total Thai population (Bangkok Metropolitan Administration (BMA), 2003). Bangkok and its vicinity, known as the Bangkok Metropolitan Region or Greater Bangkok, includes five adjacent provinces – Nakhon Pathom, Samut Prakan, Nonthaburi, Pathum Thani and Samut Sakhon (Figure 4.2).



1 = Bangkok; 2 = Nonthaburi; 3 = Samutprakarn; 4 = Chonburi; 5 = Chachengsao
6 = Nakhon Nayok

Figure 4.1 Central Region of Thailand

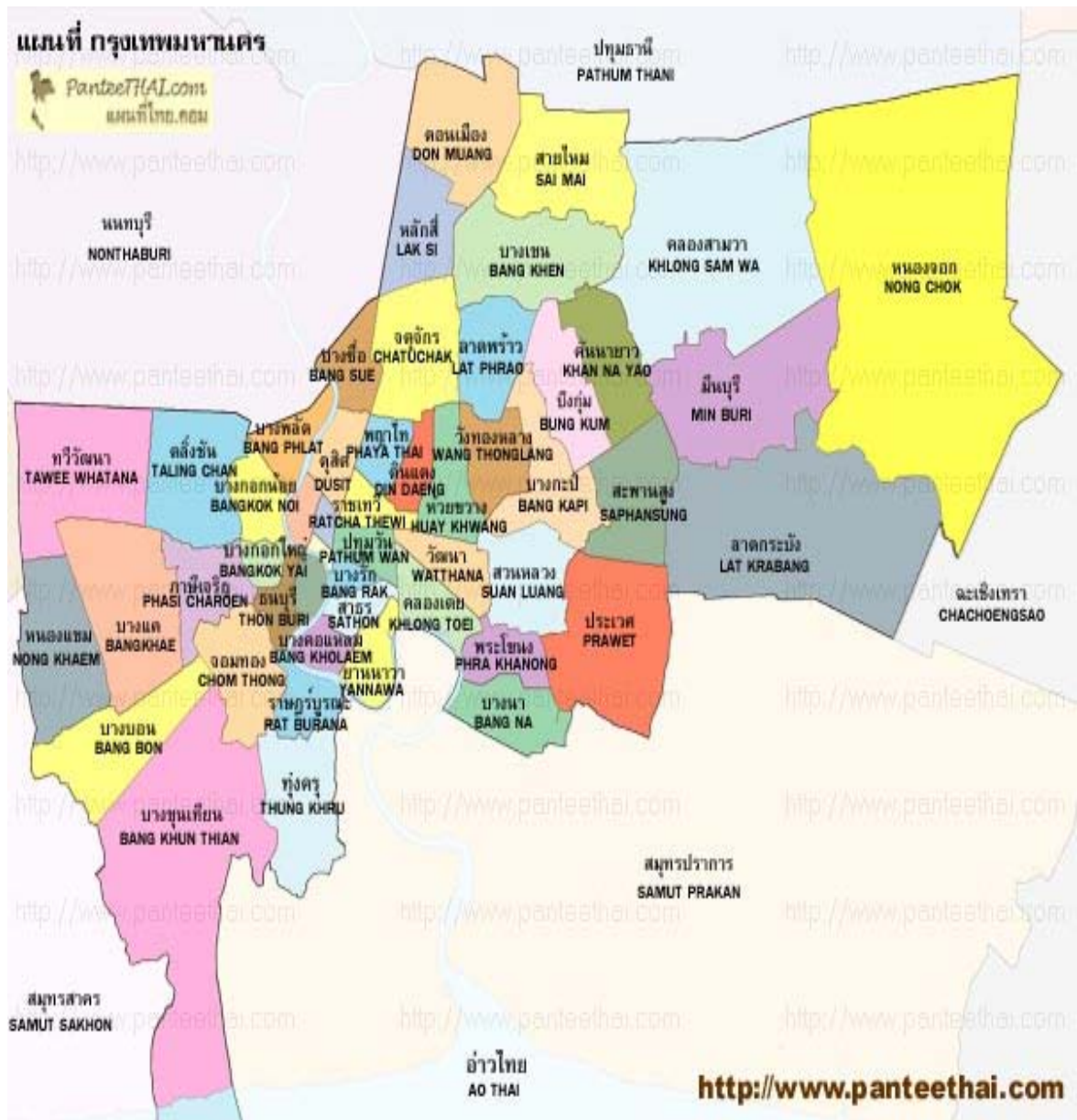


Figure 4.2 Greater Bangkok

This study took place in Bangkok and surrounding areas (Figure 4.1), which provided the appropriate settings for the research questions, with sufficient numbers of young people diagnosed with pre-diabetes or type 2 diabetes and healthy young people. I interviewed adolescents with pre-diabetes and type 2 diabetes at their houses, located in the city and its surroundings. A survey with healthy adolescents took place in and around two large shopping centres in Bangkok: Siam Square and The Mall *Baang Khae*. Some participants' families in this study live outside Bangkok, in proximal provinces, which are urbanised but distant from Bangkok by car: Nonthaburi (50 km), Samutprakarn and Nakhon-Nayok (100 km), Chacherngsao and Chonburi (150 km). Each province, except for Chonburi, has its own general hospital which is a provincial hospital with 120–500 hospital beds. Chonburi, the largest province, has a regional hospital. However, there are no paediatric endocrinologists working in those hospitals; therefore, paediatric patients with endocrine disorders are usually referred to university hospitals in Bangkok.

The increasing population of Bangkok is due to rapid urbanisation and industrialisation, infrastructure development such as road and sky-train expansions, and the influx of people from rural areas migrating to work in the city. Rapid population expansion of the city has led to environmental problems such as air, water and noise pollution and traffic congestion, and social problems such as single-parent families, and drug and sex abuse among young people. Various health problems (such as type 2 diabetes, obesity and coronary heart disease) are related to lifestyle changes, not only in the city but nationwide. This rapid growth of communities and urbanisation is not limited only to Bangkok, but has spread to the adjacent provinces, leading to the same problems in these as in Bangkok.

Religious beliefs and practices among contemporary Thais have changed as many people, particularly those who live in urban areas, no longer follow traditional religious practices. Although both urban and rural Thais are predominantly Buddhists, there are socio-cultural differences: rural Thais have a sense of local community, strong beliefs and practices regarding (im)morality, supernatural events and spirits or ghosts, while (although this is somewhat stereotyped) urban Thais are more individualistic and concerned about personal happiness, convenience in living, and interested in material objects (Komin, 1985). This implies that while urban Thais still adhere to basic Buddhist precepts, many also engage in a new form of “religious consumerism” (Sricharatchanya and Buruma, 1987). Trust in religious institutions has declined among Thai people due to frequent reports on immorality of monks (sexual relations with women or boys), telling fortunes, giving lottery tips, and in other ways behaving against religious precepts (Komin, 1995). Thai culture, as characterised by generosity, hospitality and respect for seniority, has faded and has been replaced by the culture of consumption and materialistic values (Naemiratch, 2004: 25).

In Thai culture where many important beliefs derive from Buddhism, differences in health and wellbeing are believed to be determined at birth, shaped by past life, i.e. some are rich but some are poor, or some are born with certain diseases, but others are healthy. This is a consequence of what people did in their past life, called *bun* if they “made virtue” and *baap* if they “sinned.” This belief refers to the same concept of kamma or *kam*, as mentioned in Naemiratch (2004:68): “Do good get good, do bad get bad.” *Bun* is thought of as a symbol of morality, good, and righteousness, while *baap* represents sin, evil, badness and wrongdoing. People believe that making *bun* can release *baap* attached from a past life, and then their life will become better, e.g. they may obtain a salary increase or promotion, or the ill may get better soon (see also details

of making merit – *tham bun, tham than* in Naemiratch 2004:69). Studies demonstrate that Buddhist beliefs in karma or *bun* and *baap* are included in explanations of health and illness by some Thai parents and older caregivers, and these beliefs influence the ways that they accept and cope with the child's illness. For example, parents who have a child with a heart disease believe that the reason for this was their wrongdoing in a past life, and they accept that what has happened to their family was beyond their control (Nukulki, 1993).

To deal with suffering from illnesses, Thai people, either patients or main caregivers, frequently conduct *thamjai* as a strategy based on Buddhist beliefs to control emotions (Naemiratch, 2004; Athaseri, 2007). *Thamjai* represents one's efforts in mental processes and emotion to overcome suffering and to understand and accept the uncertain future (Athaseri, 2007). Another Thai word, similar to *thamjai*, is *plong*. Naemiratch (2004:77) defined the former "to let go" and the latter as "whatever will be, will be." Thai people usually use the two terms synonymously in critical situations related to illness, failure, loss, and death, by saying these words to affected people. As both terms originate from the Buddhist creed that "everything in the world is uncertain" or "everything happens for its reasons, so let it go to release suffering," they also imply a sense of acceptance of difficulty. However, in terms of illness management, patients who express *thamjai* as an emotional coping strategy may respond to their illness in negative or neutral ways (Naemiratch, 2004). Therefore, the concept of *thamjai* in coping with diabetes, for example, does not guarantee that affected people will adhere to their diabetes management, as *thamjai* actually does not focus on a problem-solving, which is a key to self-management (Sawyer et al., 2007; Mulvaney et al., 2008).

Fieldwork: Preparatory phase

The preparatory phase of the research was from January to April 2007. This included preparing for ethics committee approvals from Monash University and Chulalongkorn and Rajavithi Hospitals, translating documents (i.e. informed consent, information sheets, and interview guidelines, into Thai), and contacting endocrinologists and other medical specialists and health researchers. I spent 2-3 months (February – April, 2007) obtaining the ethics approval from the two public hospitals (Appendix 1.1 – 1.2) as Theptarin Hospital (a private hospital) did not require formal local ethics approval.

Hospital contacts

During a preliminary fieldtrip (June – July 2006), I conducted informal conversations with three paediatric endocrinologists, three general endocrinologists and one paediatrician from four university-based hospitals (Siriraj, Ramathibodi, Vajira, and King Chulalongkorn Memorial Hospital, the latter usually referred to as Chulalongkorn Hospital); two general public hospitals (Rajavithi and Queen Sirikit National Institute of Child Health); and one private hospital (Theptarin). Based on information from the physicians, four hospitals (Siriraj, Ramathibodi, Vajira, and Queen Sirikit National Institute of Child Health) where I made contact were not included in my project for various reasons. These reasons included: my research topic was not of interest to the general endocrinologist; there were no or few adolescent patients with type 2 diabetes; or a paediatric endocrinologist was not available to participate in or supervise my project. The three selected hospitals (Chulalongkorn, Rajavithi and Theptarin) agreed that I could recruit up to 15-20 young patients with pre-diabetes and diabetes.

Since its establishment in 1914, King Chulalongkorn Memorial Hospital has been one of the most advanced medical services, medical training schools (affiliated

with Faculty of Medicine, Chulalongkorn University), and medical research centres in Southeast Asia. According to the hospital organization, paediatric patients (0-15 years) with diabetes and various other endocrine disorders are the responsibility of the Department of Paediatrics, but those aged over 15 years, with various endocrine and metabolism disorders including diabetes, are in the care of the Department of Medicine. However, in fact, many young patients aged 15-19 years were still attached to paediatric endocrinologists who had provided continuous care for them for many years, for different reasons, such as familiarity and the long term relationship with the doctors and/or other health staff in the paediatric outpatient department of diabetes. As a result, all of my participants from Chulalongkorn were recruited from the paediatric outpatient department, which is open from 9 -12 am, only once a month (the third Friday of the month).

The Rajavithi Hospital was the first Women's and Children's Hospital, established in 1951. It is a public hospital under the Ministry of Public Health and is located in central Bangkok, making it convenient for patient access via public transport. There are four endocrinologists (no paediatric endocrinologists) in this hospital. An endocrinology clinic, which includes a diabetes clinic in the outpatient department, opens every Monday, Wednesday and Friday between 8.30 am and 12.00 pm.

Theptarin Hospital is a private hospital, first established as the Theptarin Diabetes and Endocrine Centre in 1985; it changed to its present name in 1993. The hospital provides a diabetes call centre service: 8 am – 7 pm (Tuesday – Friday) and 8am – 5pm (Saturday – Monday). Rich clients are the target group of this hospital due to the relatively high cost of medical treatment and services, while Chulalongkorn and Rajavithi Hospitals provide care to patients from different socio-economic groups (mainly the middle class). Theptarin Hospital also has a high-qualified diabetes care

team, who were trained overseas, including ten endocrinologists (no paediatric endocrinologists), a rehabilitation physician, five diabetes nurses, two dieticians and a physical therapist. One of the outstanding activities arranged by the hospital is a behaviour modification activity, which provides diabetes education and nurtures a network for people with diabetes. This activity is only available to adults with diabetes.

Both Chulalongkorn and Theptarin hospitals have diabetes care teams. These include general endocrinologists, diabetes nurses and dieticians to provide important information or knowledge to people with diabetes, including basic knowledge of diabetes, appropriate foods for people with diabetes, and the use of the glucose meter and self-management of diabetes. These hospitals both run a phone line consultation for urgent cases. On the other hand, Rajavithi hospital has only endocrinologists and nurses involved in providing care of patients with diabetes (mostly adults and elderly).

Making sense of diabetes

Academics consistently worry about insider versus outsider views. I was born in Thailand and had lived and worked in urban areas for many years. This ensured that I could understand many aspects of Thai culture and society well. Although I had to be wary of making assumptions, I knew how to approach and contact health professionals and other Thai people in different socio-economic groups in an appropriate Thai way. On the other hand, I do not have diabetes and so I was viewed as an outsider by those who did. It was difficult for me to feel and understand deeply what and how adolescents with diabetes felt and thought. To gain a greater appreciation of this, as no type 2 diabetes camps for young people were available during my fieldwork, I decided to join a well-known type 1 diabetes camp held every two years by Siriraj Hospital. In addition, it was my intention to make myself familiar with patients and their relatives, health care staff and the hospital environment in the clinical settings. I had been walking

and sitting around to observe what happened, while patients and their families were waiting for treatment; I talked to some patients at the outpatient department of the diabetes clinic, on general and/or diabetic topics. I established good relationships with the endocrinologists' assistants, who were important persons in enabling my fieldwork. These assistants arranged my appointments with the endocrinologists to interview them or consult with them about the young participants' health problems, and they made the initial contact with adolescents with diabetes and their parents in order to introduce my project and me briefly and to ask their phone numbers to allow me to contact them directly. While I was waiting for ethics approval and before I could commence fieldwork, I undertook two main activities: participating in the type 1 diabetes camp of Siriraj Hospital and attending a short course on medical qualitative research at Chulalongkorn University (28 – 30 May 2007). Participating in these two activities assisted me to prepare myself and to build my confidence in conducting fieldwork.

Fieldwork: Collecting data

Using both qualitative and quantitative methods ensures gaining comprehensive data relevant to research questions, as the strength of one method can overcome the weakness of the others (Marshall and Rossman, 2006) and strengthen research findings (Creswell and Plano Clark, 2007). The qualitative approach is suitable for the study of social processes and patterns for understandings provided by lay persons in their own languages/settings (Strauss and Corbin, 1990). Sandelowski (2000) provided some examples of using mixed methods (quantitative and qualitative) in various studies for three main purposes: 1) triangulation, to ensure validation or the corroboration of data, 2) complementarity, to fully elaborate the findings, and 3) development, to guide the use of additional sampling and techniques for data collection and analysis.

My study employed quantitative instruments aiming to supplement qualitative data and to expand the scope of my study as I sought to capture perceptions, attitudes and understandings with regard to lifestyle (i.e. food and eating, and exercise) among healthy adolescents. I developed a structured and open-ended questionnaire, based on the themes emerging from the analysis of qualitative data. The information gained from healthy adolescents (aged 12-19 years) gave me a broad picture of contemporary teenagers' attitudes and behaviours related to health. Consideration of the attitudes and behaviours provided me with some clues about commonalities in the lifestyle of ill and healthy young people.

Qualitative data collection methods

This study aimed to collect in-depth data, mainly from adolescents diagnosed with pre-diabetes and diabetes, by using various qualitative methods. The benefit of using different methods for the purpose of triangulation is to ensure the validity and reliability of findings (Chantavanich, 1989; Boonchalaksi, 1993; Liamputtong and Ezzy, 2005). Data triangulation, including method triangulation (using document reviews, in-depth interviews, participant observation, and a questionnaire survey) and data source triangulation (collecting data from different groups - in this case, young people with pre-diabetes and diabetes, family members and health professionals) - were used to compare data and achieve rigor (Boonchalaksi, 1993; Liamputtong and Ezzy, 2005).

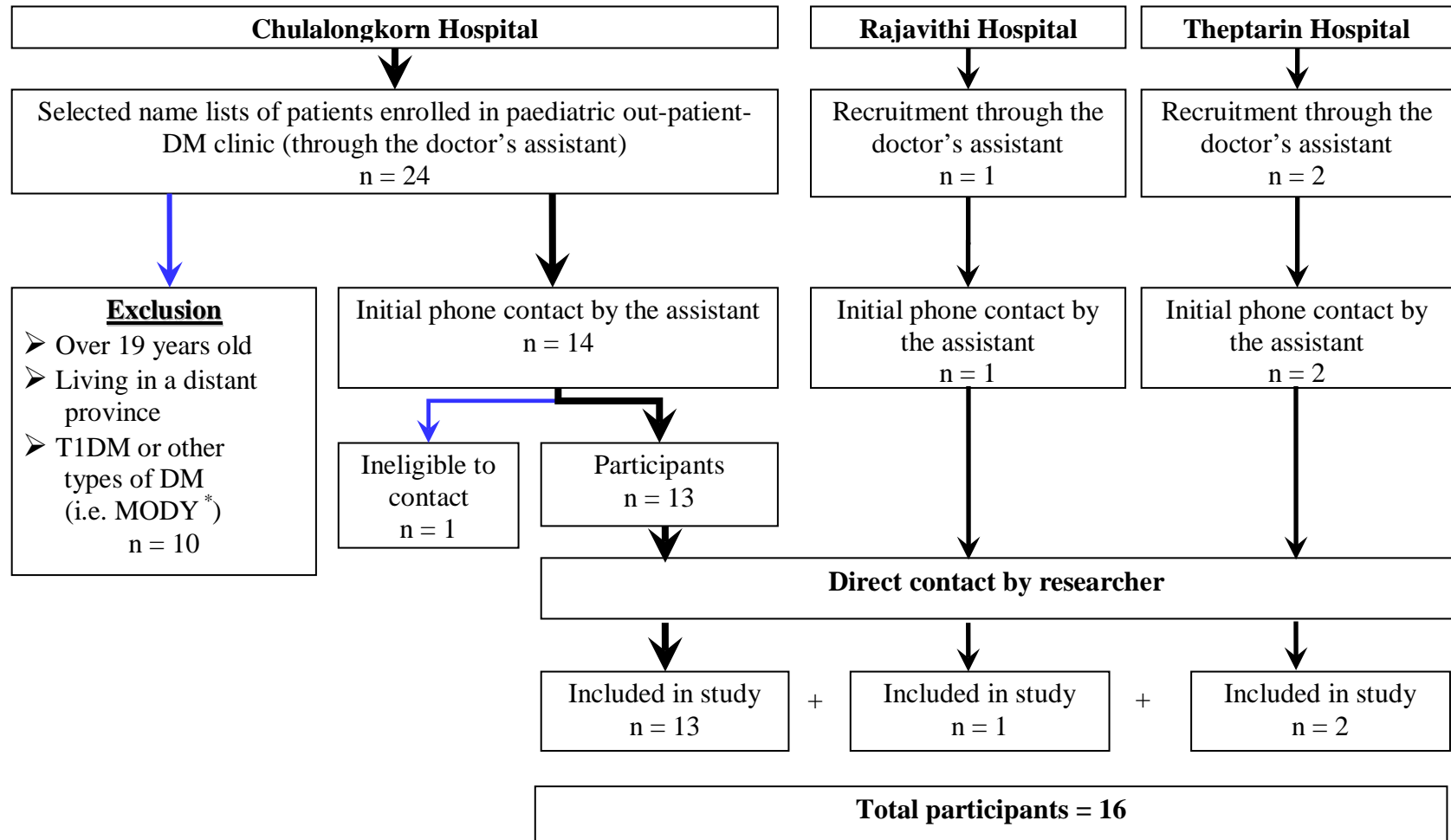
Study participants and recruitment

Three main groups of participants were involved in interviews: 1) adolescents with pre-diabetes and with diabetes; 2) parents or primary caregivers of the young participants, and other family members such as siblings and relatives (if available); and 3) health professionals who take care of patients with diabetes or who worked in relation to

diabetes. To make recruitment easier and successful, I made informal contact with the paediatric endocrinologists and general endocrinologists for three main purposes: 1) to invite all of them as my hospital mentors; 2) to select my young patients with pre-diabetes and diabetes; 3) to participate directly in my study. Next, the official letters issued by my local supervisor, Dr Tipaporn Sukosit, a Deputy Director of Praboromarajchanok Institute for Health Workforce Development (PIHWD), Ministry of Public Health (MoPH), were sent to the hospitals.

In total, 16 families of adolescents, who had been diagnosed with pre-diabetes (6/16) and diabetes (10/16) for a period of more than six months, so ensuring a correct diagnosis, were recruited from the three selected hospitals through the paediatric endocrinologists and endocrinologists. All participants were aged between 12 and 19 years and lived in Bangkok and surrounding areas. Most of them (13/16) were recruited from Chulalongkorn, with two from Theptarin and one from Rajavithi Hospital, as shown in Figure 4.3.

Figure 4.3 presents the recruitment process of the young participants with pre-diabetes and diabetes in clinical settings. Firstly, the physicians' assistants selected young patients from registration records, and then initially contacted their parents or, the young patients were over 18 years old, by phoning them to inform them briefly about the research protocol and to provide my name, and to ask their permission for me to contact them directly.



*MODY = Maturity-onset diabetes of the young is caused by genetic defects in β -cell function with predominantly insulin deficiency and the onset before ages between 25 and 30 years (Ize-Ludlow and Sperling, 2005).

Figure 4.3 Recruitment process of adolescents with pre-diabetes and diabetes

To attend the outpatient department of the diabetes clinics (for most, at Chulalongkorn Hospital) for their regular follow-ups (usually every three months), most adolescent patients came to the hospital in the early morning with their parents, and waited for the nurse to call their names. While in the waiting room, after the doctor's assistant introduced me to prospective participants and their parents and then left them with me, I started by telling them about my background (e.g. hometown, education and occupation), and then asked them to talk about themselves, to allow me to find some point of commonality, for example, if we were born in the same province or graduated from the same university. These links helped us feel we belonged to the "same group" and established a sense of "unity" which facilitated a good relationship with my participants and their parents.

I was concerned about the doctors' influence on family's decisions to join the research project. To reduce this bias, I informed the doctors' assistants that I, by myself, needed to explain the details of the whole protocol to all of the 16 adolescents and their parents before conducting the interviews, by either telephoning or meeting them face to face at the outpatient department of the diabetes clinic, or at another place that they felt was convenient. Moreover, I frankly disclosed myself as a PhD student, doing research with the supervision of the paediatric endocrinologist of Chulalongkorn Hospital, and presented my Monash student card and the certificate of the hospital ethics approval. This open self-introduction was well accepted by all parents or main caregivers. Good rapport and ways to approach families to be modest and respectful also built a closer relationship between the family and me. Therefore, all parents or guardians could make their decision whether to participate or not with limited influence from their doctor, and with no effects on their child's treatment if they refused to take part in the project.

Although voluntary participation in research was an important issue of ethical consideration, in practice, it was unavoidable that children and adolescents were likely to agree (even subconsciously) to take part in my project depending on their parents' agreement. This was found in some of the mothers' accounts:

Like today, she (Sri) told me that she did not want to talk to anybody. I convinced her to talk because it will be helpful for other people and you will get *bun* (good merit) as well. Then she said OK...OK [Sri's mother, 52].

Even this project, at the beginning, he was not okay because when I told him that you [the researcher] will come and interview him, he immediately rejected this. He said to me not to send him to a project like this "no way, mum." Then I told him to read your e-mail, explaining the project, and told him to think about this again. He might be told by his aunt that doing research is like using a man as a guinea-pig and that is dangerous. I tried to convince him and told him the benefit of the project. And I think he was not against (it) when he got a clear and logical explanation [Sib-haa's mother, 44].

As I was concerned that these two adolescents might not be willing to be interviewed, I checked with them again at the time of interviews if they agreed to talk to me. Neither rejected this. Next, I provided prospective participants with the plain language statement (Appendix 2) and explained the research protocol briefly, including its aims, objectives, methods, and expected outcomes. If they decided to take part in the study, consent forms (Appendix 3) were given to both the young participants and their parents to sign. This research involved adolescents, aged <18, who may not be able to give full informed consent due to their age. Hence, in addition to a simple language statement and consent form for young people, the consent form was given to their parents after explaining the study protocols. Adolescents aged 18 and older were asked to sign the

consent form by themselves. All adolescents and parents had sufficient time to read the consent form and to ask questions about the research protocol, to ensure good understanding before signing the consent form. I also informed both adolescents and their caregivers that participation in this project was voluntary and asked them to allow their children to make their own decision without any pressure. Participants could withdraw from the study at any time without any conditions. Participants were assured that all interview information would be kept private. If I believed any information provided to me was detrimental to their health, at the end of the interview, I explained to them the disadvantages of unhealthy or harmful behaviours. For instance, if young participants forgot to take tablets in the morning, they would take a double dose of their pills in the evening that might harm their livers due to drug overdose. I tried to encourage them to talk to or ask their health professionals how they could modify or change certain risk behaviours.

A demographic form (Appendix 4) was given to the participants or parents/guardians to fill out personal details at the first meeting, once they agreed to participate in my study, and an appointment for interviewing was made at a place of their choice. The demographic form consisted of personal information on gender, age, education, religion, nationality, marital status (single/marriage/divorced), number of family members who live in the same house, current contact details (home address, phone number and e-mail address), and parental data including both mothers' and fathers' educational background and occupation.

My phone number and e-mail address were also given, in case they had further questions about the project. Some young patients and their families had the next doctor's appointment at a distant time, which made me concerned about my time limitations for fieldwork. In that case, I made an appointment for the first visit by

phone, either at their home, school or parents' workplace, to introduce my project and conduct an in-depth interview. As these adolescents' primary caregivers, generally parents, mostly came with their children, all of them were included automatically to be part of the study. Other family members, such as siblings who were close to the young participants, and close relatives, were also invited to be interviewed. In total, 37 interviews were conducted with family members from 16 families (25 primary caregivers, 6 siblings, and 6 relatives). Ten health care providers from different hospitals were also interviewed. All health care providers were purposively selected via informal contact (telephone appointment before face-to-face meeting). All of them voluntarily agreed to sign the consent form and to be interviewed at their workplaces for at least 30 minutes.

In-depth Interviews

Plain language statements and informed consent forms were provided to all participants before interviewing. I started interviewing study participants in May 2007. All interviews were conducted in Thai. During interviewing, interview guidelines were used to ensure that the interviews covered relevant topics of interest and to encourage informants to explain their answers clearly and provide in-depth data. Interviewing included unstructured and semi-structured, open-ended questions. These questions were developed based on a review of published literature, theses and websites related to my research questions. Separate question sets were developed for four different groups: 1) for adolescents with pre-diabetes and diabetes; 2) for family members; 3) for health care providers; and 4) for the person who cooks food for the family. The question sets for adolescents and family members were divided into four themes: family relationships; lifestyle; understanding of diabetes; and self-management of diabetes. Healthcare providers were asked questions related to treatment for and problems in taking care of

the young patients. The interview guidelines were available in both Thai (Appendix 5.1) and English versions (Appendix 5.2). An audiotape recorder was also used with the participant's permission.

Probing and prompting techniques were used throughout the interviews. Probing was required when participants' answers or explanations were unclear and needed to be elaborated, clarified or completed (Rubin and Rubin, 1995). For example, *If you skipped breakfast, you would miss your tablet. Do you think this affects your blood sugar or not?* If participants said "No," I probed by asking *Why do you think that?* Prompting refers to actions such as nodding the head or making stimulating sounds (e.g. um, ah-ha) to keep conversation flowing, or when particular issues of interest were raised by participants (Liamputtong and Ezzy, 2005).

I translated all research tools into Thai. The translated documents were rechecked and corrected by one of my supervisors (Associate Professor Andrea Whittaker, who had learnt Thai and had conducted her doctoral thesis and subsequent research projects in Thailand), and by a Thai research staff member (Dr Bhensri Naemiratch, a postdoctoral research fellow, who had worked with two of my supervisors – Professor Lenore Manderson and Dr Milica Markovic).

My first meetings with selected patients and their families took place in various settings, depending on the participants' and their families' choices. While most young people and their parents preferred to be interviewed at home, a few required me to give the interview at the hospital, parents' workplaces or schools. It was my preference to interview adolescent participants without others present, so that they would feel free to talk about issues that they may not wish to discuss in front of others. In practice, at times I could not avoid inviting other family members to join when I interviewed the young participants. I was in this situation when interviewing two families at home and

another family at a hospital. On the one hand, for one interview of a family at home, I obtained rich information from the participant's relatives - his aunt and aunt's husband - who provided stories of the participant during childhood that he could not remember, encouraged the participant to talk more, and facilitated the interview to flow well and enjoyably. On the other hand, with another family at home, I did not get in-depth information as a result of interviewing a participant's mother in the presence of her aunt. This was because, from my observations during the interview, the mother appeared to be tense - her face showed little emotion and she often glanced at the relative - the conversational climate was intermittently rather quiet, and customers buying things from the shop-house where the interview took place distracted the mother's attention. There were, therefore, both advantages and disadvantages to have others present during the interviews, depending on different family contexts. One possible explanation was that parents were usually wary of their child talking to a stranger for the first time. Some parents might be worried about inappropriate questions to their child (e.g. drugs and sexual abuse). I dealt with this situation, in addition to clarifying my questions, which did not have any sensitive issues, by welcoming other members as part of the process to allow the interview to proceed. For the second interview (for some adolescents), I was able to talk to the young participants alone, when parents had trust in and were more familiar with me.

At the first visit, interviews of other household members, primarily parents, were conducted after interviewing the adolescent. Mothers and fathers were interviewed separately to gather information independently, which assisted cross-checking information and explaining different perceptions and understandings obtained from others. Interviews lasted 1-2 hours with each parent and approximately one hour with adolescents. A second interview was requested only if new issues requiring further

explanation emerged from data analysis. Finally, seven families with adolescents with pre-diabetes or diabetes were visited two or three additional times to interview siblings or other related family members who were not available at the first visit.

Most interviews of young patients were conducted at weekends because then they had some free time from regular study. Before the appointment date, I telephoned the participants or their parents to confirm and remind them of the date of the interview. This was a good way to ensure that nothing had changed with my appointment. For example, the young participant might not be available for the interview on the given date because of scheduled school activities, such as a school camp or an inter-school sports competition. If this was the case, then a new appointment was made and I would be able to make other plans or replace this with other possible interview appointments to keep to my own schedule for interviews. On the remaining days, I spent time transcribing recorded tapes and reading journal articles, theses and hospital brochures related to my research. I also kept contact with the endocrinologists' assistants, endocrinologists and diabetes nurses two-three days a week, to continue further recruitment at Chulalongkorn and Rajavithi Hospitals.

Paediatric endocrinologists, endocrinologists, diabetes nurses and nutritionists were asked to provide data on diabetes and treatments, services, counseling or advice on self-management, and recommendations or barriers to treatments. The interviewing process lasted for approximately 30-45 minutes, with all interviews conducted in clinical settings. Although only one interview was supposed to be conducted with each clinician, four health professionals agreed to be interviewed twice, due to time limitations affecting their ability to complete all questions at once.

Observation

Observation methods provide a strong basic framework about “front stage” (public) and “backstage” (hidden from people’s eyes) behaviours (Singha, 1991; de Munck, 1998). Observational data can be obtained from participation and non-participation (Singha, 1991; Kawulich, 2005). For example, I was allowed to observe encounters between young patients with their parents and health care providers in the outpatient diabetes clinics (Figure 4.4). During this time, I used a digital camera with the doctor’s and the parent’s permission. My presence at clinic sessions provided me with a good opportunity to watch and listen to what the doctors explained and how they educated the young patients and their parents in relation to diabetes. In addition to gaining such diabetes-related knowledge, with the patient’s/family’s permission, I obtained the young participants’ medical and health data (illness history, medical treatment, weight/height measurement, laboratory results and the practice of diabetes control), which were helpful to enrich my interview data. I also conducted unobtrusive observation while I was sitting around the waiting area in front of the examination room, collecting contextual data related to human interaction, and the physical environment in clinical settings.

Lay and patient health information reviews

Written documents, including health-related topics in local newspapers, leaflets, brochures, pamphlets, and medical newsletters produced by hospitals, NGOs and the Ministry of Public Health, were reviewed for up-to-date information and opinions related to diabetes, health services and preventative or health promotion programs.



Figure 4.4 A doctor and a young patient in the examination room

Quantitative data collection method

Prior to developing a questionnaire for healthy adolescents, I collected accounts of the lived experiences before and after diabetes diagnosis (e.g. understanding illness, family dynamics, treatment compliance) from adolescents with pre-diabetes and diabetes, as well as from their main caregivers. Pertinent issues which emerged during the preliminary analysis of my interview transcripts, and discussion with my co-supervisor, led me to derive survey questions on teenagers' lifestyle (food, eating patterns and activities in spare time).

I intended to identify the perceptions of lifestyle behaviours of healthy adolescents (aged 12-19 years), using a 10-minute-interview. Information gathered from healthy adolescents was likely to give me a broad picture of teenagers' attitudes and lifestyles in contemporary Thailand. Consideration of the attitudes and beliefs of the healthy group can also provide some clues to potential factors associated with the development of pre-diabetes and type 2 diabetes among young people. Information of

lifestyle and eating behaviours gained from both groups may assist in understanding the problems leading to the development of pre-diabetes and diabetes among adolescents and the difficulties experienced by adolescents (and their families) living with this chronic disease/condition.

As mentioned earlier, the two survey sites included Siam Square Centre and The Mall *Baang Khae*. Siam Square, a popular shopping and entertainment area, is located in the inner city. It is a centre of department stores, fashion boutiques, local and international restaurants, an entertainment complex, and private tutor schools, and was chosen as a survey site because it is a popular meeting point for adolescents. Not only Bangkok teenagers but also provincial teenagers come here for shopping and tutoring for school or university admission during semester breaks and/or at weekends. Adolescents living in Bangkok also come here for supplementary studies after regular classes in the evenings. Such extra study has become an essential part of Thai children's and adolescents' lifestyle, because parents expect their children to get good school results and so study at a prestigious public university. Another reason is that the new admission entrance system of Thai education counts both the GPA (Grade Point Average) of 3 academic years (Grade 10-12) and the national examination scores. This new system is likely to push many adolescents to study harder as there is competition with their peers to get higher GPA scores each academic year to supplement their entrance scores at the end.

A shopping mall named "The Mall *Baang Khae*" was also selected. This shopping mall is a branch of "The Mall" department store in Bangkok, and is located in an outer city zone. Like Siam Square Centre, this shopping mall is the centre of an entertainment complex with cinemas, food centres/restaurants, varieties of shops, supermarkets and branches of private tutorial institutes, and is also a common meeting

point for teenagers living in this outer area after school, at weekends and during holidays.

Urban Thai teenagers commonly spend free time hanging around shopping malls, fast food stands, theatres and private educational institutes (i.e. the English Language Centre, Mathematics Centre and Physics Centre). Therefore, these two survey sites were selected, as they include such places and are well known as places where Thai adolescents gather.

A questionnaire survey was developed between August and September 2007. The one-page questionnaire was established as a matrix (7 columns and 6 rows): rows contain issues about food, exercise and activities in leisure time, and “Wh” questions - what, where and how often – were in columns (Appendix 6.1 in Thai and Appendix 6.2 in English). I then pretested this instrument with six teenagers and adjusted the wording of questions which were difficult for them to understand. For example, instead of using the term “healthy” food (*aahaan sukkhapaab*), I asked, “What foods do you think are useful for your body? (*Arai pen aahaan tee mee prayote tor raang gaai?*).” Examples of survey questions are provided below:

What is your favourite food?

How often and how much do you eat it?

Do you like fast food? What is your favourite one?

How often and how much do you eat it?

Do you exercise? What kinds of exercise? How often do you do this?

What do you most often do in your spare time?

I conducted the survey in October 2007 because, in general, Thai teenagers have a school break from the end of September to mid October. Using convenience sampling,

I walked around Siam Square and The Mall *Baang Khae* and identified young adolescents to participate in my study. I introduced myself and the survey aims to them briefly and clearly. Once they agreed to participate in the study, all questions were asked and completed within 10-15 minutes. All answers were recorded on the survey questionnaire form. In total, 60 respondents from the two selected sites participated in the survey. Although convenience samples are handy and require little effort, the major limitation is that the findings of my survey cannot be generalised as healthy participants recruited do not represent the population (Bouma, 2000). Therefore, it affects validity of the data. Two research assistants were required to conduct the interviews undertaken over two days. The assistants had experience in market survey research, and in asking questions in various social science projects relating to people who suffered from the tsunami disaster and children's rights.

Data analysis

Qualitative data collection and data analysis were on-going, simultaneous processes throughout fieldwork. Based on the grounded theory, data analysis began after the first day of data collection, leading to the emergence of concepts or themes, then to questions, and questions leading to more data collection, as a circular process (Corbin and Strauss, 2008). I applied thematic analysis (Braun and Clarke, 2006; Markovic, 2006) to my data, which involved gaining familiarity with the data, data coding, and searching for and identifying themes (Ryan and Bernard, 2003); and developed a grounded theory of the experience of Thai adolescents with pre-diabetes or diabetes, and their families.

As soon as practically possible after interviewing each participant, I transcribed tape-recorded information verbatim and placed it into a database. I then read through the

transcripts to get a broad picture and identify any new ideas or questions which were added to the next interviews. Although the transcription of taped interviews was time-consuming, I developed more understanding of and familiarised myself with the data, as well as being able to recheck the transcripts against the original audiotapes for accuracy. This step helped me to identify whether my data were saturated or what additional data I needed. All field notes were expanded in a systematic form (saved as a computer file) on the same day of fieldwork or as soon as possible. They included general information of the participants such as personal appearance and characteristics; interview places (location and environment in and around the places); emotions and feelings during interviewing; and nonverbal behaviours.

I used the combined behavioural theories and explanatory models to guide my data analysis – discovering themes or categories. In turn, my data led to the development of grounded theory which I also used to enrich the combined behavioural theories. Identifying thematic categories is an important and basic step for qualitative analysis; without thematic categories, they will have nothing to describe, compare and explain (Ryan and Bernard, 2003). Themes are abstract constructs and cover the expressions or concepts which are linked to themes. The establishment of themes can derive either from data (mostly from empirical data – texts, images and sounds) or from the researcher's theoretical literature review, understanding of the studied phenomenon, commonsense constructs and personal experiences (an a priori approach) (Strauss, 1987; Maxwell, 1996). Coffey and Atkinson (1996) and Ryan and Bernard (2003) state that qualitative researchers frequently generate a priori themes from their interview questions. I commenced my analysis with applying thematic categories from an a priori approach, but I also employed an inductive approach to discover themes or sub-themes from interview data, field notes and document reviews.

As proposed by Ryan and Bernard (2003), there are eight techniques to find out interesting findings in texts and four ways of processing texts. In my study, I adopted some of these techniques and modified them to suit my own data. The choice of techniques include looking for repetition, indigenous typologies or categories, similarities and differences and processing texts by cutting and sorting or pasting techniques. Firstly, I started with reading a transcript over and over again (two or three times) on the computer screen until I found words frequently used, local terms, meanings or cultural expressions and then highlighted these sections with different colours. I also marked similarities and differences by comparing pairs of expressions from either the same or the different informants (Strauss, 1987; Charmaz, 1990; Strauss and Corbin, 1990). Next, I searched for new and unobvious themes in the texts that remained unmarked in the third or fourth round. After the initial marking of texts, I identified important quotes or expressions by cutting them from the original transcripts and then pasting them in each predetermined codes, which came from theoretical models or interview protocols. For example, in Chapter 5, the chapter title – family, lifestyle and childhood obesity - came from the literature review in that obesity is the most important risk for the development of type 2 diabetes. Concurrently, with my thematic analysis, I found repetition of the phrase “overweight (or obesity) during childhood,” perceived to be caused by eating behaviours and the lifestyles of both youths and their parents. Then a priori categories – lifestyle-related factors and family’s health-related beliefs and behaviours and sub-categories were set up. Major themes that emerged from the data (e.g. food preference; parenthood, kinship, friendship and sharing food; parents’ voices: “fat” children and food enjoyment; etc.) were identified and put under those thematic categories/sub-categories.

I spent much time and effort to code and recode the data to ensure that I developed and retrieved accurate themes relevant to the interview scripts and I did not miss any key themes from the initial coding. I also played with codes or themes (in which some codes became themes) by drawing a thematic map (like a mind map) and creating a thematic table so that I could see easily the inter-relationships of themes/sub-themes. Finally, based on these themes, grounded theories of Thai adolescents and their families in relation to type 2 diabetes were developed, according to their real and grounded stories. Selected dominant sections of the analysed transcripts were translated into English. Participants' ideas, explanations and specific terms, which were well-expressed in their own words and explained the meaning in the analysis of these transcripts, were kept in the Thai language, followed by the English translation, to maintain the voice of participants. All field notes and other documents were summarised, using content analysis.

As commonly known, the conversion of qualitative data into quantitative data is referred to as quantizing (Sandelowski et al., 2009), and this has been increasingly used in either qualitative (i.e. ethnographic study) or mixed-method studies (Sandelowski, 2000; Creswell, 2009; Sandelowski et al., 2009). Quantizing (i.e. coding and other analytical tools such as tabulating and diagramming) serves as a means to think about and interact with data (Sandelowski et al., 2009). The value of quantizing has been acknowledged in reducing "mess" in text data, and to manage or simplify the complication and ambiguity of narrative. Concurrently, it is challenging for researchers to maintain the rich "messiness" of qualitative data while transforming them into numerical values. Sandelowski et al (2009) also argue that quantizing is valuable as it can enhance the value of qualitative data. I also displayed the major themes or findings in the form of diagrams, in Chapters 6 to 9. The diagrams contain main

themes/findings, showing the relationship between them. These diagrams demonstrate my ability to analyse the data holistically, extract key themes, put them together and make connections between them.

Converting qualitative data into quantitative data (i.e. diagrams and tables) has been applied in other qualitative studies (Sigurdardottir, 2005; Naemiratch and Manderson, 2006). For example, Naemiratch and Manderson (2006:1152) studied control and adherence among adults who live with type 2 diabetes in Bangkok. This qualitative study displays results on understanding the trajectory of control of diabetes in a diagram, showing subjective notions of control in living with the disease change along the trajectory of illness. Reading the diagram can easily capture the main concept which the authors intended to propose, for example in this study, adults with diabetes perceive that their diabetes controls their life (i.e. they have to limit/control their food and increase exercise when the symptoms of diabetes are visible). On the other hand, when there are no symptoms of the illness, the patients perceived that they had the power to control the disease. Another example of qualitative research using a diagram for data presentation is that by Sigurdardottir (2005). In this study, the findings diagram (p.305) serves as a model showing factors affecting self-care, including knowledge, physical skills, emotional aspects and self-efficacy, and self-care, again affecting blood glucose control (Sigurdardottir, 2005). All these variables are presented in square boxes and their interaction with each other is displayed by a black arrow – indicating positive association – and a broken line arrow, indicating negative association. As a result, reading and interpreting the diagram can help the reader easily conceptualise the main findings.

Similarly, in my study, one of my diagrams (in Chapter 9, pp.332) illustrates factors influencing diabetes self-management. The model covers the macro- and micro-factors affecting adolescents living with pre-diabetes or diabetes both before and after the diagnosis, in terms of self-management styles which result in three different health outcomes. This means that all major findings/themes presented in the whole thesis are conceptualised in a one-page diagram.

The demographic data arising from both the survey with healthy participants and in-depth interviews with participants with pre-diabetes and type 2 diabetes were simply analysed. The demographic findings of participants with the chronic illness were of interest and converted into the number as well as displayed in tables. This data provided descriptively demographic characteristics such as age, educational level, occupation and religions in relation to gender and diagnosis (i.e. pre-diabetes and diabetes). Raw survey data were analysed descriptively, using Microsoft Excel 2003 software. All raw data were categorised and coded through this software. A pivot table, which is an integral part of the software, located on the “Data” toolbar, was used to create quickly a cross tabulation which provided more depth and summarised information. Cross-tab data were firstly displayed in a contingency table in a matrix format, presenting relationships between two or more categorised variables, and finally the table was converted into bar charts with percentages, which were simpler and easier to interpret.

Study limitations

This study has some limitations in relation to research participants and cultural matters. The sample size is relatively small and relatively homogenous, as all young participants were from middle to high socioeconomic class and were recruited from hospitals. Therefore, the findings may not be applicable to families from low socioeconomic backgrounds. However, although the small sample size of young participants in this study may limit generalisability of the findings, the use of theoretical saturation (Guest et al., 2006) in determining sample size and the difference in the age range of young participants (12-19 years) suggested internal validity of the findings. The number of my respondents is not an issue, because they are not supposed to represent an adolescent population. Instead, I focused on the representation of the situation of pre-diabetes and type 2 diabetes among adolescents in an urban area in Thailand.

In my planned protocol, family cooks who were employed and were not family members were to have been interviewed. In practice, the families (mainly adolescents' mothers) did not allow their employed cooks to provide information. The reasons given to me by the mothers were that their family cooks did not know anything regarding food and cooking; they simply followed the family's orders and did what the family members wanted. For example, the family cooks purchased cooking materials (cooking oils, sauces and ingredients) ordered by the mothers or primary caregivers. Family members thought it was not useful for me to interview their cooks. Rather they offered themselves to respond to questions regarding family food and cooking. In addition, in this study, two families employed cooks, and two families had relatives as family cooks who were not allowed to participate in my study. In the remainder, mothers or in one case, a father, were the family cooks. If I had interviewed the family cooks, data related

to the cooking process (i.e. how much sugar, fish sauce or salt, oil, monosodium glutamate and other additives were added in food prepared particularly for the young participants) would have been cross-checked. Therefore, data from the family cooks might be different from mothers' reports, as mothers might not be with the family cooks while they cooked, or the family cooks might not follow the mothers' instructions regarding food restrictions for the young participants.

In contemporary Thai culture, within an urban environment, staying at night in a participant's house in order to observe individuals' behaviours, family food and eating patterns, family relationships and environment was not possible, for various reasons. One reason was that family members did not have dinner together during the week, as parents might come home late and children had dinner by themselves, or they might have activities outside, and ate out at the weekend. Therefore, it was not possible for me to stay longer with the family as they wished to preserve their family time, particularly at weekends. In addition, I intended to interview all young participants' fathers, but some fathers did not agree to participate in my study as they were busier than mothers because of their work commitments, time limitations and their own illness.

Time available to interview young participants and their family members was limited to weekends only, because most young participants had limited free time during the week, because of regular study and evening classes. Working parents or caregivers were also more available for interviews at weekends than other days, although they preferred to keep their weekends for family activities such as going shopping, visiting grandparents or relatives living in different places or other provinces, or doing household tasks. Although making an appointment for an interview might have been done, it was sometimes postponed as either young participants or their parents had other priorities: young participants had school activities arranged at the weekend; parents

worked at the weekend; or the whole family had a holiday trip during the child's school break. Therefore, my data collection proceeded slowly, and took more than a year.

Interviewing healthcare providers, particularly physicians, also required patience. The process from making an appointment to waiting longer to meet them, and to be well prepared for brief and relevant questions, was demanding. Making an appointment with physicians through doctors' assistants was commonly required because they were busy with their routine work, including ward rounds, examining patients at the outpatient department of the diabetes clinic, and teaching medical students, and other non-routine work - conducting their own research, attending in conferences and participating in hospital administrative meetings. It was time consuming to arrange interviews as I had to contact doctors' assistants several times either by phone or talk directly to find available time to meet with doctors. Although I had the exact date and time to meet doctors, again interviewing them was often delayed, and thus I could complete the interviews with only one or two doctors per day. If interviews with some doctors were uncompleted because of time limitations, I had to resume the whole process to complete my interview questions.

Overall, the few limitations mainly relate to the small sample size, and so lack of generalisability of findings, time limitations of study participants for the interviews, and unavailability of fathers and employed family cooks to take part in the study. Data corroboration from the different study participants (lay people and doctors) partly compensated for these limitations.

CHAPTER 5

FAMILY, LIFESTYLE AND CHILDHOOD OBESITY

At the beginning of this chapter, I provide personal data of the young participants with pre-diabetes and diabetes - demographic, familial and diabetes characteristics - and of their primary caregivers. I then focus on lifestyle- and family-related factors associated with childhood obesity among young participants. In lifestyle-related factors, I present adolescents' diet, physical and sedentary behaviours by discussing both survey data, gained from the healthy group and interview data from adolescents with the illness, and compare these findings with other studies. In family-related factors, I consider family's perceptions, beliefs and behaviours, including child-rearing and parenting styles, as all these familial factors may underpin a childhood obesity problem.

In this chapter, my findings answer the first research question, on exploring health risk behaviours, lifestyles and family's parenting styles. The two major categories in this chapter – 1) lifestyle related factors and 2) family's health-related belief and behaviours – came from the questions in the interview protocol (as provided in Appendix 5.2) as a priori themes (cf. Ryan and Bernard, 2003: 88). A priori themes can derive from the researcher's review of the literature in relation to the phenomenon being studied, theoretical orientations, interview questions, and personal experiences (Strauss, 1987; Coffey and Atkinson, 1996; Maxwell, 1996). This ensures that these themes provide relevant and rich data gained from the informants. The use of a priori categories was complemented with an inductive approach to identify sub-categories or sub-themes under those categories. Themes/sub-themes I found in the literature included diet, physical and sedentary activity, child-rearing and parenting styles, food preference, meal patterns and eating behaviours, food availability at school, and food

availability at home. Themes which were identified through thematic analysis are parenthood, kinship, friendship and sharing food; role models; and parents' voices.

Adolescents' and caregivers' backgrounds

Drawing on qualitative findings, I display the personal and family backgrounds of adolescents and their main caregivers in Tables 5.1-5.3. The adolescents' demographic and family data are summarised in Table 5.1. Young participants with pre-diabetes (6/16) and diabetes (10/16) in this study are relatively homogeneous: the majority (12/16) studied at a secondary school and high school, were 12-17 years old, lived in a nuclear family with one - two siblings, and came from moderately well-off to affluent families. A minority group includes four adolescents (one female and three males), aged 18-19, studying at a university. One 18-year-old male had dropped out of school and had no job at the time of being interviewed. All participants follow Buddhist beliefs. Nine young participants had mothers as a primary caregiver and had at least one family member with diabetes living in the same family.

According to Table 5.2, all young participants had a history of childhood obesity. At the time of being interviewed, almost all young participants (14 out of 16) were overweight or obese. One male and one female adolescent had a healthy weight (BMI¹⁰ percentile 5th – <85th), despite having diabetes; both adolescents had been treated, and learnt more about treatment and self-management of their illness and how to adjust their lifestyle.

¹⁰ A body mass index (BMI) percentile for children and adolescents aged 2-20 years is assessed by using the BMI-for-age and sex charts established by the US National Centre for Health Statistics (Kuczmarski et al., 2002).

Table 5.1 Demographic and family data of adolescents by gender and diagnosis

Characteristics	Total n = 16	Females	Males	
		Diabetes n = 6	Diabetes n = 4	Pre-diabetes n = 6
Age (Year)				
12 - 14	5	1	1	3
15 - 17	7	4	1	2
18 - 19	4	1	2	1
Educational level				
Primary school	1	-	-	1
Secondary school	5	1	2	2
High school	7	4	1	2
University	3	1	1	1
Occupation				
Student	15	6	3	6
Unemployed	1	-	1	-
Religion				
Buddhist	16	6	4	6
Family type				
Nuclear	12	5	3	4
Extended	4	1	1	2
Family members having diabetes				
No	7	1	2	4
Yes	9	5	2	2
Number of siblings				
None	3	1	-	2
1 - 2	11	5	2	4
3 - 5	2	-	2	-
Family income (AUD*/month)				
< 1,000 (Low)	3	2	1	-
1,000-1,600 (Medium)	7	1	2	4
>1,600 (High)	6	3	1	2

* 1 AUD = 30 Baht

Almost all young men (9/10) were obese (BMI $\geq 95^{\text{th}}$), three young women were overweight and two were obese. All young participants had a family history of diabetes (see kinship charts in Appendix 7). All young women had diabetes and most were overweight, while all young men were obese but most of them had only been diagnosed with pre-diabetes. The duration of pre-diabetes and diabetes ranged from seven months to nine years. Most young men (5 with pre-diabetes and 2 with diabetes) had been diagnosed for between two and three years; the remainder had been diagnosed for over three years. Almost all young women (5 out of 6) had diabetes for over three years and only one had diabetes for less than one year. Just over half of the adolescents (9 out of 16), predominantly with pre-diabetes, had other health problems, such as allergy, asthma, headache, sleep apnoea, and liver cirrhosis.

The demographic data and history of having diabetes among the 25 main caregivers are displayed in Table 5.3. The ratio of female and male caregivers was 2:1. Most main caregivers (14 out of 25) were aged 40-49 years. The caregiver's backgrounds showed that female caregivers (mainly mothers) were younger and better educated than male caregivers (i.e. fathers). Over 50% of all caregivers had a lower undergraduate degree, although three female caregivers had completed a postgraduate level (i.e. a master's degree). The findings also revealed that the role of a mother as a housewife, staying at home, was fading away, and most women worked outside the house. Most female caregivers worked for the government or ran their own business; a minority of female caregivers worked as company employees or housewives, while male caregivers worked as government employees, business owners or company employees equally.

Table 5.2 Diabetes data of adolescents by gender and diagnosis

Characteristics	Total n = 16	Females	Males	
		Diabetes n = 6	Diabetes N = 4	Pre-diabetes n = 6
Duration of (pre-) diabetes (year)				
0.5 - 1	1	1	-	-
2 - 3	7	-	2	5
> 3	8	5	2	1
Family history of diabetes				
2 nd level (grandparents and relatives)	6	2	2	2
1 st level (parents and siblings)	9	4	2	3
None	1	-	-	1
Recent blood sugar level				
< 100	5	1	-	4
100 - 125	4	1	1	2
126 - 200	4	2	2	-
> 200	3	2	1	-
BMI* for children (percentile)				
Underweight (<5th)	0	-	-	-
Healthy Weight (5th- <85th)	2	1	1	-
Overweight (85th - <95th)	3	3	-	-
Obesity (\geq 95th)	11	2	3	6
Other health problems				
Headache (Migraine)	2	1	1	-
Allergy	4	2	-	2
Liver cirrhosis	1	1	-	-
Asthma	1	-	-	1
Sleep apnea	1	-	-	1
None	7	2	3	2

BMI* = Body Mass Index

Table 5.3 Main caregivers' demographic data

Characteristics	Total n = 25	Number	
		Female n = 16	Male n = 9
Age (years)			
30 - 39	2	1	1
40 - 49	14	11	3
50 - 59	9	4	5
Education level			
Less than undergraduate	14	8	6
Undergraduate	8	5	3
Postgraduate	3	3	-
Occupation			
Government employee	8	5	3
Business owner	9	6	3
Private business employee	6	3	3
Housewife	2	2	-
Diabetes history			
Yes	6	3	3
No	19	13	6

Six of the 25 caregivers had diabetes (3 of 16 females and 3 of 9 males). Owing to many roles among female caregivers today, the role in providing care for children has been reduced and women are not fully responsible. This affected adolescents with diabetes as they needed long-term and intensive care from the family, in particular from their parents or main caregivers.

Gender, family history of diabetes, and childhood obesity were dominant factors in the development of pre-diabetes and diabetes among participants in this study. Parents' socioeconomic status, high and low, was associated with childhood obesity as all young participants had gained weight during childhood. This is concordant with a longitudinal study (1998-2007) of Singaporean adults (Ong et al., 2009). However, this finding is incongruent with a Thai 1997 study, demonstrating parents' high education and high household incomes were strongly correlated to childhood obesity (Sakamoto et

al., 2001). The discrepancy in the Thai studies may be a consequence of time difference in conducting research whereby cultural, social and environmental contexts have changed due to the urbanised environment and lifestyle factors. Recently, people with either high or low income have been able to easily access unhealthy food, and engage in little physical activity and exercise due to excessive work or lack of public spaces for exercise and unsafe places (Ong et al., 2009). Childhood obesity in Thailand is increasing not only in urban but also in rural areas. Poor families' lifestyle, in the purchase of prepared food and of snacks high in carbohydrate, fat, salt, sugar and chemicals (i.e. monosodium glutamate), has also become common across socio-economic groups. In other words, although high socioeconomic status still predominates as a factor in obesity, low socioeconomic status, particularly in urban areas, has been associated with childhood obesity (Mo-suwan, 2005a: 20-21).

Lifestyle-related factors

All young participants were obese when children. I have categorised the key underlying factors of overweight and obesity into three main groups: 1) diet (i.e. food preference, meal patterns and eating behaviour, and food availability at home and at school), 2) physical and sedentary activities, and 3) familial factors (i.e. parents' perspectives of childhood overweight and obesity, parenthood and sharing food, role modelling and child-rearing).

Diet

The meanings of eating and food in Thailand, as reflected in the translation of snack food, varies: *aahaan waang* (food in free time), *khong kinlen* (*khong* means things, and *kinlen* is the combination of *kin* and *len*, meaning to eat and to play), emphasising the *sanuk* of food, the pleasure and social aspects of it in Thailand. *Khong kinlen* also infers

eating light food simultaneously with other leisure activities, such as chatting with friends, drawing, or playing games or cards. There are many types of *khong kinlen*, which can be categorised into three groups.

Aahaan waang is often used to refer to light fried or steamed foods (e.g. curry puff, fried meatballs or fried sausages on skewers (see Figure 5.8), satay and Chinese dim sim), which are generally not eaten with rice. If these foods, such as Chinese dim sum, are consumed as breakfast or lunch, Thai people call them *aahaan nak* (heavy food). Therefore, this type of *khong kinlen* is different from snacks or *khanom*.

Khanom is generally used to include sweets, candies, ice cream and crispy snacks such as chips, crisps nuts and other savory snacks, which some Thai people may eat during a meal or throughout the day. Thai children frequently eat *khanom* while they play with friends; therefore, the meaning of *khanom* is very close to *khong kinlen*.

Fruits (*ponlamai*) are traditionally consumed after meals and Thai families in the past prepared fruit as *khong kinlen* for children to eat after they come back from school or after meals. The Thai notion of eating fruit after a meal is to clean the mouth (*laang paak*), so that food residuals and its smell in the mouth will be removed. In the past, Thai people would consume fruit every day and frequently. In contrast, Thai people today eat less fruit and vegetable (Iedsee, 2005) and some families skip fruit after meals, even after dinner. After school, children usually buy and eat snacks or *khanom* with friends before going home, because parents do not prepare fruit or *khong kinlen* for them or because parents may not be at home. With the influx of Western fast food and snacks, young people can easily access and afford such snack foods, which are considered to be tastier and more ready to eat than fruits. Therefore, *khong kinlen* for Thai children and adolescents, at the present time, would refer to *khanom* and Western

finger foods (e.g. fried sausages, chicken nuggets, and fried chicken wings) rather than fruit.

Food preference

People generally choose their food based on their food preference, influenced by food appearances such as taste, odour and image. Thus food preference determines food and eating behaviour patterns (Pyke, 1986; Birch and Fisher, 1998). In my study, young participants had similar patterns of food regarding their preference in food taste, and frequency of consumption during childhood. Western fast foods, such as fried chicken from KFC outlets and soft drinks (e.g. Pepsi), were favoured foods, and young participants frequently consumed these foods and drinks, which subsequently affected their weight. One young man said, “During studying at Grade 10, my weight was up nearly to 20 kilos because of eating KFC every day, except at the weekend.” One primary caregiver also commented, “He [Sib-ed] likes eating KFC and can finish the whole set - four pieces of fried chickens, one small box of potato chips, eight spicy chicken meatballs, and a large glass of Pepsi.”

According to Schmidt et al.’s (2005) definition, Western fast food includes burgers, sandwiches, hotdogs, fried meat, French fries and pizza, sold in fast food outlets such as McDonald’s, KFC, Pizza Hut, Burger King, and other fast food restaurants. These Western fast foods are paid for before eating; paper, plates or plastic buckets, spoons and forks are provided at point of sale. Thailand has adopted this Western fast food pattern over the past 40 years. All Western fast food outlets and restaurants in Thailand also sell soft drinks with fast food as a set; therefore, it is not surprising that young people have increasingly consumed both fast food and soft drinks (Un-Em, 2007; Luangkaew, 2008).

In this respect, I asked 60 healthy Thai adolescents to respond to ten questions relating to the trend of consuming fast food, snacks and soft drinks, and of exercising and doing leisure activities. All quantitative results are displayed in Figures 5.1-5.10. In response to the question “What kinds of fast food do you most frequently eat?” (Figure 5.1), nearly all respondents understood fast food to be Western fast foods, although a few also mentioned instant noodles and noodles from hawker stalls.

As shown in Figure 5.1, approximately 87% of young men eat Western fast foods, compared with 80% of young women. Most young women (43%) preferred eating fried food, while most young men (43%) consumed burgers and sandwiches. Twice as many female respondents as males did not eat fast food (13.3% vs. 6.7%).

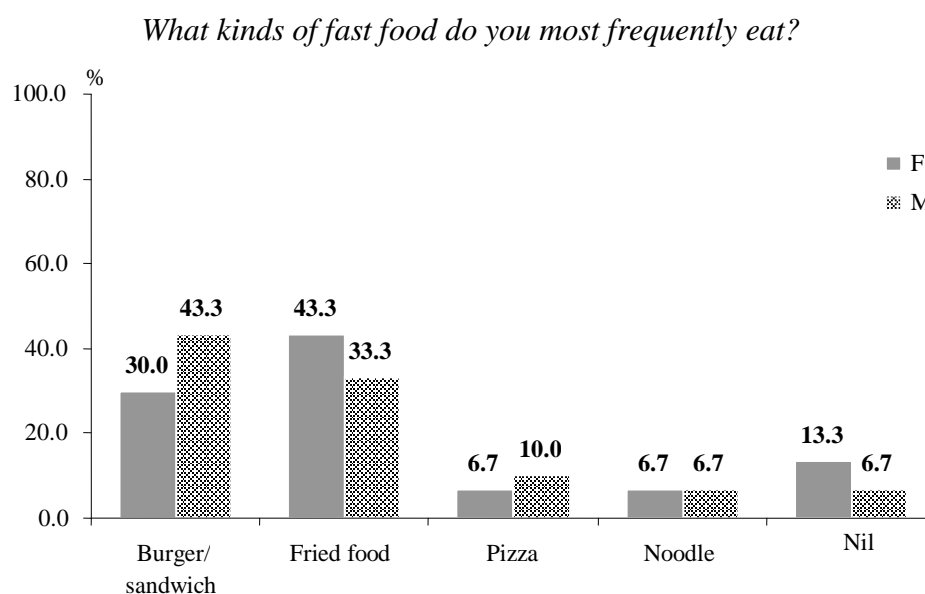


Figure 5.1 Types of fast food consumed by healthy adolescents

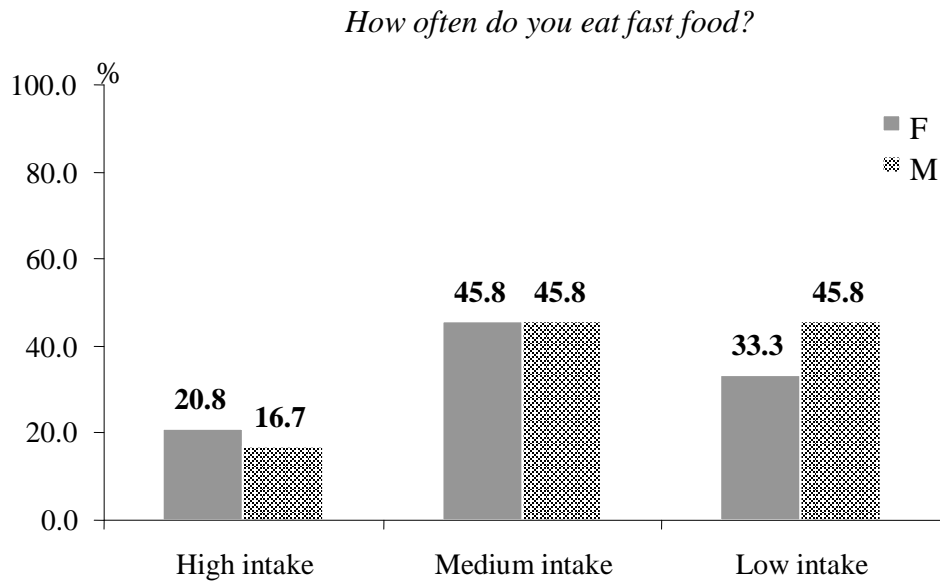


Figure 5.2 Frequency of fast food intake among healthy adolescents

In my study, high intake was defined as eating fast food more than three times a week; low intake was defined as less than once a week, based on Schmidt et al.'s (2005) criteria. Both female and male respondents had medium intake as they reported that they ate fast food 1-3 times a week. However, female respondents consumed Western fast food more often than young men, as illustrated in Figure 5.2. This finding is not congruent with a 5-year study on fast food intake among the US adolescents, which reported that male adolescents were more likely to consume fast food than females, and one-third of all US young respondents ate fast food more than three times a week (Bauer et al., 2009). Figure 5.2 indicated the opposite result (20.8% for females and 16.7% for male), and one-fifth of all Thai young respondents were classified as having high intake. The number of Thai adolescents with high frequency of fast food intake is less than that of the US adolescents because Western fast food in Thailand is more expensive than local Thai fast food (such as a plate of rice with other dishes, or stir-fried noodles or soup), and eating Western fast food in Thailand is not as common as in the US.

There was no difference in between healthy adolescents and those with diabetes. Young participants with chronic illness reported that, prior to diagnosis, they frequently ate fried food, including fried pork and fried chicken with rice, and avoided eating fresh vegetables. Adolescents' favourite foods and drinks contained high fat, carbohydrate, salt and sugar, and had high energy density and low fibre content. One boy described his food consumption habits and behaviours as follows:

I enjoy eating food I like. I like eating rice very much and I also like fried food. Before I had diabetes, [I] had often eaten rice with fried chicken and omelette, which my mother often cooked for my family [Sib-sii, M, 13, pre-diabetes].

What kinds of drinks do you usually have either at home or restaurants?

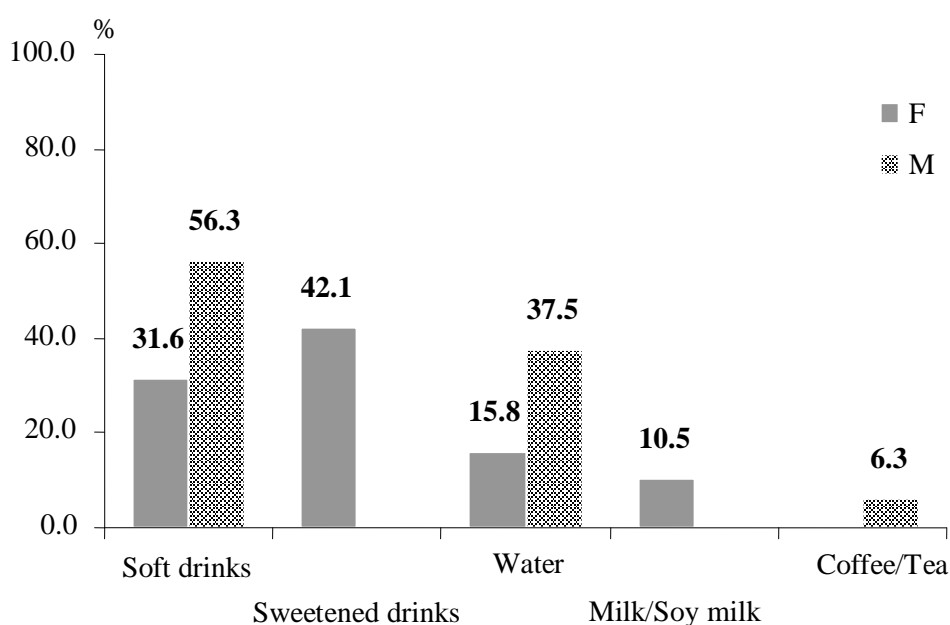


Figure 5.3 Types of drinks consumed by healthy adolescents

Figure 5.3 shows that male respondents consumed more soft drinks than female respondents (56.3% versus 31.6%), while most female adolescents had sweetened locally made drinks, mainly pearl milk tea¹¹ (see Figure 5.4). No male respondents drank such kind of tea, milk or soy milk. Only male respondents drank coffee or black tea. Female respondents consumed more sugary drinks than males (approximately 74% vs. 56%).



Figure 5.4 Pearl milk tea

¹¹ Pearl milk tea (*chaa khai muke*) is tea shaken with milk and additional sugar, or sweetened condensed milk. Pearl-like balls are added; these are made from a mixture of tapioca and carrageenan powder. The drink is typically served with ice.

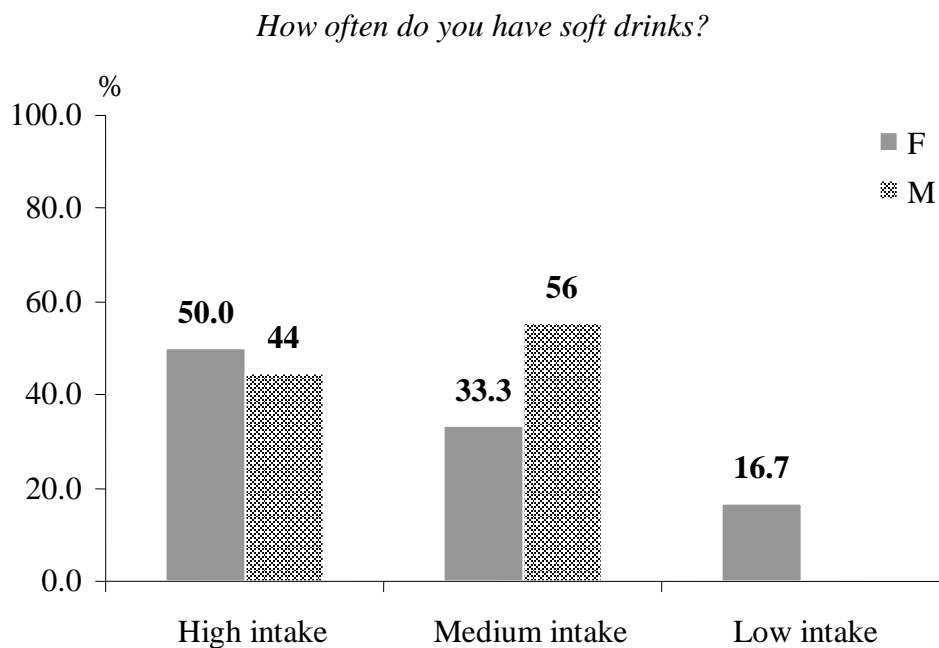


Figure 5.5 Frequency of soft drink intake among healthy adolescents

As displayed in Figure 5.5, female respondents were likely to consume soft drinks more than three times a week, although a few young women had a low intake. Males were likely to drink moderately (1-3 times a week), but no male respondents had low soft drink intake. Soft drink data from the healthy group were concordant with those of young participants with diabetes, suggesting high Pepsi consumption among young men rather than young women during childhood or adolescence. Many adolescents, who I interviewed, associated drinking Pepsi every day with their childhood obesity.

Based on my survey data on snacking presented in Figures 5.6 and 5.7, there is not much difference in types and frequency of snack intake between female and male respondents. Approximately 93% of all respondents, females and males, consumed snacks and sweets, particularly potato chips (over 60%). Contrary to fried food and sweetened drink intakes, the majority of female respondents were likely to eat snacks, mainly potato chips (Figure 5.6). However, in terms of frequency of eating potato chips, males were likely to consume potato chips more frequently than females (Figure 5.7).

What kinds of snacks do you most frequently eat?

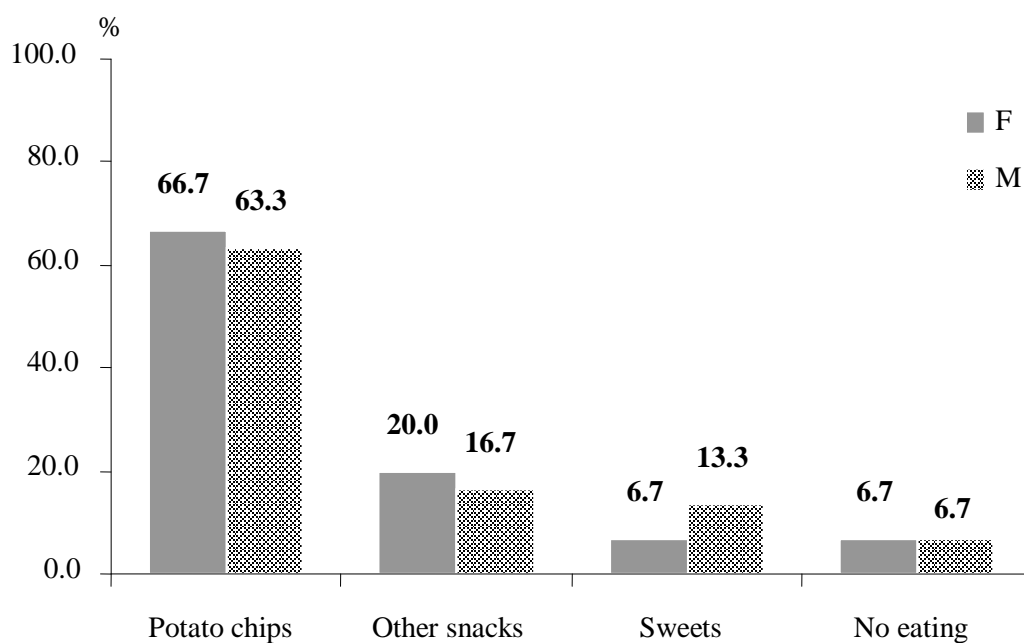


Figure 5.6 Types of snacks consumed by healthy adolescents

How often do you eat potato chips?

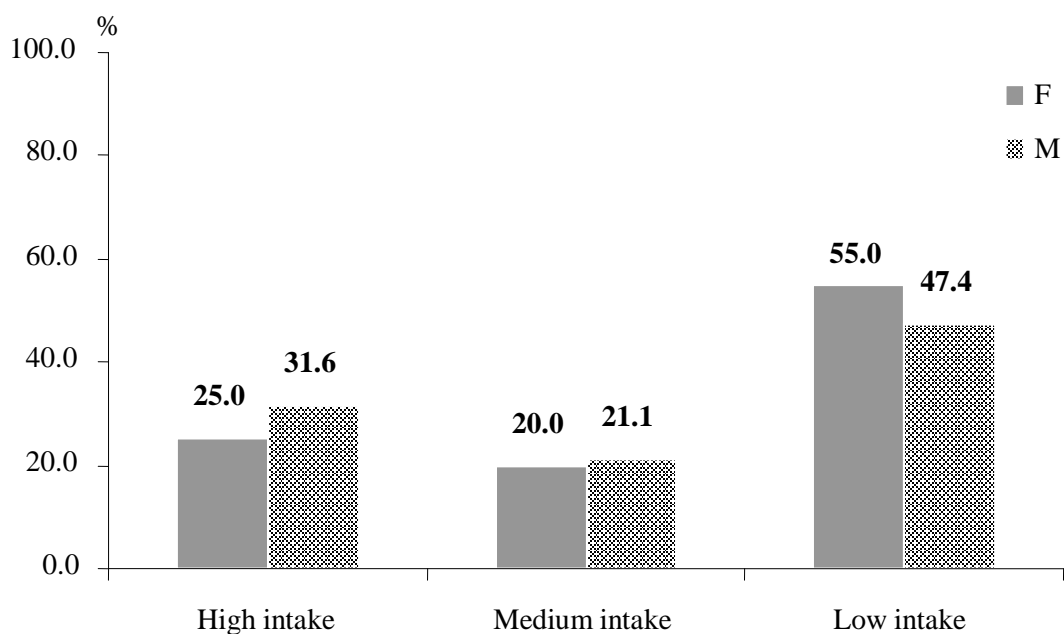


Figure 5.7 Frequency of snack intake among healthy adolescents

Likewise, male respondents appeared to be high snack eaters (eating snacks every day) and females were low snack eaters (eating snacks less than three times a week). Similar to the healthy group, participants with pre-diabetes and diabetes often consumed snacks such as Lay's potato chips. Previous studies of Thai school-age children also confirmed that young people aged 6-14 years most frequently consumed snack foods, compared with other groups, and they most commonly consumed potato chips 4 - 6 times a week (Theerawit, 2007; Luangkaew, 2008).

Overall, the survey results from healthy adolescents in my study suggested that young women are more likely to eat Western fast food and soft drink (i.e. Pepsi) than young men. This supports epidemiological data on the prevalence of diabetes, which shows 53% of women and 47% of men have diabetes although it is not significantly different (Aekplakorn et al., 2003).

Meal patterns and eating behaviours

According to young participants with diabetes or pre-diabetes, patterns of meals and eating behaviours affected their body weight. Many of them had breakfast and dinner at home, and all had lunch at school. Purchased foods, such as Thai-style dishes, congee (a Chinese rice soup, which Thais called *joak*), and soy milk, or cow's milk with bakery breads and cakes, were preferred for breakfast by these young respondents. Buying food for the family breakfast is common in many Thai families living in Bangkok, because parents have limited time and spend an extended time in traffic commuting to work. Some families who prepared breakfast usually cooked simple foods, such as rice with omelette, or prepared sandwiches or bought bakery items, and sometimes fed them in the car on the way to school. Most young participants bought food at school for their lunch, usually a hot dish (e.g. fried rice with meat, fried egg and basil) or a bowl of noodles. They frequently had soft drinks, sweetened juices and ice cream instead of

fruits, both after lunch and at other times during the day. Dinner was the heaviest meal for young informants. Over half of young participants ate precooked food purchased for their dinner, as their caregivers bought ready-to-eat foods at food stalls, local markets, nearby supermarkets or department stores. This finding was congruent with earlier studies, which indicate that nearly half of all adults in the studies frequently bought take away food from street food stalls for themselves and their families (Ganjanasuntorn, 2002; Naemiratch, 2004). Today, eating bakery products with tea or coffee as a main meal such as breakfast has become popular and common among adults, to save time and for convenience (Ganjanasuntorn, 2002). In the family context, this breakfast pattern may be copied by young people, as these foods and drinks are available at 24-hour supermarkets and from street vendors, and so are easily accessible. Therefore, young people, when they eat out, commonly buy snacks such as sausages, fried meat-balls and bakery products such as sweet buns with sweetened drinks as a main meal.

Young male respondents during childhood had at least four meals, including three regular meals and a nighttime snack or bedtime meal, and they usually ate food in large portions. One relative stated, “He [a young participant] eats everything in front of him and he doesn’t know how to eat (only a little) bit. He enjoys eating a lot of food.” One boy said that when he was in primary school, he had four meals a day for three years. This boy often had dinner after school at his grandmother’s house, as his parents worked outside the home. His dinner cooked by the grandmother was primarily rice, with omelette mixed with minced pork, a dish easily and quickly cooked. He then had a second meal with his father, after he (father) returned home late from work, as his mother explained:

When he started Grade 7, after school, he came home and ate his fourth meal. While he was waiting for me as I worked outside home, he was

watching TV. When I arrived home, he ate with me again and that was his fifth meal. I wondered why he was often hungry and ate a lot. The bad thing was that he usually ate oily food [Hawk's mother, 46].

Prior to their diagnosis, young participants with diabetes frequently consumed high-energy fried meat as a side dish, as well as eating excessive amounts of rice (more than two ladles of rice). Some young participants thought that eating too much rice and fried food, as well as fast food, might be a leading cause of diabetes. This may reflect the fact that although young participants with the illness knew of the adverse effects of eating Western fast food or other fried foods on their blood glucose, many of them still eat these foods, although less frequently than before because of their parents' concerns.

A US study suggests that children who frequently ate fast food were more likely to consume sweetened drinks, but eat less fruit and non-starchy vegetables (Bowman et al., 2004). These authors argue that the consumption of fruit and non-starchy vegetables protects against excessive weight gain because of their low energy density, high fibre content and low glycaemic index, while inadequate consumption of this "healthy food" is associated with the risk for obesity and co-morbidity (Bazzano et al., 2002), including diabetes (American Diabetes Association Task Force, 2002). My study also found that few young participants liked eating fruits and vegetables. Some failed to eat fruit because their mothers did not prepare the fruit ready to eat (e.g. peel skin from the fruit and put it in the fridge or on the dinner table).

Eating behaviour between boys and girls is different, "rice for boys and sweets for girls." Many young men indicated that they did not like *kin jubjib* (eating sweets or small snacks frequently between meals or throughout the day). Instead, they preferred to eat rice as a main meal and in a large portion. In contrast, *kin jubjib* was an outstanding characteristic of eating among girls; they were more likely to continually eat sweets and

other snacks throughout the day. This gender difference in eating behaviour is illustrated by one male and one female adolescent:

My main food is rice and I usually eat it at almost every meal. I don't like to eat a little amount and frequently, like eating snacks for a main meal. I like to eat food as a meal and stop eating when I finish the rice. I don't like bread or any processed food made from rice. I eat *khanom* (sweets or snacks) as a snack in my spare time [Sib-hok, M, 19, pre-diabetes].

I am a *kin jubjib* child. I prefer eating rice noodles or noodle-like food rather than rice. I actually like eating *khanom* (desserts or snacks) all day, and I don't like eating food as a meal. For example, my dinner sometimes is potato chips, and I enjoy most eating a jelly (a kind of sugary sweet) that contains a lot of sugar [Sib, F, 16, type 2 diabetes].

According to my observations at a public school after school hours, different types of food, sweets and sweetened drinks were sold around the school (Figure 5.8). Popular foods and drinks consumed by students included fried foods such as fried meatballs, sausages, squid and pork with sweet chili sauce; sweets such as crepes and deep-fried ice cream; soft drinks and sweetened milk tea. Although many students ate fruits, they frequently bought sweetened fruits such as fermented guava, soaked in sugar-added juices, and ate cut fruit with a sugar-chili powder dip. School-age children do not eat "healthy" food, because the cooking methods and ingredients used by food vendors include deep stir-fry, with cooking oil, salt and sugar as major components. Hence, not only children's eating behaviour at school or outside the home, but also unhealthy food available at school and in public, directly affects children's health risks.



Figure 5.8 Fried food sold outside school

One young woman recounted her daily activity related to food after school when she was a girl:

When I was of school-age, after school finished, I bought fried meat-balls, soft drink, and sweetened-milk tea. Sometimes I spent more than 100 baht buying these snacks and 12 fried chicken drumsticks for 40 baht. Then I had dinner with my mother around 6 pm [Song, F, 19, type 2 diabetes].

Food availability at school

Food availability both in and around the school influences children's lifestyle as children spend approximately eight hours a day at school. In 2005, the Health Research Network, on the basis of a survey of 400 primary schools throughout Thailand, revealed that three-quarters of all schools had a school regulation prohibiting the sale of soft

drinks (Lerksirisuk, 2005). Even so, in these schools, 15% still sold soft drinks and some schools had vending machines. Fifty percent of all schools allowed commercially produced snacks to be sold at school, and 25% of these schools sold snacks directly to students. Other food, such as fried rice and noodles, was prepared by school cooks or nutrition teachers (70%) or was bought from outside schools (18%), and 12% was food that students bought from food vendors in schools (Mo-suwan, 2005b:43). This means that schools have the authority to control the sale of unhealthy foods in school canteens. However, in practice, foods high in fat, salt and sugar are still sold in the canteens and the surrounding school areas. Young participants in this study mentioned that many food vendors both in and out of their schools sold various fried meats and snacks, sweetened juices and soft drinks. One 12-year-old boy with pre-diabetes commented on “unhealthy” food available at his school and the school’s responsibility for this:

Sometimes the school has a student meeting and they [the school] order Mac [McDonald’s burgers] for our lunch. And my school sells a lot of French fries and fried chicken as well, and red cordial, but other kinds of soft drinks and alcoholic drinks are not allowed.

What do you think? Should these foods be sold at school?

I would say school should not sell them as I can’t restrain myself when I see them [food]. For example, one day I saw a younger boy at Grade 4 eating four oily fried chicken wings and [he had] two more drumsticks in his bag and that made my mouth water.

But such foods are still sold a lot at school, what do you suggest?

I think schools should be the first place to help [us]. Schools promote many health-related projects but such food still exists. I don’t mean any fried food should not be allowed at school. Instead, I mean schools should reduce it [fried food]. For example, the school should allow selling only 2,500 pieces of fried chicken if there are 5000 students and limit this only to three shops. So on average, one student eats half a piece. This is like, first come, and first served.

A paediatrician who participated in my study pointed out that many schools, particularly private schools and public schools that were not in the Bangkok Municipality, had vending machines, from which unhealthy snacks and sweetened drinks were available. Although some schools prohibited such foods in school, food vendors sold fried foods, snacks and soft drinks along both sides of the street in front of schools and surrounding areas. It is difficult to stop food vendors selling such foods because it is out of the school's authority, but the state government has that power. In recent years, the Bangkok Municipality has released many policies, including a daily food menu for children and has provided training for nutrition teachers. It has also introduced a prohibition to sell snacks and soft drinks in schools, and *rongrian onwaan* (less sugar in school) in the 435 schools under its supervision (Thailand National Health Foundation, 2007). However, these policies have not been assessed adequately and students' satisfaction with the projects has never been evaluated. Furthermore, many schools in rural areas lack nutrition teachers, and the lay understanding of a "fat child" as a healthy or pretty child still exists among Thai people, especially those who live in rural areas. In some areas, there are still "chubby child contests" to promote raising healthy children.

Food availability at home

Based on my qualitative data, food availability at home was mainly determined by parents and relatives. For example, some parents bought commercial snacks and soft drinks in large quantities to store at home, when they went shopping at the weekend, and families would go shopping and eat "big" meals at the weekend. One mother provided this account: "When she [Song] was very young, [we] bought a lot of crunchy snacks at the weekend, we often went shopping at a big department store, let her play at an entertainment park, and then found something to eat there." Family activities mentioned by all young participants included birthday parties, followed by shopping at

weekends and cultural ceremonies. All these activities involved food-based energy intake rather than energy expenditure, with the range of activities arranged primarily by parents. Young participants living in extended families were also unavoidably influenced by other family members regarding food availability at home:

Food and eating is the focus of this [extended] family. Every meal comprises mainly rice and many other dishes. It's crowded here [in this house] and many people here [in our household] cook and enjoy eating, so she [Sri] likes to eat the same (sorts of food) that others eat [Sri's mother, 52].

He [Hawk] loves eating at KFC and McDonalds very much, as well as Pizza Hut. Another cause of making him fat was Pepsi. In the past, we lived with his grandmother and people in that house, instead of drinking water, drank a litre of Pepsi every day. They bought buckets of Pepsi and stored them at home [Hawk's mother, 46].

Physical and sedentary activity

The terms physical activity and exercise are often confused and sometimes used interchangeably. Physical activity in everyday life refers to sports, occupational movement, household and other activities which include bodily movement and energy expenditure. Exercise is considered as a subset of physical activities, referring to planned and repetitive physical movement which aims to improve or maintain body fitness or strength (Caspersen et al., 1985). My study defined degrees of exercise based on Sallis and Patrick (1994): vigorous exercise involves exercising almost every day for at least one hour; moderate exercise as exercising 3-4 days a week for at least 30 minutes; 1-3 days a week for light exercise; and less than three days a month for exercising rarely.

To find out what young people do in their spare time and how often, the findings obtained from healthy adolescents are displayed in Figures 5.9-5.12. Subsequently, all these findings on this issue are discussed with data gained from adolescents with diabetes and other studies.

As illustrated in Figure 5.9, healthy respondents reported three categories of activities in which they were involved - sports, physical activities and physical education classes. Most respondents defined physical activities as household activities, walking, shopping, playing music and dancing, and defined exercise as playing sports and physical education class. Most healthy respondents played sports rather than performed other physical activities; the majority were male respondents (86.7%). Female respondents were likely to do physical activities such as dancing and doing household tasks, and participated in physical education classes more often than male respondents.

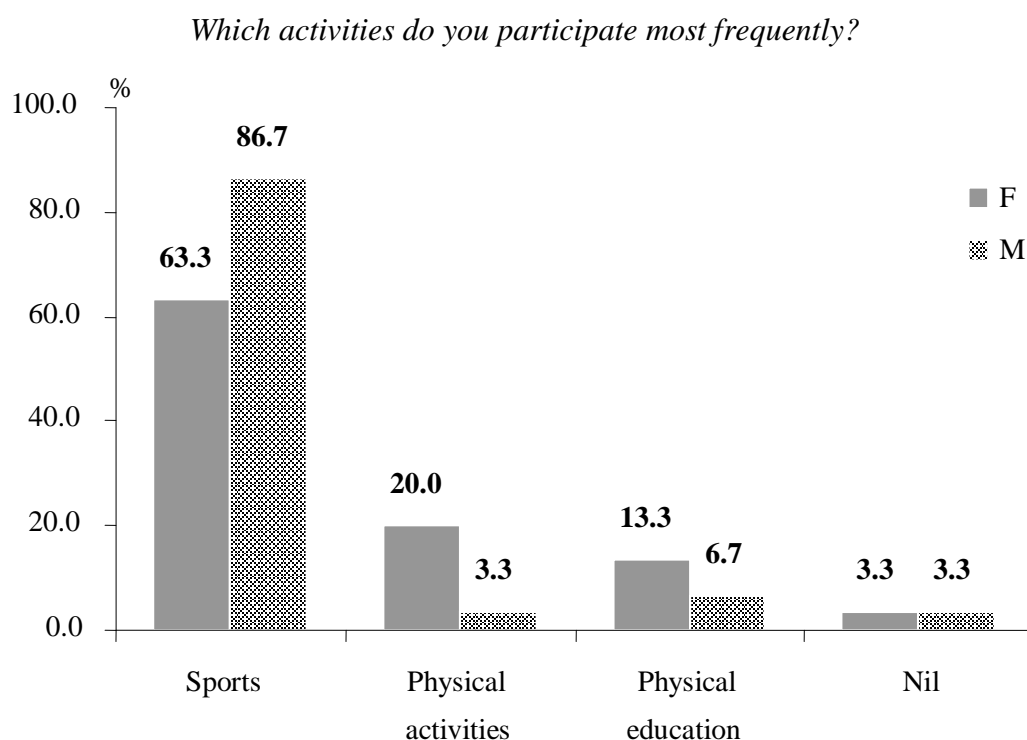


Figure 5.9 Types of exercises most frequently done by healthy adolescents

Twenty percent of healthy respondents, mainly female, reported exercising only in class; this generally does not provide adequate exercise intensity (Sallis and Patrick, 1994; Kohl and Hobbs, 1998). It is evident that in the US, children participate only in a limited number of physical education classes, and schools offer little support for this subject: physical class is often replaced by other subjects (Kohl and Hobbs, 1998).

Among respondents who played sports, as presented in Figure 5.10, males rather than females had moderate to vigorous levels of exercise, while female respondents had more light exercise. The figure showed that females (16.6%), rather than males (10%), attended physical education classes and never exercised, suggesting that female respondents are more likely than males to exercise insufficiently.

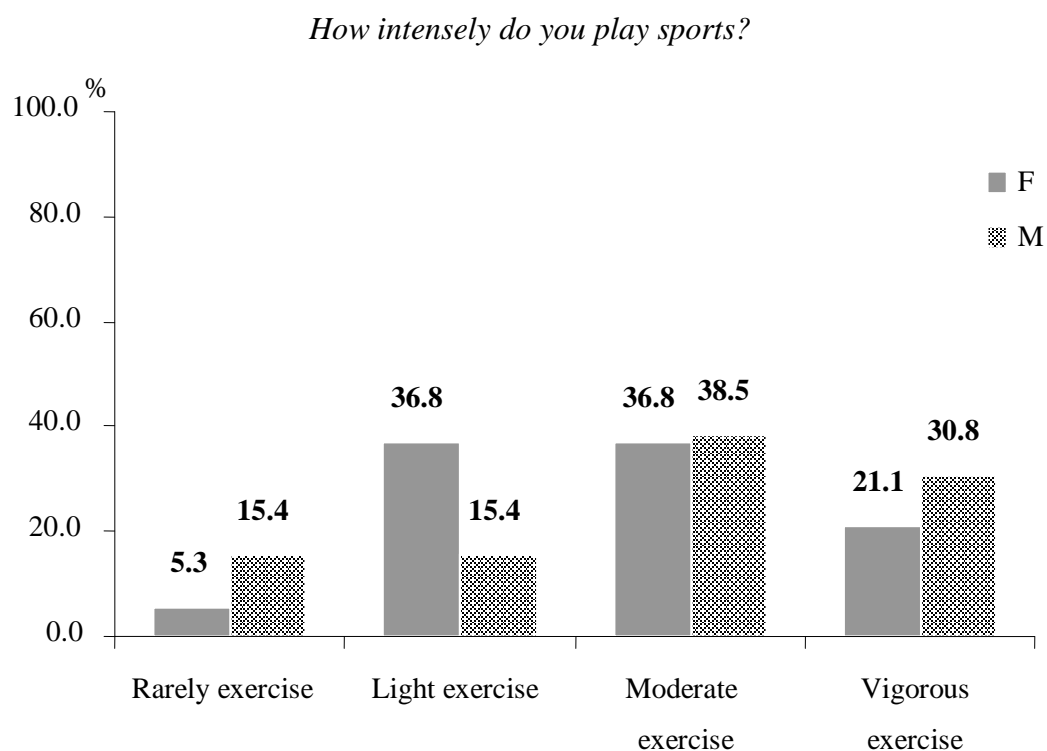


Figure 5.10 Intensity of exercise among healthy adolescents

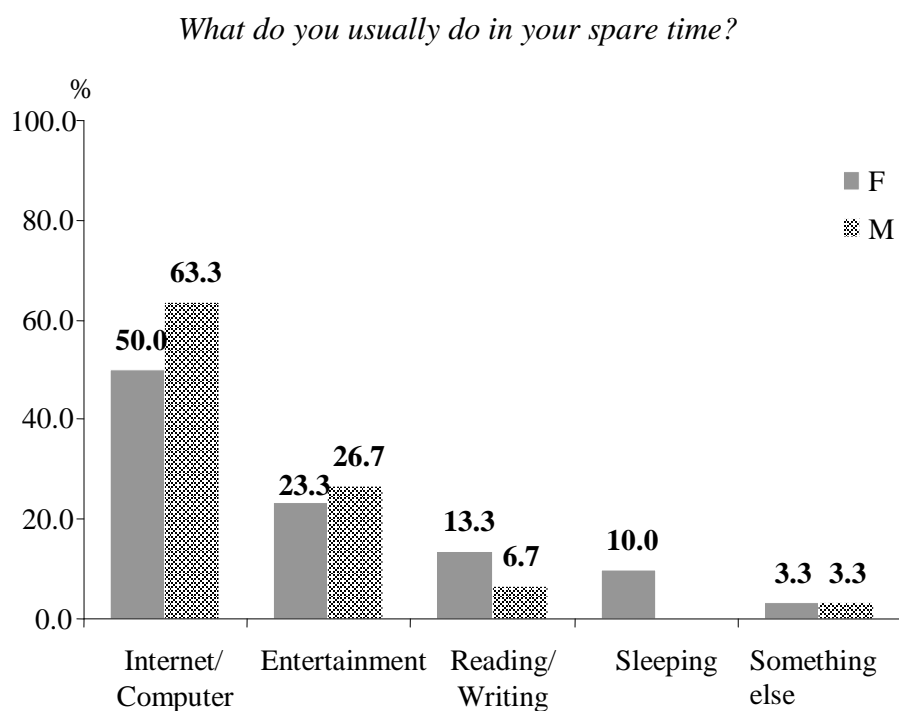


Figure 5.11 Activities frequently done in spare time by healthy adolescents

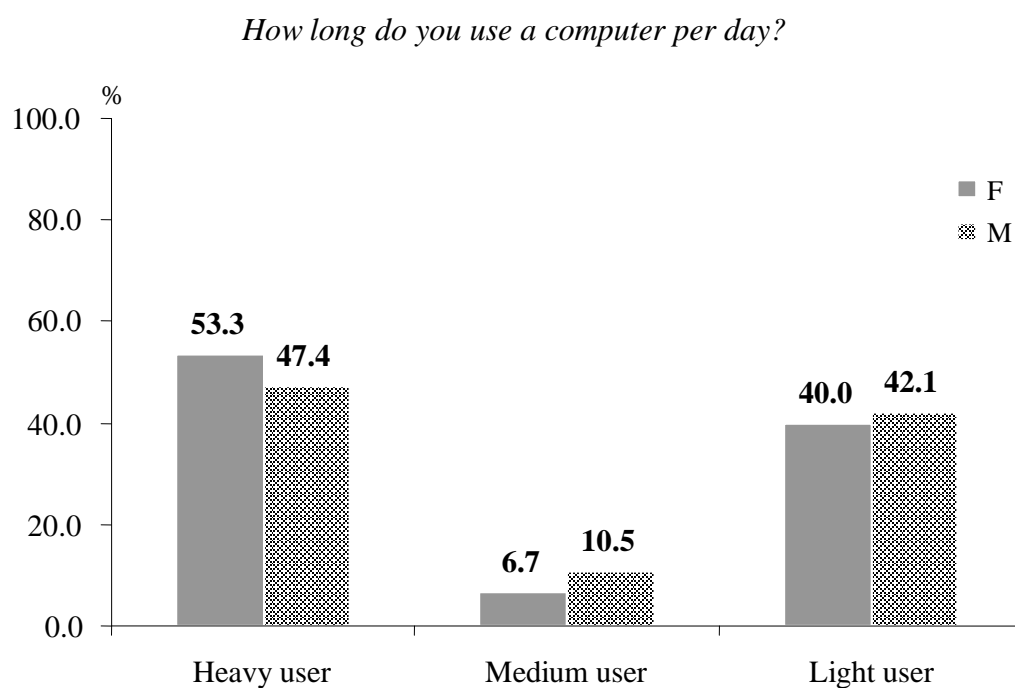


Figure 5.12 Intensity of computer use among healthy adolescents

As illustrated in Figures 5.11-5.12, the majority of healthy respondents most frequently played internet or used computers (males 63.3%, females 50%). Most young women (53.3%) and men (47.4%) spent more than three hours a day sitting in front of the screen. Male, rather than female, respondents were medium users (2-3 hours/day for playing a computer) or low (< 2 hours/day) computer users.

Other Thai studies on game addiction confirm the increase in playing online or offline computer games among adolescents in Bangkok aged 10-19 years (Hongsanguansri and Katumarn, 2006; Kanjanopas, 2007). Kanjanopas (2007) found that the proportion of males and females who were heavy computer game players was not different (52.2% vs. 47.8% of all heavy users). In this study, types of computer games such as sport, adventure and fighting were more popular among boys, while a Barbie fashion designer game was favoured among girls. Studies on the impact of using a computer suggest that sitting continuously in front of a computer or television screen for longer than three hours a day affects negatively both physical and mental health, and particularly playing video or online games is associated with obesity, as it reduces physical activity (Vandewater et al., 2004; Hongsanguansri and Katumarn, 2006). Therefore, using computers or watching television should be limited to two hours a day (Gortmaker, 2008).

According to my qualitative findings, all young participants mentioned playing sports, physical education, jogging, walking to school and doing household tasks, and this was consistent with definitions of physical activity, as outlined by Caspersen (1985). None mentioned exercising during childhood. However many reported undertaking some physical activities such as household tasks, and attending physical education classes as a compulsory subject at school. Males, rather than females, engaged in playing sports during class, after lunch and after school. Young participants

who were studying at the university mentioned that the higher the level of education, the less exercise. Particularly when they studied in high school or in university, they rarely or never exercised because of many assignments and examinations. Other studies on physical activity behaviours among young people report similar results (Mo-suwan et al., 1998; Cleland et al., 2008; Pittet et al., 2009). In addition, at the time of the interviews, the majority of young participants still exercised little and were inactive, spending most leisure time viewing television and playing online computer games. One of them explained:

At weekends I eat and sleep at home. I usually play online computer games like a tryout player as I want to try a new game. You know, it's quite boring when being at home. Sometimes I play the whole day and often I play [games] and eat [snacks] at the same time [Sib-ed, 16, type 2 diabetes].

According to my data, computer use among both adolescents with and without diabetes is about the same. However, among young participants with diabetes, males were more likely to play computer games than females.

Caregivers in my study also reported their child's sedentary behaviours, including sleeping after eating, playing online games the whole day, no exercise, and watching television for several hours; they all were considered to be causes of their child's obesity. Watching television and eating foods, snacks and/or soft drinks were common among this group. Some parents tried hard to encourage their child to exercise because they did not voluntarily participate:

It's like pushing her [Sri] to exercise – I mean walking. She is fat and not happy to walk as it's both tiring and [it is] warm. We did it only twice and then stopped. I didn't want to force her again. I know she won't do it anymore. Even her grandmother and her aunt try to encourage her to be

active like sweeping up the house, but it doesn't work for her [Sri's mother, 52].

Like Sri's mother, other parents indicated that their children were not active. In addition to individuals' preference for sedentary activities, some parents pointed out the limited space in which they lived and lack of public space for exercising. Some also spoke about competing interests between work and leisure. All my findings from adolescents with and without diabetes are supported by other Thai studies (Mo-suwan et al., 1998; Thamrongloughaphun, 2003; Un-Em, 2007; Tripathi, 2008). These studies also suggest that parents have limited time to take their children out to exercise; children are occupied with school assignments and spend many hours attending both regular and extra classes; and sedentary activities (e.g. playing computer games, surfing the internet and watching TV) were common leisure activities. Such activities distract from exercise and sport practices, and decrease a close relationship between parents and children (Khemmani, 1994). Additionally, parents' restrictions of their children to the home is due to perceived insecurity outside the home, and this negatively affects children's development, their social interactions and freedom (Sidebotham and the ALSPAC Study Team, 2001). Safety was the greatest concern among the parents in the ALSPAC study (ibid.); with parents' worries associated with both dangers from traffic and from strangers. These concerns have led to restrictions on children's movements, affecting the young participants in my study.

These studies reflect the fact that Thai parents' perceptions and attitudes in rearing children have changed according to environmental and cultural transitions worldwide. Thai family relationships and kinship ties today appear to be weaker than in the past (Thai Webmaster Association, 2007). Previously, Thai children frequently played outdoors, usually playing in groups with an unlimited number of players and no

complicated rules, and with simple and natural materials such as wood and rocks (Khemmani, 1994). With such outdoor activities, they had fun, exercised, and practised their abilities in body movement, cognition, observation and decision-making. The close relationship between parents and children was evident from children's activities, as parents usually made the children's toys, played with them, and educated them while playing (ibid).

In general, school now may be the best place to increase physical activities and exercises among young people but, in fact, according to my interview data and other studies, this does not occur. There is a lack of space for children to play and exercise, as schools demolish sports grounds and build new study buildings and reduce physical activity and focus more on academic classes (Thailand National Health Foundation, 2007). My young participants with diabetes commented that the school environment did not produce space or encourage sports:

Previously, there were basketball grounds and playgrounds on 70% of school areas, but now there are hardly any left. They [the school] have constructed buildings and they will have bridges between the buildings so I and my friends have no place to play basketball [Hawk, M, 12, pre-diabetes].

A 2002 school survey in Switzerland examined barriers to sport practice among adolescents with and without chronic illness (Pittet et al., 2009). The results suggested that lack of time was reported frequently by both females with and without chronic illness and by healthy young men. There was contradictory information from young men with and without chronic illness: healthy young men reported lack of time, but young men with chronic illness indicated their preferences for other activities as a barrier. Adolescents with diabetes in my study also reported these barriers. For example, the statement "I don't like" or "don't want to exercise" was frequently mentioned by

these adolescents, suggesting their dislike of exercise as a barrier to physical activity. Additionally, young participants who rarely exercised mentioned that their parents also rarely exercised. Over half of the parents or caregivers in this study did not exercise because they did not like doing so, and because they worked hard. Out of 16 young participants, only five had family members who participated in exercising with them during childhood. However, in a few families, although parents exercised regularly, young participants did not increase their exercises. Even though these few families had fitness equipment (e.g. a treadmill) at home, young participants rarely used them for exercise. One of them explained that she was happier to exercise with friends or family members outdoors than indoors, as she got bored when exercising alone in a limited space. In this case, having space and fitness equipment at home, expected to be more common in families with high socioeconomic status, did not increase this girl's physical activity. Instead, companions or friends are likely to be an important factor to promote exercising among young people, and study participants mentioned friend's involvement in physical activities.

Obesity research suggests that overweight or obese people, particularly females in different cultures (i.e. Turkish, Thai and Latina), are greatly concerned with their weight (Contento et al., 2003; Ozmen et al., 2007; In-iw et al., 2010). While historically people associated body fat with wealth, success and health, today people increasingly prefer a relatively thin body image as attractive, fit and healthy. Quantitative studies on adolescents in Thailand and Turkey suggest that adolescent obesity affects negatively their self-image (reduced attractiveness), self-confidence and self-esteem (Ozmen et al., 2007; In-iw et al., 2010). In contrast, almost all adolescents in my study reported that being overweight or obese did not affect their social life; neither did they lose self-confidence nor feel ashamed. A possible reason is that these urban adolescents receive

public messages from various advertising media, including now a new website <http://www.jumboqueen.com> organized by Samphran Elephant Ground & Zoo Co. Ltd. (see an example in Appendix 8.1 – messages from “Jumbo Queens”), enhancing the value of self-confidence and self-ability irrespective of body size. In addition, a body size and beauty competition among obese women, which frequently appears on television, internet and in newspapers or magazines, demonstrates that stigmatisation and devaluing obese people is changing in Thailand (see Appendix 8.2: a picture from internet of a “Jumbo Queen”); the stereotype of people who are obese as lazy, inactive, ugly and silly has been minimized to some degree.

The one young woman in my study who felt ashamed of being fat is an exception. This is possibly because of her social and family environment: According to her mother’s account, she was socially isolated, seen by her parents as aggressive and disobedient, and regularly avoided social outdoor activities such as jogging with family members and going out with friends. It is difficult to know whether her feelings of “shame” are true or not. This young woman was also very quiet and uncomfortable, and gave very brief responses to questions in the interviews. Personality factors may have played a role, but my study lacks data on that issue, as this was not my focus.

Overall, adolescents in this study face both internal and external barriers to regular exercise. According to a systematic review (Korkiakangas et al., 2009), internal barriers refer to factors associated with individuals’ making choices, while external barriers refer to independent factors of individual’s decision-making. Like adults with pre-diabetes or type 2 diabetes (Lawton et al., 2006; Korkiakangas et al., 2009), lack of time, non-preference or low priority for exercise as internal barriers were commonly reported by my young participants. Feeling shame of being overweight or fat as a barrier to exercise was not mentioned by these young respondents, except for one young

woman (as discussed above). External barriers most reported were lack of companions and fun when exercising alone. Perceived benefit of exercise indicated a gender difference: while female adolescents had a goal of a slimmer body shape, males were more concerned about health improvements.

Family's health-related belief and behaviours

Parenthood, kinship, friendship and sharing food

Sharing food is a social activity, which involves social interactions and relationships within and among families and friends. A US study of Latino families reported that the father-child interaction frequently involves food, and fathers were more likely to either cook or buy unhealthy food than mothers (Kaufman and Karpati, 2007). One mother in my study also reflects on family relationships in relation to her child's food:

Some weekends when I was not at home, both of them [a young participant and his father] cooked for themselves, and they went through dozens of eggs within a few days. Sometimes, his aunt cooks lasagne with a lot of cheese. He [Hawk] likes eating cheese so much. When we lived with the paternal grandmother in the past, cheeses were commonly in the fridge. He'd come in and take one, and when he was going out, he'd also take another one. Cheese is the problem, I bet. Another problem was drinking Pepsi a lot when we lived with the maternal grandmother. My son [Hawk] was an excessive eater during childhood and at the time, I left him in a nursery. You know what happened to him. He usually helped his classmates to finish a glass of ice-red cordial. "No worries. I can finish it for you." [Hawk's mother, 46].

Another mother in an extended family faced difficulties in supervising the food her son would eat:

My son [Sib-haa] eats instant noodles every day after school as his aunt cooks for him. Despite seeing this several times, I can't say anything because she is [a member of] his father's family, and she will not be happy if I say no to her [Sib-haa's mother, 44].

In extended families, mothers' autonomy is reduced as it is difficult for them to resist relatives giving less healthy food to their child, particularly if they are relatives on their husbands' side; paternal grandparents have the highest authority in Thai families. In nuclear families, family food prepared or arranged by mothers is primarily based on fathers' and children's preference, as one mother explained, "I often cook oily food such as fried pork and chicken, particularly Thai chicken. And we often eat Kentucky Fried Chicken as my husband and children prefer eating chicken and duck."

Caregivers described the ways in which they raised their children; this may be regarded as a contemporary pattern of child-rearing among parents living in urban Thai society: feeding their child too much food; preparing high protein and high fat food; purchasing street stall food or eating out; and making food available everywhere at home (e.g. children can find food easily in a refrigerator, on a dining table, on kitchen benches, and in cupboards). The reasons for such practices of child-rearing – generally indulgent - are associated with links between food and displays of parents' devotion and love, family preferences for a chubby child, and the values placed on food with high fat and high protein. Below is an extract from an interview with one mother, who associated family food habits with diabetes:

All those things, which one do you think is the main cause of her diabetes?

Um... eating, I think. I actually don't want to put the blame on anything. All I did, I gave best to her. That was *yud yeard hai kin* [feeding children too much food]. Her father likes cooking and tells her to eat up, and that led to her developing the habit of excessive eating. And in this house,

there is food on the table all the time. All of us are like this, if anyone is hungry or comes in, then he/she eats. So she (Sri) is surrounded by the food – she eats and goes, and then comes back to eat again. Another cause is that (we) parents were not with her when she was very young. So she may feel like there's a lack of warmth, and so she has compensated her feelings by eating a lot. But I'm not sure whether it is a cause or not.

Sri's mother's views were reflected in other families who spoke about child-rearing. For example, Sib-sii's mother shares similar experiences of coming to terms with her child's negative health outcomes, which she saw as the result of nurturing, i.e. love, expressed through cooking and feeding. Sib-sii's mother said:

Because of eating, he's got diabetes. In the past, when I cooked wonton soup or deep fried wonton, I put a lot of pork in it because I love him. When he asked me for one more bowl of wonton, I gave it to him too. So he ate two big bowls of wonton, about 20 pieces in total; the wontons, which I made, were bigger than those that were sold at stalls. This [diabetes] happened because of me. I really didn't know it would have a bad effect on him, later [Sib-sii's mother, 43].

Role models: Parents' unhealthy behaviours

Parents provide a role model for their children. Children also absorb parents' and/or other family members' behaviours through observation of adults or by cultural interactions and copy these behaviours (Pyke, 1986). A US study demonstrated that the majority of Latino mothers believed that their children developed their eating habits and behaviours from their own behaviour (Gomel and Zamora, 2007). Therefore, role modelling can have both protective and harmful effects on the children's health behaviour (Un-Em, 2007). As mentioned earlier, 50% of all young participants have family members (mainly fathers) with type 2 diabetes (see Table 5.1). Most fathers and others (i.e. a mother, a grandmother and an aunt) who had diabetes did not change their

behaviours and continued to eat fried foods, desserts, sugar-added foods and drinks, and soft drinks, although they reduced or limited these foods on some occasions (i.e. before a regular blood check-up or when their blood sugar increased by using a glucose meter at home). This adult behaviour - manipulating blood sugar control to avoid doctors' blame - is also reported by Naemiratch (2006). One mother in my study described her behaviour, and her husband's behaviour, when he was alive:

He [her husband] had diabetes for four or five years before he died; he had liver disease as well. He loved drinking whiskey and when he had diabetes, he just changed to drinking a bottle of wine every day. We ate out for almost all meals, either with friends or by ourselves. Neither of us likes eating vegetables. However, we tried to tell our daughter [Song] to eat some, but it often didn't happen. I also like both Western and Thai desserts but not soft drinks. We don't do exercise, because we don't like to exercise and she [Song] doesn't like it either [Song's mother, 49].

Other mothers also mentioned fathers' poor food consumption. For example, one mother said: "See his father. He usually refuses to eat all vegetables." Another mother said: "The father is not a good role model for eating food, as he likes eating sweets, snacks and drinking soft drinks. My son copies his father." One young participant said that he would drink soft drinks every day, as his mother, who did not have diabetes, liked soft drinks and drank them every day as his family ran a grocery shop. All young participants, before they had diabetes, had the same health behaviours. However, the findings suggest that even in families where fathers had diabetes and followed a healthy lifestyle (but only following complications), young participants did not change their behaviours after diagnosis. It is possible that these fathers are not "healthy" models until they develop complications. Therefore, these young participants' behaviour is predicted

to be the same as their fathers'. That is, young participants may be willing to change their health behaviours only when diabetes complications become apparent.

Parents' voices: "Fat" children and food enjoyment

Food is a basic need and usually gratifies people. Within the family, food may be used as a reward, or an encouragement to control children (Manderson, 1986). Feeding children, as a means of entertainment, is frequently unhealthy and involves eating out (Gomel and Zamora, 2007; Kaufman and Karpati, 2007). As Sri's mother explained:

Since her birth, I have worked in Bangkok and came home only at weekends. This made me feel guilty as I didn't spend much time with her like other mothers. I wanted to please and entertain her [Sri], and compensate for taking care of her rarely. So I took her to eat fried chicken, her favourite food, at a KFC outlet, almost every week. This would be a cause of her obesity, I think [Sri's mother, 52].

In turn, families are pleased when they see their children enjoy eating food and they look chubby (*jummum*). The appearance of chubby children is also linked with families' notions of "good" or "bad" parenting and food prosperity in the family (Gomel and Zamora, 2007). The concept of "good or bad parenting" in an Australian study is associated with "healthy or "unhealthy" food-purchasing behaviours of the family (Noble et al., 2007). In this study, women applied the term "good parenting" to include the provision of healthy food to ensure their healthy children, with food symbolizing their love for their children and the dimensions of a sense of responsibility. However, mothers find it difficult to encourage their children to eat healthy food such as fruits and vegetables (*ibid*). The study also suggested a paradox in parents' food choices: some mothers, although aware of buying "healthy" food, still prepared or allowed their children to eat "unhealthy" food.

According to my study, parents perceive “good parenting” in relation to food as children’s pleasure and enjoyment, and this also involved social norms (i.e. abundance of family food or chubby children representing “good parenting”). Mothers prepared or bought “unhealthy” food such as Western fast food because their children preferred eating this kind of food. Some mothers valued Western fast food as expensive food or food for rich families, and so its provision was a way of indulging their child. “Good parenting” is also associated with the social norm of body image. The quotation below shows that mothers were pleased with their child’s body image:

I know she [Song] is fat, but many people say that she’s so cute. She is both cute and active, so I don’t think her fatness is abnormal [Song’s mother, 49].

Another mother was of a similar opinion, “I raised him and saw him become bigger and for me, he was so cute.” Being a chubby child is a consequence of parental preference and belief, such as nurturing with plenty of food a “special” child (i.e. the first child or the only child of the family, or the “ill” child). As one mother recounted, “She [Sri] has been fat since she has been very young because of being the first child. I felt that I wanted to feed her until she was full with rice, egg, pumpkin and so on.” In a developing country such as Thailand, a chubby child generally may symbolise the high socioeconomic status of the family. My findings reveal that raising a chubby child signifies “good” parenting. Children are provided with abundant food even when families have an average financial status, as slim children were perceived to indicate that the family is poor. As one caregiver said, “We raised him [Nueng] quite well, and we never let him go hungry or starve. Instead we fed him with a lot of food, although our family is not rich.”

Parents' voices: Lack of concern about food and fatness

Despite perceiving their child to be fat or obese since childhood, no caregivers considered that fatness could harm their children later in adolescence. Instead of being concerned about the children's health, parents focused more on food quantity and the amount of money they spent on food. As a result, their children developed habit of eating excessively:

We frequently take him to eat *Moo gatha* (Korean-style grilled pork) every week or sometimes twice a week. We did this in the past, before he got diabetes. This was because I didn't cook dinner and we usually ate out on Fridays and Saturdays, so he [Hawk] ate freely whatever he liked. And eating *Moo gatha* is quite cheap and it is like a buffet, you can eat as much food as you can. I think my son is obese because of eating *Moo gatha* and at that time, I didn't realise that it could make him fat like this [Hawk's mother, 46].

Being thin is of greater concern than being fat in many Thai families. One mother was worried about her thin child as he looked "sick" and "fragile." In contrast, her "fat" child appeared to be "healthy" and strong, so she believed that there was nothing to worry about. Mothers who had higher education actually knew of the dangers of obesity, but did not act on the knowledge, while those with low education knew little about obesity-related problems. One mother in the latter group – Kaow's mother - blamed herself as a "poor" mother, due to her lack of knowledge of feeding her child (Kaow) appropriately, and believed that she had caused Kaow's obesity:

If I could rewind the time, I wouldn't have raised him as I did. I wouldn't have given Pepsi and fatty food to him. After I got the doctors' messages, I felt guilty that I hurt him unintentionally. I didn't really know that what I fed him was wrong. They [doctors] thought I raised him badly. At that time, I never thought much about any effects of fried food. I simply

thought, I saw my son enjoy eating such kinds of food, so I cooked it routinely [Kaow's mother, 44].

A US study of restrictiveness of food accessibility and children's weight gain suggested that the more parents restricted children's access to food, the more likely the child's weight increased as children compensated their favourite food (mostly unhealthy food) when being with friends or relatives (Birch and Fisher, 1998). This is not consistent with my study, in which most parents reported that they allowed their children to have access to food, including energy dense food, easily. It can be assumed that prior to diagnosis, childhood obesity among young participants was possibly associated with parents' failure to restrict access to food. In addition, parents did not consider that their children's obesity was a risk factor for the development of pre-diabetes, type 2 diabetes, or metabolic syndromes, and so were unlikely to prevent their children from consuming unhealthy food.

Parents' voices: No solutions, "I have to let him eat, though"

As I have already argued, the development of children's food preferences and eating habits in childhood is primarily shaped by parents or alternative main caregivers and food availability, as well as early experience in food tastes and observation of parents' or family members' eating patterns (Birch and Fisher, 1998). Hence, children's preference for high fat food and their overeating was embedded in their habits from childhood to adolescence; and so it may not be easy for some children and adolescents to later modify their eating habits and behaviours. Many parents in my study faced difficulties prior to their children's diagnosis in dealing with their children's overeating, and they mentioned that they could see no way out of the problem even though they tried to limit their children's food:

She [Sam] ate frequently and excessively. Once I gave her less, she didn't accept it, and started crying and cried all the time. What could I do? [Sam's mother, 49].

If I had restrained myself not to allow him to eat much, he would have been very upset. His father wouldn't be happy when he saw the child upset. In the end, we had to allow him to eat again [Hawk's mother, 46].

When he [Sib-hok] was in kindergarten, he always asked for two servings. I asked his teacher to give him half a ladle of rice for each serve. It was his habit of having rice twice. But it did not work as he was not full and asked for more. Finally, the teacher had to do the same [laugh], and we couldn't change his eating pattern [Sib-hok's mother, 51].

It's too late to fix him [Kaow] because he has been used to eating a lot for many years. Although I warned him not to eat much, he didn't listen to me and kept eating. He sometimes debated, "It doesn't matter. If eating like this makes me die, let me die." You know, his response made me really upset. This was because of his immaturity and if he desired to eat, he usually did [Kaow's mother, 44].

Child-rearing and parenting styles

In the past, a typical Thai family was extended. Family members such as grandparents and aunts, in addition to mothers, took part in the role of child-rearing. Thai mothers generally have the greatest responsibility for rearing children, particularly if a child is chronically ill (Athaseri, 2007). Although in contemporary Thailand the residential family is commonly nuclear, consisting of only parents and children, strong ties within the broader family still exist. Thai children are still sometimes adopted by relatives for various reasons: parents cannot afford the financial burden of nurturing many children; both parents work hard and do not have time to look after children; or relatives do not have their own children. Although in recent years, the use of nurseries is increasing

particularly in urban areas, Thai middle class and richer families are more likely to employ a baby-sitter to look after their young children, because relatives live separately and at a distance, and have limited time due to their own participation in the workforce. Although the father's role has been expanding to the involvement of household tasks and as a main caregiver, on the whole, primary care giving is still the mother's role, and mothers' education is the most influential factor in child-rearing (Natamongkonchai, 2004).

The word "child-rearing" in Thai is *karn obromlieangdoo-dek*: the suffix *dek* is child; *karn obromlieangdoo* is a noun containing two keywords – *karn obrom* (training) and *karn lieangdoo* (nurture). According to Isaranurug (2007), *karn obrom* includes a sense of suggesting, teaching, educating and passing on cultural knowledge, disciplines, attitudes, beliefs, values and aspirations. *Karn lieangdoo* is defined as caring, in response to the physical and psychological needs of a child. Therefore, the dual roles of nurture and education are explicit in the term *karn obromlieangdoo-dek*.

Child-rearing practices vary due to differences in the culture, beliefs and way of life. For example, in Chinese cultural settings where Confucian beliefs predominate, parents believe that children who are born in poor families can achieve their goals, if they exert themselves and work hard (Rao et al., 2003). Chinese parents also instill filial piety and the value of academic achievement in their children. These Chinese beliefs are adopted by Thai-Chinese and are mixed with Buddhist beliefs. As many Thai people have Chinese ancestors, child-rearing in Chinese-Thai families is influenced by both Confucian and Buddhist beliefs. Thai families generally have three major goals in bringing up a child: to be healthy, to have good manners, and to make virtue through action, speech and thought (Isaranurug and Suthisukon, 2007). They also have high expectations about children's academic achievement.

Parenting styles may be important for understanding the experience of young people with pre-diabetes and diabetes. Parenting style, according to a US study, is defined as a characteristic of parents that is stable over time and has an effect on a child's characteristics as well as social, emotional and intellectual development (Rhee et al., 2006). According to a review of the Thai literature on parenting styles (Natamongkonchai et al., 2004), it can be concluded that classifications of parenting styles vary and there are more than four parenting styles, with some styles relevant to Baumrind's classification (Baumrind, 2007). However, unlike Western cultural patterns, the patterns of parenting in Asia (including among Thais) are characterised by interdependence within the family. Parents are often said to be over-protective and permissive (Isaranurug and Suthisukon, 2007). Parenting styles in Western countries have been categorised by Baumrind (2007) into four styles: authoritarian, authoritative, permissive, and neglecting. The categorisation considers parent-child interaction along two dimensions – parental demands (referred to as maturity demands, supervision, and behavioural control) and parental responsiveness (referred to as warmth or supportiveness). My justification for employing the Baumrind's model has been already provided in Chapter 3 – the section of theoretical framework.

I have categorised four patterns of child-rearing in Table 5.4: *Pa-dedkarn* (authoritarian), *Mee hade pon* (authoritative), *Taam jai* (permissive), and *Ploipla-laloei* (neglecting). Four dimensions (themes) – parental control, parental expectation, parent-child communication and child's obedience – are used to categorise these parenting styles. In the domain of parental demand, in my study, I refer to the dimensions of parental control and parental expectation. The parent-child relationship is divided into parent-child communication and child's obedience. These themes, emerging from interview data of adolescents and their families, make my classification of the four

parenting styles clearer and more compatible with the Thai cultural context and Buddhist beliefs, when compared with Baumrind's model. However, although the main concepts of each parenting style in any culture are similar: authoritarian – power use, authoritative – reason use; permissive – no power use; and neglecting – ignorance, there are differences in detail deriving from different cultural roots and beliefs. For example, corporal punishment involving hitting children may not be acceptable by authoritative parents in many European countries because of its negative impact on child's behavioural outcomes, such as depression, aggression and disobedience, and because of the legal environment (Hindberg, 2001; Council of Europe, 2007).

Table 5.4 Characteristics of child-rearing styles among study families

Dimensions	Authoritarian	Authoritative	Permissive	Neglecting
Parental control	High	Fair	Low	Low
Parental expectation	High	Fair	Low	Low
Parent-child communication	Low	High	High	Low
Child's obedience	High	High	Low	Low
Numbers and Examples of study families	N = 2 Sib-haa Ha	N = 8 Sib-sii, Sam, Hawk, Nueng, Sib-song, Sib-hok, Sib- jed, Sib-pad	N = 2 Song Sib	N = 4 Sib-sam Sri, Kaow, Sib-ed

The issue of smacking children within the family has long been debated, particularly in Western countries (Mason and Gambrill, 1994). However, parental smacking or spanking in the US and in many Asian countries including Thailand is common and legal (Mason and Gambrill, 1994; Isaranurug and Suthisukon, 2007). Research on corporal punishment by parents in the US found that the combination of punishment and reasoning reduces the subsequent misconduct recurrence among children, i.e. a recurrence of fighting by 32% and disobedience by 16% (Larzelere, 1994). Recently, Australian public media revealed that 92% of people in Victoria accept parental smacking, and one young woman who was smacked as a child reported that she agreed with parental smacking as it made her respect her parents and what they were teaching her (Moor, 2010). According to Larzelere (1994)'s study, the combination of physical discipline and reasoning is likely to have a positive effect on child development, as children accept and understand the punishment that they receive. On the other hand, punishment without explanation by authoritarian parents, or emotional punishment without reason by neglecting parents, would result in harmful side effects on child development (Straus, 1994). This is because children do not understand why they have to be hit, therefore they do not accept and resist their parents' actions or messages, leading to child's further depression, aggression, disobedience and resistance.

In my study, physical punishment appears to be common in almost all parenting styles, except the permissive style. This Thai tradition of child-rearing from generation to generation is reflected in a Thai proverb *rak wua hai pook, rak look hai tee* – “if you care for your cows, tie them up; if you love your children, beat them.” This punishment is more likely to be applied to boys than girls. Compared with other parenting styles, authoritative parents, when spanking their children for telling lies, for example, usually explain to their children why they are being punished. Sometimes a parent may ask a

child, before administering a punishment, “Do you know whether what you did is wrong or right? Why did you do that? And how should you be punished?” Then parents explain and educate their children to do the right things, whether the children give an answer “yes” or “no,” or keep quiet.

In the following paragraphs, I discuss parenting styles among my young participants. I also describe characteristics of each parenting style, providing examples of the family backgrounds of four participants (Sib-haa, Sib-sii, Song and Sib-sam) in text boxes. I then identify potential parenting factors affecting childhood obesity. I intend to provide a snapshot of parenting styles among my young participants’ families, to be discussed further in relation to diabetes self-management styles in Chapter 8. As mentioned earlier, parents’ characteristics associated with their parenting styles rarely alter across time, despite having a child with chronic illness; therefore, parenting styles appear to be integrated as a part of diabetes self-management styles.

Authoritarian parenting style (pa-dedkarn)

Pa-dedkarn is a relative rare parenting style in my study. Only in two families (Sib-haa’s and Ha’s families) were parents, particularly fathers, the most powerful persons, affecting children’s habits and behaviours including in relation to food and health. Children growing up in this family environment, particularly in an extended family, are less likely to resist their parents’ requirements or to express their opinion to parents or senior relatives. The authoritarian parenting style in this study is categorised by high parental control and parental expectations, a distant parent-child relationship, and child’s obedience. Sib-haa is an example of children growing with this parenting style. His family background is provided in Text box 1.

According to my interview with Sib-haa, his relationship with his parents is rather distant when compared with that with his younger brother, Daeng. Both Sib-haa and Daeng often talk to and consult each other when one or the other has a problem. However, the mother claimed that because of the way she takes care of Sib-haa, including complaining, scolding and forcing, her son may think she does not understand him, and this has led to a distant relationship.

Text box 1 Sib-haa's history

Sib-haa is 16 years old and is growing up in a Chinese-Thai extended family with his grandparents (on his father's side), aunt (father's older sister), his parents and a younger brother - Daeng. The father, as a head of the family, is the most powerful in this family. Although mainly his aunt raised Sib-haa, his mother took responsibility for him as the primary caregiver, e.g. providing financial and academic supports, education, and seeking treatment. His aunt is responsible for cooking food for the whole family. Sib-haa is the first child of the family and is studying in the 10th grade. Both parents graduated in accounting at the same university. His mother is 44 years old, working as an executive accountant; at the time of being interviewed, she was studying for a Master of Business Administration. His father, aged 49 years, had already completed a master's degree and ran his own business. His parents' income was approximately 300,000 – 400,000 baht¹² per month. Sib-haa has health problems, including lipids accumulated in his liver and pre-diabetes; he is also obese (age- and gender-specific BMI percentile = > 95; obesity level 3). His father and maternal grandfather also have type 2 diabetes.

¹² AUD 10,000 – 13,000 per month (1AUD = 30 baht)

The excerpt below illustrates that when the mother teaches Sib-haa about food issues, for example, she applies a combination of negative statements and incentives to encourage a behavioural change:

I sometimes teach him that if you speed up eating any food which is not nutritious and delicious and then you get fat early like this, in the future you will not be able to eat anything at all. Otherwise, I tell him “well, Sib-haa, [if you] become thin first, one day mama will take you out and you can eat as much as you can...eat freely because it will be your special day. But you must be thin first [laughing]” [Sib-haa’s mother].

Unfortunately, the incentive - eating as much as he can - would compromise further his health outcomes. The mother in this family often uses “must”, “don’t” and “stop” words in her conversation with her sons. These words imply control, command and instruction: Sib-haa must follow his mother’s orders, whether or not he agrees with her. It is compulsory for Sib-haa and his younger brother to obey their parents, as they have been raised according to Confucian and Buddhist precepts (described above), as understood by Chinese-Thais. Based on the mother’s account, it appears that the parent-child relationship in this family had limited two-way communication (i.e. mostly, the mother talks and her sons listen), less consulting between children and parents, and the children spend most of the time with each other rather than their parents (e.g. having dinner together without their parents, playing computers, and talking).

Children in an authoritarian family are usually obedient to their parents; Sib-haa is an example. Sib-haa’s younger brother, Daeng, indicated that in the past, when Sib-haa was not fat, his mother frequently forced him to finish all food, ordering him to “clean all plates” if she saw food left on the table. Sib-haa had to follow her orders, and it seemed to become his responsibility to finish all food. From this, Sib-haa may have

developed the habit of eating excessively, leading to overweight and then obesity. Daeng said that his mother had subsequently done the same with him, as Sib-haa was already fat but he was not. Daeng also explained that his mother was concerned about her own weight rather than his weight or health outcome, because she thought men should not worry about body image. He was concerned about becoming obese and developing pre-diabetes too, and thus his mother would be more involved his life in the same way as she is with Sib-haa. Daeng attempted to avoid this happening by rejecting requests to finish the leftovers or to eat food that his mother did not like or did not want to eat.

As illustrated by Sib-haa's family, parental expectation can reduce children's academic performance (i.e. having a low school grade). Regarding high expectations in children's education, Sib-haa and Daeng have parental pressure to study, as their parents expect them to have high marks in all subjects. A reason behind this is a social norm: Sib-haa's parents have high academic achievements (i.e. getting the first or the second top grade of the class) and high socio-economic status when compared with their relatives or friends. Therefore, Sib-haa is also expected to achieve well in education and to run the family business (as the first son who responds to maintain the family line, according to the Confucian belief) to maintain the family's and their own social status. Sib-haa explained that this parental pressure affected negatively his school grade, and he felt that he could not live his own life.

Despite the mother being the primary caregiver, others influence food consumption. In this case, the parental aunt is the family cook. This affects Sib-haa's obesity, as his aunt frequently cooks oily food and allows him easy access to unhealthy food such as snacks and sweets. Because of his obedience and fear of making his aunt angry, Sib-haa rarely rejects his aunt's cooking, despite it being salty and oily. Although

his aunt plays one of the key roles in the family, I did not interview her as she refused to participate in my study. According to Sib-haa and his mother, there was conflict between the mother and the aunt in relation to the child's food after Sib-haa had been diagnosed with pre-diabetes. For example, the mother restricted Sib-haa's consumption of oily and sugary food, but the aunt allowed this. Hence, Sib-haa must be obedient and negotiate both his mother's restriction of and aunt's allowance of access to food. Judging by his weight, he has not managed this successfully.

Authoritative parenting style (mee hade pon)

This parenting style is regarded as one of the most effective parenting styles in relation to children's behavioural outcomes, particularly among adolescents, with its emphasis on self-control, discipline, academic achievement, obedience, and positive mental health (Isaranurug and Suthisukon, 2007). My study found that, among the 16 families, authoritative parenting style is the most common style (eight families). Sib-sii, as a case sample of this common style, provided his family background in Text box 2.

Sib-sii's family is a prominent example of an authoritative parenting style with the key features being child-centred care, parent-child relationship (closeness, warmth, creative communication, and child obedience); parental involvement (logical teaching, engaging in both general and specific care); flexible parental control; and a combination of punishment and reasoning. The relationship between children and parents in this family is close: active communication, more parental involvement, and children's obedience. In Thai culture, children are not allowed to tease their parents, but must show high respect. However, the closeness of the father and son is illustrated by Sib-sii's parents:

Simply, I'd say, I don't seem to be his father, perhaps (his) brother, either older or younger. Whatever I am, he can tease me as I never get angry with him [Sib-sii's father, 42].

Text box 2 Sib-sii's history

Sib-sii is the first child in a nuclear family and has one younger brother. At the time of being interviewed, he was 13 years old and he was in the 8th grade at school. His mother was 43 years old, was running a bakery shop, and had a bachelor degree in nutrition; his father was 42 years old and worked as a banking employee; he had a diploma. His parents' income is approximately 30,000 baht per month (AUD 1,000). Sib-sii has health problems, including allergies and pre-diabetes, and is obese (weight = 68 kg, height = 160 cm, age- and gender-specific BMI percentile = 95-97; obesity level 2). He has a strong family history of diabetes, including his father and both grandparents on his mother's side. In this family, the father shares the responsibility for child-rearing: Sib-sii's mother is mostly involved in food preparation for the whole family and provides special care for Sib-sii, regarding his health conditions, while his father is mainly involved in education, physical activity, spare time activities, and medication.

The father in this family is very supportive and involved in Sib-sii's everyday life, both in general (study, talk, household tasks, and computer use) and in his health care (drug intake). He also applies indirectly different ways to ensure that his son uses the computer in an appropriate way:

If it's about studying, I check his school bag and timetable every day. And ask him, [is there] any homework, any assignments? How is your study? I'll talk to him while driving on the way home. Sometimes he replies to me, but sometimes he doesn't. I try to encourage him to talk: this evening, what do you want to eat, or what do you want to learn? If my wife is not home yet, I do the household tasks, such as cleaning the

house, preparing things, and washing dishes. I also watch them [both sons] spending time playing on the computers. I use indirect ways: I ask the younger one what the older one plays; sometimes I pretend to take some fruit or milk to them in their bedroom; and ask for the password so that I can check what they have done [Sib-sii's father, 42].

Although Sib-sii's mother is rather authoritarian, on the whole, both parents can be described as authoritative. For example, Sib-sii's mother, when angry with Sib-sii, occasionally punishes him by hitting. His father, although he uses the same punishment, provides an explanation and reasons for punishment to Sib-sii, without showing anger. The primary reasons that these parents punish their children are for quarrelling with each other and demanding to play outside when their parents refuse permission. Below is an excerpt from Sib-sii's mother, presenting her concern about danger outside and her parenting strategy to deal with him:

Father...ur, he has hit the child only twice ever. This involves hitting, while telling [him] the reasons, such as that he quarrels with his brother. But I still spank him sometimes. Like in his childhood, when he came back from school, he wanted to play outside although it was a sunny day and I wouldn't let him as he was vulnerable to getting sick due to his allergic conditions. Instead, I told him to do his homework. Instead of obeying me, he just was mute – he'd sit, not move, not eat, and not take a shower. Then I would hit him and he knew that he would be punished when I got angry [Sib-sii's mother, 43].

Sib-sii's mother was concerned about her son's susceptibility to weather conditions and possible illness, when her child wanted to play outdoors. Therefore, asking the child to do homework seemed to be a good way to keep him in the house. On the one hand, the mother's concern about danger outside might be right. On the other hand, her child may have lost an opportunity to play as a child and may have been unable to develop his

physical and social skills. Additionally, if her son was exposed to sunlight, his health may have been improved, i.e. enhancing his immune system. However, the way this mother teaches her son is different from the father. The father uses more reason, while the mother acts more with emotion:

I teach my son logically. We will talk about reasons: What is not good, what is true, what he can't do, and why not? [Sib-sii's father, 42].

If I am in a good mood, [we] will play together like friends, like this. But if I get angry, I will hit him. I really do [hit] him by using a stick of wood: "When I'm in a good mood, I'm in a good mood; when I scold, I really scold" [Sib-sii's mother, 43].

Other families in this study, including those of Hawk, Sib-song, Sib-hok, Sib-jed, Sib-pad, Nueng, and Sam, also raise children with an authoritative style. I also found that mothers in these families tended to strictly control their children's eating behaviours, while fathers were more flexible and involved not only in general care, but also the health and illnesses of their child.

Permissive parenting style (taam jai)

A permissive parenting style in this study is categorised by low parental control, low parental expectations, a close parent-child relationship, and child's disobedience. This was a relatively rare style. It is most similar to the last style - neglecting parenting style - in all dimensions except for the parent-child relationship: distant relationship between parents and children is found in the last style. Song and Sib are examples of being raised in wealthy and permissive families. Song is indulged more than Sib, as Song is the first child and lost her father when she was young. I use Song's family for describing this parenting style. Song has never undertaken any household tasks, never got in trouble, and has reportedly never been punished by her parents or relatives. Her mother

indicated, “I never demand, scold and hit (her), never. Just only flatter her to do this and that. She is usually indulged by many people, such as the baby-sister. She usually gets what she wants.” Song is confident that she has been loved by her family:

Before my dad died, I stayed only with both parents, my sister was with my grandma and my brother lived with my aunt, who asked for him to be her adopted son. So I’m self-centred as dad and mum cherished me only.

The next page shows Song’s family background in Text box 3.

Text box 3 Song’s history

Song was a 19-year-old woman, studying in the second year of a public university. She is the first child, followed by a brother and a sister who have both been raised by relatives. Song has been in the care of her single mother, as her father died when she was five. At the time of interview, her mother was 49 years old, had a bachelor’s degree, and was working for a government corporation. Although the mother’s income was approximately 12,000 baht per month (AUD 400), she had a second income from her deceased husband’s business; she would not disclose this figure. Song’s family is from a high socio-economic class according to contextual evidence, including her late father’s business, the fact that her father was a politician, owned several houses, and frequently went out for dinner. Song was diagnosed with type 2 diabetes nine years ago and has had no other health problems. She has a strong family history of diabetes, including her father and both grandmothers. Despite being overweight (weight = 70 kg, height = 162 cm, age- and gender-specific BMI percentile = 85-90), she looked healthy.

Despite having a good mother-daughter relationship, Song has some negative behavioural outcomes, such as lack of self-control and disobedience. Her mother recounted, “I warned her but she actually didn’t listen to me. I now tell her to try eating vegetables and fruits.” Song concurred:

I'm an extremely self-centred person. So if mum says something, it doesn't matter. It's nothing. Even if mum inhibits me, I insist. I'm disobedient as the first child, absolutely stubborn [laughing] [Song].

The relationship between Song and her mother is very close and they actively communicate. When her father was alive, Song's mother claimed it was a perfect family with much involvement from her father in nurturing her, "Her dad was the key man to look after her. He managed all things, while I did few things. But since he passed away, I have always been with her [Song]." Because the mother has only kept this daughter and seems to love her most, the mother stated, "I seem to be biased, that is, I love this one [Song] only." The mother is nostalgic of a perfect family life:

At weekends, we'd usually go out with the whole family and walk around the nearby department stores. During her childhood, we usually took her to an entertainment park in a shopping mall, enjoyed shopping at a department store and found delicious foods to eat. Of course, it's not surprising that she was fat like her father who died early [Song's mother, 49].

According to this excerpt, one possible factor related to Song's childhood obesity, eating out at weekends on a regular basis, stems from her permissive, sociable and wealthy parents, particularly her father. Eating out at the weekend or on a special day is also found in other young participants' families, and this appeared to be common in children who become obese.

Neglecting parenting style (Ploipla-laloei)

This is the second most common parenting style in my study. The four families (Sib-sam, Sib-ed, Sri and Kaow) are included in the last parenting style. This style is illustrated by Sib-sam's family, presenting characteristics of a neglecting parenting style with low parental control, permissiveness, low expectations, low parental involvement in the child's illness management, and lack of time to be with their child. Text box 4 in the next page provides Sib-sam's family background.

Text box 4 Sib-sam's history

Sib-sam is a 14-year-old boy in a nuclear family. He is the only child and is studying in the 8th grade. His mother is 47 years old, working as a teacher, with a bachelor's degree; his father is 49 years old, works as a factory employee and has a diploma. His parents' income is approximately 40,000 baht per month (AUD 1,333). Sib-sam has health problems, including sleep apnoea and pre-diabetes with obesity (weight = 108 kg, height = 172 cm, age- and gender-specific BMI percentile > 95). His mother has heart disease and his father has type 2 diabetes. This family also has financial problems that increase parental stress and distract them from taking care of their child, particularly in relation to health. The mother often uses her condition of having heart disease to avoid engaging in her child's exercise and thus asks the father to take this responsibility, while the father claims that his work commitments mean that he has no free time to engage in activities with the child. Neither the mother nor the father pays much attention to educate and bring up the child; as a result Sim-Sam appears to ignore taking care of his health and his study.

Sib-sam's mother claims a close relationship between parents and the child, but the father's excerpt reflects little communication between them and limited parental involvement regarding Sib-sam's illness:

Um...depending on issues, like...he is close to me in the matter of studying and close to his father in general matters, such as about having a mobile phone and clothes, but not in the matter of exercising [Sib-sam's mother, 47].

I am close to him [the boy] like a friend - we eat, sleep and see movies together. He mostly consults his mother for education. I am usually not at home because of my work. But...actually, he rarely consults with either of us about anything [Sib-sam's father, 49].

Sib-sam's parents not only have little control over him and rarely punish him, but they pay little attention to him and have little involvement in his life, including in regard to his health, illness and education. Although Sib-sam pays little attention to his study, his mother does not encourage him to improve it. His mother explained:

His study...I am not satisfied with [the boy's study] but we must...not say anything to him too much, because if we say something, it will appear like we are comparing our child with others. So I'd rather not talk. And I don't force him [the boy] much to study. My niece has homework and has to use a computer for work every day, while my son has never had homework at all [Sib-sam's mother, 47].

This mother blames herself for not taking serious action in relation to her son's health, but she also blames him for his lack of concern about being obese:

The mother doesn't take care of him, the mother doesn't control him and the mother spoils him due to having only one child. At first, I never thought he would be very fat like this...I just thought that he was big like his father...that's it. Besides, he doesn't realise the harmful consequences, which will develop due to being obese and having diabetes. He will find it difficult to solve them [problems] later [Sib-sam's mother, 47].

Research on parenting styles and overweight status among the US children suggests that authoritarian parenting is associated with the highest risk for childhood overweight or obesity, while authoritative parenting has the lowest risk, compared to other parenting styles (Rhee et al., 2006). The authors discuss this association in that children in authoritarian family who gain weight may do so because their parents (with high expectations and restrictions) demand them to finish food on the table despite satiety; those in permissive and neglecting families may have freedom to eat due to lack of parental control and thus this increases risk for obesity.

In my study, all authoritarian, permissive and neglecting parenting styles (whether before or after diagnosis), as an indirect factor in developing pre-diabetes and diabetes and/or obesity, have negative impacts on children's behaviours: non-adherence to treatment and self-management and delay in changing their lifestyle related to diet and weight control. Parenting factors common in obese children include encouraging children to eat beyond satiety, eating out at weekends, eating food as an entertainment, and food as a reward; lack of time for children's exercise; and relatives' influence in relation to cooking and sharing food. These factors were evident in the eight case examples (either with pre-diabetes or diabetes) of these parenting styles. Authoritative parenting through parental concern about and parental involvement in their child's health and illness was a protective factor for developing pre-diabetes and type 2 diabetes with or without complications, through encouragement and adherence to self-management. My data indicated that all adolescents who were able to modify their lifestyle and improve their health outcomes were raised in authoritative families.

CHAPTER 6

PATHWAYS TO DIAGNOSIS

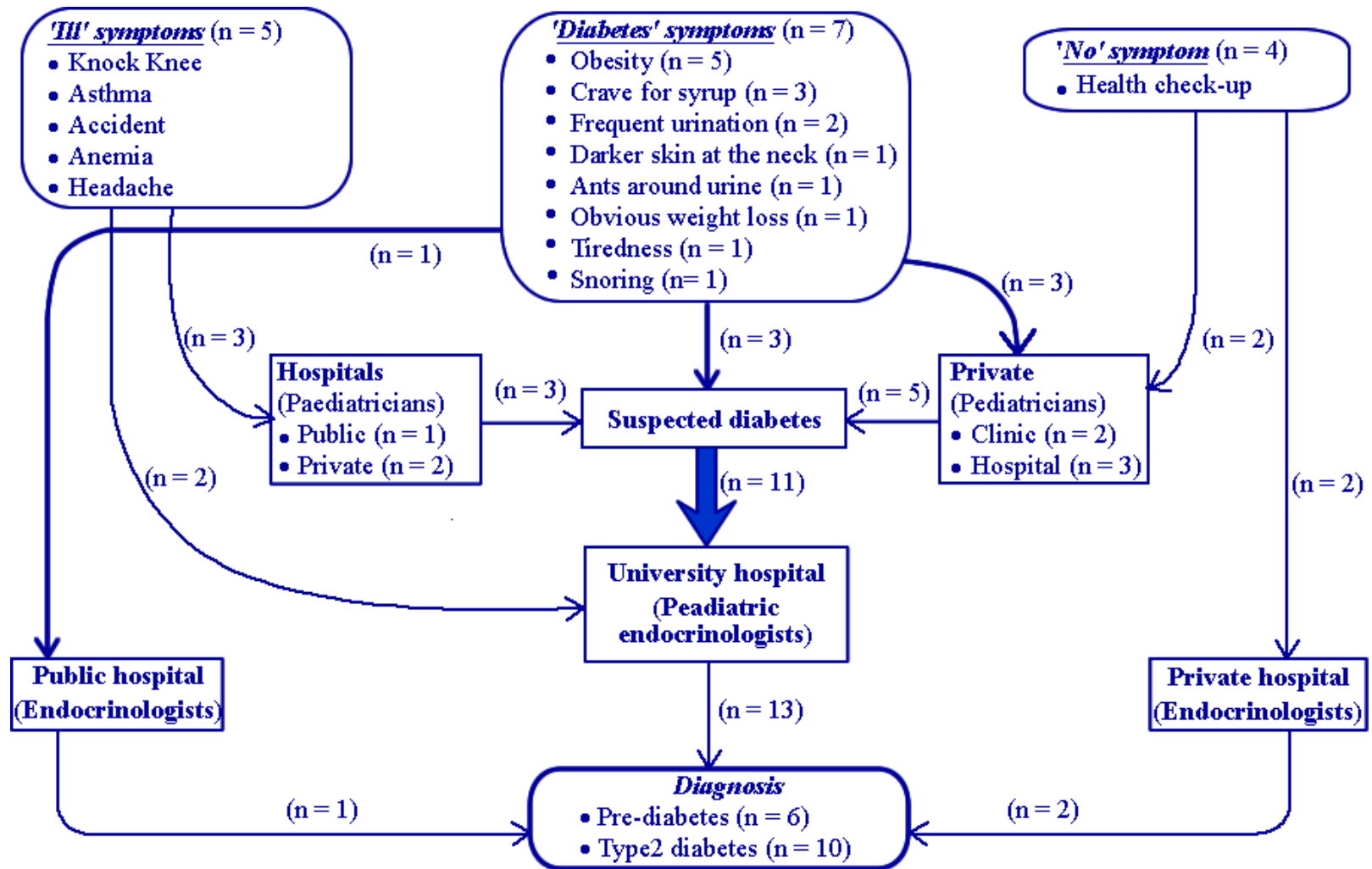
In this chapter, I explore the history of illness of chronically ill adolescents, and their routes to diagnosis. This is summarised in Figure 6.1, the next page, which illustrates the pathways leading to diagnosis. Three major circumstances leading these young people to visit health professionals include symptoms associated with being “ill,” symptoms associated specifically with “diabetes,” and presentation with no apparent symptoms. The two main routes to diagnosis - direct and indirect access to specialists - are identified according to this pathway. All adolescents end up with diagnosis through specialists, either paediatric endocrinologists or endocrinologists. In the last section of the chapter, the feelings of young patients and their caregivers at the time of diagnosis, participants’ perspectives of healthcare services and providers, and hospital brochures from my participant observation are discussed.

Adolescents’ illness history

In this study, I refer to preceding circumstances to refer to critical events or symptoms leading up to visiting healthcare providers and to diagnosis. These circumstances are different in individuals, for example, people who have the onset of obvious symptoms may seek diagnosis, while others may delay seeing a doctor (Knafl et al., 1995). In general, people present to healthcare providers when they have obvious symptoms of illness and those symptoms interrupt their daily life (i.e. inability to work, study or live normally); mild symptoms, such as cough, fever, slight weight loss or weight gain, are usually recognised as normal and do not precipitate presenting for medical advice, and

self-treatment (e.g. self-medication and home remedies) commonly occurs. However, not all adolescents followed this path, as I demonstrate in Figure 6.1.

People may be diagnosed by accident, despite the absence of symptoms of a certain illness such as diabetes, when they present for other health problems or regular check-ups. Therefore, in this unexpected situation, diagnosis (frequently through blood examination) occurs soon after seeing the doctor and leads to early treatment, although even then, not in all cases. Further, in diabetes and in other diseases, such as tuberculosis and endometriosis (Demissie et al., 2002; Mahendradhata et al., 2008; Manderson et al., 2008), despite the presence of symptoms, diagnosis may be prolonged because of patient factors, and factors associated with healthcare providers and hospital services. For example, patients delay visiting the doctor because of the recognition of their symptoms as normal, work and family responsibility, financial problems, and the perceived poor quality of treatment or services (Watkins and Plant, 2004; Mahendradhata et al., 2008). Delay of the diagnosis may come from healthcare providers and services, such as misdiagnosis and laboratory report delay (Demissie et al., 2002; Arnold and McGowan, 2007; Manderson et al., 2008). People with type 2 diabetes may have some illness signs or symptoms that they do not distinguish as pathological, such as feeling tired, thirsty, or craving for sweets or juices. Some people, at risk, who have such kinds of symptoms, even with a strong family history of diabetes, may delay checking their blood, despite suspecting having diabetes, because they wish to avoid being stressed if their blood results are positive, and they reject being labelled as “diabetic” (Keim et al., 2004).



GP = General practitioner; PE = Paediatric endocrinologist

Figure 6.1 Pathways to diagnosis

Research on diagnosis of type 2 diabetes in the UK presented three main “routes” to diagnosis - suspected diabetes, illness, and routine route. It also investigated adult patients’ emotional reactions when they were first diagnosed (Peel et al., 2004). The “suspected diabetes” route to diagnosis was associated with positive emotional responses or lack of emotional reaction to diagnosis, as patients in this group viewed that they were vulnerable or suspected that they had diabetes. Patients in the “illness” route defined their reaction to a type 2 diabetes diagnosis as “quite relieved,” because they viewed diabetes to be less severe than other diseases with which they might have been diagnosed. The “routine” route to diagnosis presented a diversity of emotional responses, ranging from mild to strong (i.e. a little bit scared to feeling shocked), as patients in this group, unlike the two previous groups, frequently had no symptoms of diabetes or other illnesses, and they were diagnosed accidentally through “routine” medical testing. All three routes to diagnosis of diabetes in the previous study are a linear process: people with or without illness symptoms visit healthcare providers and are subsequently diagnosed. This linear process to diagnosis is the same as the “direct” pathway to diagnosis illustrated in a study conducted in the US of children’s pathway to diagnosis of chronic illnesses through interviewing parents having a child with chronic illness (Knafl et al., 1995). The latter study suggested five pathways to diagnosis, including direct, delay, detour, quest and ordeal, each of which has different characteristics in relation to the nature of the illness onset and severity of presented symptoms. Patients in the direct pathway experienced the shortest duration between presentation and diagnosis; the other four pathways resulted in longer duration because of parents’ misinterpretation of illnesses and/or physicians’ misdiagnosis.

Manderson and her colleagues (2008) proposed four main “circuit breakers” which they referred to as critical events or circumstances leading to transition from

recognising a condition (in their example, menstrual pain) as normal to pathological. These breakers interrupt a cycle of illness (pain) among women and alert them of possible pathology and so prompt them to seek accurate diagnosis. This is in contrast to my study: adolescents with pre-diabetes and type 2 diabetes were mostly asymptomatic and most of them looked like “normal” teenagers, therefore, they did not present with a cycle of illness regarding their diabetes. Instead of circuit breakers, the preceding circumstances in my study seemed to be “turning” points leading to a change from recognising obesity and/or *cor-dum* (darker skin around the neck) as normal, to recognising these as abnormal conditions. I propose three major circumstances leading to diagnosis: a) diabetes symptoms; b) general symptoms of illness; and c) no symptoms (and so “routine” diagnosis).

Diabetes symptoms

The initial symptoms of diabetes, such as being overweight or obese, experiencing thirst or tiredness, or having darker skin around the neck, are often considered as normal variations in the behaviour and appearance of teenagers. For example, teenagers are usually recognised by the family as energetic, studying hard, growing and spending a lot of energy; therefore it is common that people in this age group may need more food and water because of their physical growth and the balance of their food intake and energy use. Overweight or obesity may be a consequence of eating too much and exercising less; thirst may be a consequence of playing sports or physical activities and hot weather; tiredness may be a result of excessive studying. In a hospital-based study in Thailand, 53% of young patients with type 2 diabetes had clinical signs and symptoms, including 19% diabetes ketoacidosis (DKA); 15% a combination of frequent urination, increased eating and weight loss; 12% a combination of frequent urination and

increased eating; and 7% abnormal menstruation. The remaining 47% did not have any symptoms (Likitmaskul et al., 2005).

In my research, nearly half of the young participants (7 out of 16) had more than one sign or symptom of diabetes (Figure 6.1). Most in this group (5 out of 7) presented to doctors with overweight, followed by increased thirst for syrups or soft drinks (3 out of 7), and frequent urination (2 out of 7). Among these symptoms, obesity and darker skin around the neck do not fall within the lay notion of diabetes symptoms; instead, they are perceived as “relatively new” ideas, which are mainly provided by healthcare providers to young patients and their caregivers. In contrast, people perceive frequent urination, obvious weight loss, thirst for sweetened drinks, and ants gathering around urine droplets, as symptoms of diabetes. Three symptoms - overweight, *cor-dum* (darker skin around the neck), and *yark nam waan* or *nam daeng* (thirst for sweetened drinks) - were the main themes mentioned by respondents, according to their current understanding of diabetes symptoms. Medical explanations for these symptoms are also discussed.

Overweight and cor-dum

In the past, overweight or fatness was not considered to be a serious symptom of any disease, but this is now recognised by some parents as “abnormal,” possibly leading to other health problems, including high blood pressure, high blood lipids, snoring and sleep apnoea, and type 2 diabetes. Parents’ recognition of obesity is also supported by a medical specialist in this study as demonstrated below:

Actually, at this moment, parents are more concerned about fatness. In the past no one took their children to see doctors because of fatness. I would say a chubby child has been viewed as a healthy child. Something like that. But now if you go to the Outpatient Department, you will see quite a lot of parents taking their child here because they are concerned about

obesity. This suggests that parents see obesity as a problem, and this is a good sign to detect diabetes early in children [Paediatric endocrinologist].

Obesity and *cor-dum* can occur in other children, for example, obesity may be because of eating a lot of high fat and sugary food, and *cor-dum* because of playing sports/activities or the side effects of chemicals. These examples were illustrated by three mothers:

I think nothing. It's like the nature of [boys of] his age. His father said that "It's just like this...children at this age, when [they] grow up, [they] will be taller." I think it doesn't matter and if they grow up, they become thin automatically [Sib-pad's mother, 48].

Ur...I took him to swim and yes, I saw his neck...having *cor-dum* around there. But I think (it is) because of chlorine damaging (his skin) [Hawk's mother, 46].

Yes, I'd seen it (*cor-dum*) for a long time since (he was) fat. I told him that (he's) both fat and dirty – no scrubbing *khee klai* (the outer layer of skin). Despite taking a long shower, his *khee klai* was still there - I'm not overstating it - (he's) really dirty, I thought [Sib-sam's mother, 47].

Only Sam's mother considered her child's obesity to be abnormal as she noticed that up to the age of eight years, Sam's body weight was increasing on average 10 kilos a year:

She (Sam) was overweight from her birth. She was about 3,920 grams. That's so big. She ate a lot from then on. Other babies had two ounces (of milk) a meal, but Sam used up to four ounces. If she was not full, she always cried. When she was three months, she weighed 7 kilos; her average increase was half a kilo each week and she was weighing to 20 kilos at the age of two. Then her weight was up 10 kilos a year until her weight was 80 kilos at the age of eight. I took her to a private hospital for a health check-up and became a client of this hospital. I haven't changed the doctor treating Sam since then. This doctor often said that her weight

was fine - "It's normal. No problem." But why has her weight still been going up and up (laugh), that's what I thought [Sam's mother, 49].

A Helsinki adult study makes a clear association between high birth weight, rapid growth in childhood (weight and BMI) and the development of type 2 diabetes in adult life (Erikson et al., 2003). The findings of this study showed that adults with type 2 diabetes who weighed over 3.5 kg at birth were more likely to have rapid increase in weight and BMI at about two years of age, compared with healthy adults who had the same birth weight. In addition, other studies indicated that babies with high birth weight (≥ 4.0 kg) with slow growth in the first three months after birth tended to have rapid gain in BMI after the age of two and this increased the risk for developing type 2 diabetes in adulthood (Alberti et al., 2004; Singh et al., 2004). The authors concluded that babies with high birth weight and slow growth up to the three months of age were usually the children of shorter mothers, and that this pattern of weight gain could be affected by insulin disturbances. High maternal BMI and low social class (i.e. a labourer) also influenced rapid childhood weight gain (Fall et al., 1998; Erikson et al., 2003). Rapid growth among children who had mothers with high BMI could be explained through a genetic predisposition. One explanation for rapid childhood growth in families of low social class was low quality of food (Erikson et al., 2003). In another study on type 2 diabetes among school-aged children in Taiwan, higher BMI and the family history of type 2 diabetes were dominant factors among those who had high birth weight and later developed type 2 diabetes (Wei et al., 2003a).

As noted, Sam had high birth weight (3.9 kg), rapid growth in weight and BMI during infancy and childhood; her mother was overweight during pregnancy (> 20 kg); and she also had a family history of type 2 diabetes (a grandfather and an uncle). These are all factors associated with the risk for the development of type 2 diabetes. In my

study, I did not systematically collect information on the pattern of growth between birth and the age of three months. However, in Sam's and her mother's accounts, there was other evidence of atypical growth and development, i.e. amenorrhea, and lack of puberty characteristics (breast development and pubic hair). This was because of hormonal imbalance, according to her doctor, who also participated in my study. It is possible that Sam's development of type 2 diabetes was underpinned by her genetic predisposition, disturbances of insulin metabolism due to hormonal problems, high birth weight associated with high maternal weight gain during the pregnancy, and rapid growth during infancy and childhood due to the availability of and access to a plenty of food in the family. With these underlying physiological bases and social circumstances, it was difficult for Sam to lower her blood sugar and have weight close to the normal range, although she tried to limit her food and sweets, and continued light exercising (e.g. simple yoga) with her mother's support.

However, according to interview data from adolescents and their caregivers, it was not the caregivers, but physicians and other people such as relatives, teachers and parents' employers, who alerted the caregivers to their child's overweight and the presence of *cor-dum*. They perceived these characteristics as "abnormal" and suggested to the parents that they take their child to see a doctor. Once caregivers were told by other people about these symptoms, their response – to seek a diagnosis – followed relatively quickly. My findings identified that all adolescents had a history of childhood obesity and a family history of diabetes, and most of them (14 out of 16) were still overweight or obese at the time of interview. Data on the presence of acanthosis nigricans were available from interviews and health records (with the permission of their caregivers) for only eight adolescents. However, out of eight, only one (boy) presented to a paediatric endocrinologist with *cor-dum* as his mother was concerned this

as a warning sign; actually, in this case the symptom was noticed by a relative working as an endocrinologist in a private hospital, who suggested that the mother takes the child to a well-known paediatric endocrinologist working in the university hospital. When I asked caregivers about the meaning of diabetes (as discussed in Chapter 8 – Explanatory models), less than half of the caregivers mentioned *cor-dum* and only two boys (Nueng and Hawk) and their caregivers promptly mentioned this sign in our talks. The boys also observed whether other children, such as friends and relatives, had *cor-dum* or not, and if so, they told their friends about this sign or suggested to them to have a blood check-up. Nueng and Hawk both talk about noticing other people with *cor-dum*:

People who are diabetic will have black (darker strip-like skin area). He (my cousin) has also black (strip-like area). Both his arms and legs turn dark. I have *cor-dum* and also my cousin has one black strip (on skin around the neck) [Nueng, M, 14, diabetes].

Some guys who are thin, when (I) see closely their necks, they don't have *cor-dum* but only have a very dry crack in their skin (*roi taek*). (My friend's) neck is not black because he doesn't have insulin resistance, despite being fat. (He has) a little bit of *bao waan* (diabetes) as his blood sugar is slightly high. But another guy "94" [referring to his friend whose weight is 94 kilos] has *pued pai mod, taek lae cor dum* (obvious appearance of skin around the neck being very dry, dark skin). (He) looks sluggish [Hawk, M, 12, pre-diabetes].

*Yark nam waan*¹³ - Craving for a sweet drink

Thirst for syrup or a soft drink is the second highest symptom leading to a visit to a doctor. Thais commonly use the term *yark nam waan* or *nam daeng* to refer to this symptom, of a craving for sweetened water (e.g. syrups and soft drinks). *Yark nam waan* is an interesting issue among adolescents in this study, as it may be regarded as the cause of their childhood obesity, particularly among boys who are more likely to consume soft drinks than girls (as illustrated in Figure 5.3). Parents and caregivers reported that approximately half of these adolescents, prior to their diagnosis, were overweight because of drinking a lot of soft drink or *nam waan*, or taking anti-histamine solutions (for the treatment of allergies and asthma) which are sweet and are believed to have side effects in relation to food appetite and weight gain. It is very likely that the caregivers' understanding is right about these side effects, according to medical information available on reputable websites:

<http://www.medicinenet.com/cyproheptadine-oral/article.htm> (FirstDatabank Inc, 2009; RxList, 2009) and <http://www.rxlist.com/cyproheptadine-drug.htm> (RxList, 2009).

Drinking too much *nam waan* or Pepsi before being diagnosed as diabetic, and craving for *nam waan* or *nam daeng*, was illustrated by a young man and one mother:

Before being [diagnosed as] diabetic, I was tired, often urinated – every couple of hours at night - and I felt extremely *yark nam daeng* (had a craving to drink red syrup) – Hale's Blueboy (a trade name of red syrup). I drank it a lot, two or three big jugs. My tiredness and frequent urination made my aunt to suspect something was wrong with me.

What is it like, the feeling of yark nam daeng?

¹³ *Yark* = the feeling of craving; *nam* = water; *waan* = sweet taste; *nam waan* refers to a drink with sweet taste and *nam daeng* is a type of red-colour sweetened drinks such as "Hale's Blueboy".

(Whenever) I see it, I crave for (it) and I have it everyday. If (I) don't have it, (I) feel *hoi hoi* (the feeling of being hungry in relation to having low blood sugar) and feel *yark (nam daeng)* all at once. It's like something in my life is lost if I haven't had it. But after treatment, it (the feeling of *yark nam daeng*) was gone [Sib-ed, M, 17, type 2 diabetes].

I had diabetes when I was pregnant with Sib-song. It's because (I) *yark nam waan* so much. I *yark* Pepsi or something sweet and cold. I had it and I had never thought having such drinks would lead to this. If I had known this (the effect of syrups or soft drinks) before, I wouldn't have drunk (it) at all. But no one told me that. I had it (Pepsi), five medium-size bottles a day, for about two months when I was pregnant. I often craved sweets so I ate a melon a day or orange juice, coconut juice, milk and something like that. I thought it (*yark nam waan*) was my *paae thong* (natural symptoms of pregnancy such as morning sickness, morning vomiting and craving for certain foods). Really, no one told me, don't eat sweet (things) otherwise (you) will be diabetic [Sib-song's mother, 47, type 2 diabetes].

According to medical explanations, the symptom of *yark nam waan* or craving for syrup is a physiological effect and can be explained through the brain pathway which involves opioid (opium-like chemicals) and dopamine systems (Drewnowski, 1992; Parker et al., 2006; Johnson et al., 2009). When eating sweet food as an exogenous input, the brain produces opioid (i.e. endorphin), which is associated with pleasurable sensations such as, in this case, the sweet taste. The sweet taste, concurrently, triggers the release of dopamine - a neurotransmitter working together with memory and triggering a pleasurable sensation - which motivates the feeling of craving sweets again. These neurotransmitters lead those eating sweet food to keep seeking and eating them (Kleiner, 2008). A neuro-medical study suggests that increasing sugar intake can sensitise dopamine and mu-opioid receptors in the brain, as occurs with drug addiction (Colantuoni et al., 2001). Although food or sugar cravings and drug addiction share this

brain pathway as a reward reinforcement system which is involved in various motivated behaviours, currently there is no consensus to support the idea that craving food or sweets is an addiction (Parker et al., 2006). Therefore, the feeling of *yark nam waan* could disappear when blood sugar decreases after treatment; this is concordant with Sib-ed's account above.

Other symptoms such as dramatic weight loss, frequent urination and noticing ants gathering around the urine droplets predominated for Nueng and Sib-ed, who both had a strong family history of type 2 diabetes. With the experience of having family members and relatives with diabetes, the caregivers of both adolescents noticed these diabetes symptoms of their children and suspected them to be diabetic. Subsequently, seeking a diagnosis started immediately:

Ooh! Urine. He voided in a basket as he couldn't make it to the bathroom. The next morning, when his sister (the main caregiver) was doing meditation, she saw ants around his urine droplets. Then she told me, "mum, have a look. Nueng pees and ants gather around the urine." So the day after (we) had to tell him not to eat rice (breakfast) and took him to check for *bao waan* (diabetes) [Nueng's aunt, 52].

At that time, he (Sib-ed) was tired as he had just come back from traveling abroad. He told me after this trip that he wanted to reduce his weight as he felt it was difficult to move and he moved very slowly. At first I thought he did well with his weight as in only one month he lost just over 10 kilos. But later, I suspected that something was wrong and that it wasn't normal weight loss because he became too thin. Then (I) checked his blood sugar with my glucose meter twice and of course his sugar was high. So (I) took him to a private hospital to check it (blood

sugar) again. It's up to 290.¹⁴ Then (I) took him to be treated at Chula (Hospital) [Sib-ed's younger aunt, 49, type 2 diabetes].

The two excerpts suggest that lay notions of diabetes symptoms (e.g. ants gathering around urine and rapid weight loss) are significant for family members to distinguish pathological from normal symptoms; this can help children and adolescents to be diagnosed early and then treated. Many questions that the doctor asked patients were similar to lay notion of diabetes symptoms. Parents or caregivers gained this information related to diabetes from their experience of having diabetes (in some cases), from family members who have diabetes, or healthcare providers, before their children were diagnosed. The example of the conversation between the young patient and the doctor below illustrates a doctor using simple language and non-medical terms in an examination room:

Is there (a symptom) like jai sun hwew hwew (a symptom of the heart beating fast and light), or like fainting?

No.

At night, (do you) wake up and urinate often? Or were there any ants around the urine?

Not often. (I) slept through the night and woke up in the morning. I never noticed whether there were ants around or not.

Can I see your neck? (Your) cor-dum is now fading.

¹⁴ This figure refers to Sib-ed's blood sugar level which is higher than the normal value (< 100 mg/dl) and falls into the diagnostic value (> 126 mg/dl).

Ill symptoms

Out of 16, five adolescents visited doctors because of having other health problems: having knock-knees, a condition in which the knees are touching and ankles are separated, while standing; asthma; an accident resulting in a wound; headache; and anemia. The three who presented to doctors with knock-knee, asthma and accident were referred to paediatric endocrinologists at a university hospital by other healthcare providers who also noticed signs of diabetes: i.e. overweight and/or the presence of acanthosis nigricans. Two of their parents described these circumstances:

At that time, he (Sib-pad) had an accident, he didn't have any disease...he had a wound. So (I) took him to see a doctor. The doctor asked me why he [my son] was big like this and whether he had ever seen a doctor or not. I said 'No'. Then the doctor suggested to me to take my son to see a paediatric diabetes doctor [Sib-pad's mother, 48].

One day, (I noticed) his legs seemed to be problematic when he walked. Then (I) took him to Chula Hospital. While I was waiting for the doctor, medical students walking around there asked me in passing why he [my son] had *cor-dum*. I said "because (he) didn't clean himself properly when taking a shower, but I don't know why it [*cor-dum*] still appeared even when I used turmeric to scrub it or put a body lotion on it." Those medical students told me that this wasn't the case. Instead, he had a problem related to endocrine glands. And they suggested to me that I go downstairs, take a queue card, and see a paediatric endocrinologist right away [Sib-sii's mother, 43].

The other two adolescents, both overweight, were Sam, who presented to a doctor with visibly pale lips and face, and Sib-jed, who was having headaches. Both were diagnosed with type 2 diabetes as a result of blood tests for other illnesses.

No symptoms

Four adolescents had no symptoms of illness when they saw a doctor. Three visited a doctor when their parents were having a regular health check-up because they had diabetes, or they presented to a doctor for a check-up when applying for life insurance. Another adolescent, Song, suspected that she was vulnerable to diabetes because her father had diabetes and had died from cirrhosis. She was twelve at the time. Song explained:

I've heard that the first child will be (diabetic) if the father is diabetic. My dad was (diabetic) and after he died, (I) asked mum to take me to check my blood as I wanted to know whether or not I had (diabetes). (I) really didn't have any symptoms. Not at all. I just wanted to test (my blood). That's it [Song, F, 19, type 2 diabetes].

Song's mother confirmed that she was surprised that Song wanted a blood test, but because of her suspicion, her diabetes was found early and could be treated. Song went to a private clinic to have a blood test for diabetes and her fasting plasma sugar level had reached the diagnostic range of type 2 diabetes (> 126 mg/dl). Yet although Song knew she had diabetes, she resisted treatment because of the absence of symptoms. Once her doctor at the clinic referred her to a paediatric endocrinologist at Chula hospital, she started obtaining diabetes treatment.

Access to paediatric specialists

Young people may visit specialists either directly or indirectly. Out of 16, eight adolescents presented directly to paediatric endocrinologists and I refer to this as the direct route to diagnosis. There are three patterns for direct access to specialists: through parents with type 2 diabetes who were monitored and treated by specialists; through the

lay referral of teachers, family members or others; and through healthcare providers making professional referrals. The other adolescents followed an indirect route as they firstly visited non-endocrinologists (i.e. general practitioners and paediatricians) in a public hospital (n = 1), private hospitals (n = 5), or private clinics (n = 2). Some young patients were referred by these physicians to a paediatric endocrinologist in a university hospital because there was no paediatric endocrinologist in their own hospitals. Some who were diagnosed by general practitioners or paediatricians were referred because their parents decided to seek help from paediatric endocrinologists to provide more relevant and specific treatment for their children. Access to the paediatric endocrinologist in Chulalongkorn Hospital is shown in Figure 6.2, and the registration counters and the waiting room for physical examination in Figures 6.3–6.4.

Nearly all adolescents who attended their general practitioners/paediatricians before going to paediatric endocrinologists went to private hospitals or clinics, possibly because the socioeconomic status of most families in this study was middle and upper class so families could afford these services. Moreover, the proximity of their home and hospitals and clinics, time saving due to the lack of needing to wait in long queues, convenience and fast service, are important factors influencing the choice of health services at private hospitals. In contrast, patients visiting university hospitals are drawn from a full range of socioeconomic statuses because health service costs, which are regulated by government, are affordable compared with those of the large private hospitals. Although university hospitals generally have established systematically a hospital accessing process such as information desks, patient registration counters, physical examination rooms, and waiting zones for patients and relatives, they have often been criticized for slow process.

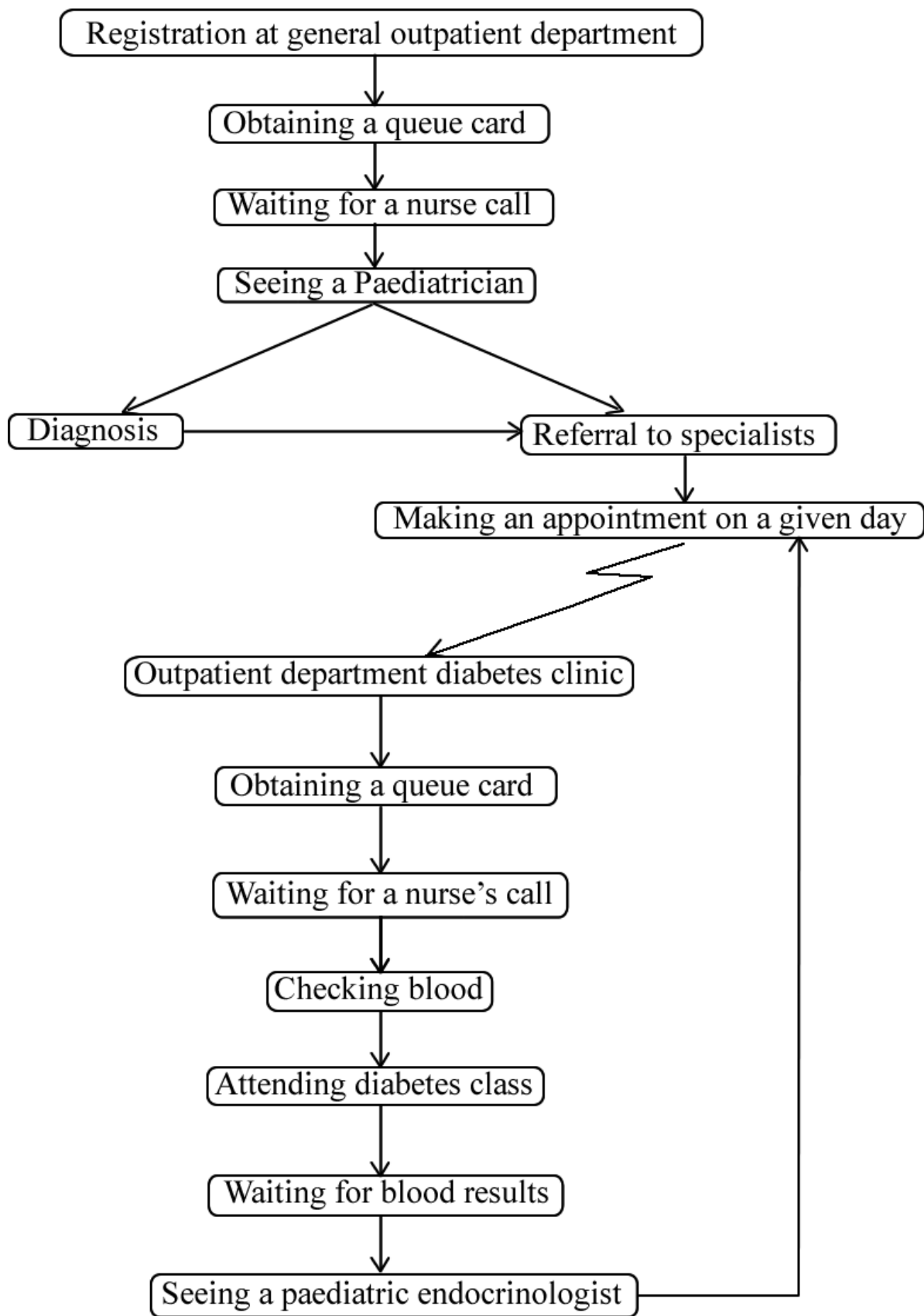


Figure 6.2 Access to a paediatric endocrinologist



Figure 6.3 Registration counters at the outpatient department diabetes clinic

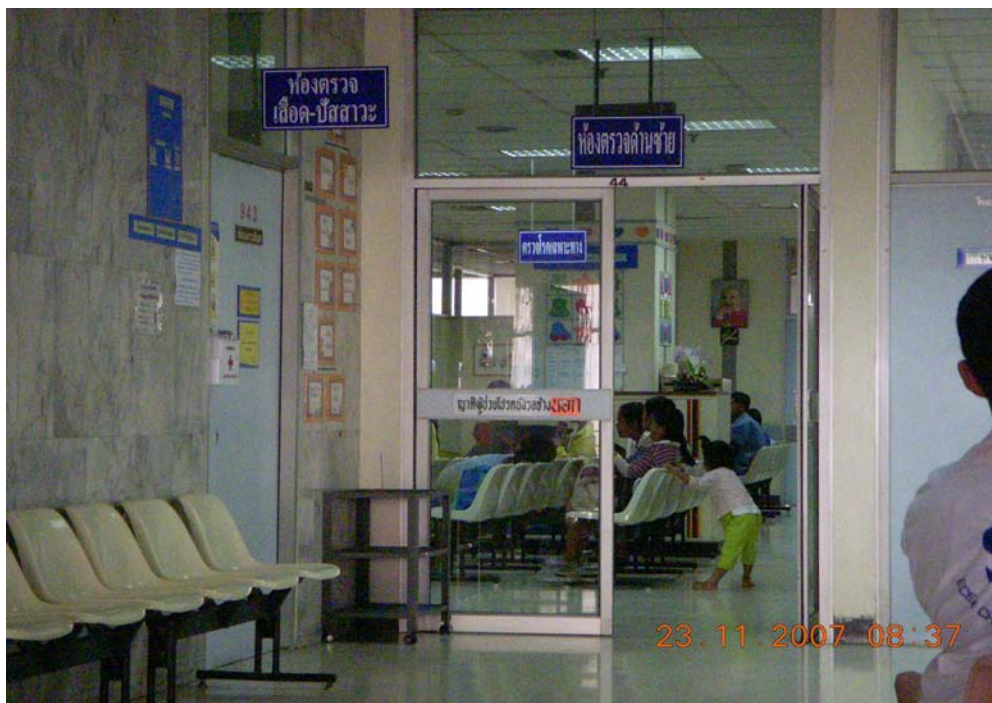


Figure 6.4 Waiting rooms for physical examination

In my study, all adolescents were diagnosed with pre-diabetes and type 2 diabetes without any delay by either paediatric endocrinologists or endocrinologists. Only one family presented to a public hospital, despite this service being time-consuming; this was a family with a low household income and with less capacity to meet health expenses. Most adolescents (13 out of 16) were diagnosed with pre-diabetes and type 2 diabetes by paediatric endocrinologists at a university hospital, while two adolescents were diagnosed by endocrinologists at a private hospital and another one at a public hospital.

The characteristics of the direct route to diagnosis in this study is similar to the “direct” pathway described by Knafl and colleagues (1995), and involves an uncomplicated route from the onset of symptoms to diagnosis: visiting directly a specialist and ending up with accurate diagnosis; short duration pathways; active parents’ response to their child’s symptoms by seeking diagnosis; and cooperation between parents and healthcare providers. However, Knafl’s study of children with chronic illness in the US suggested that most children with diabetes presented “delay” and “detour” pathways to diagnosis (Knafl et al., 1995). Those who presented with diabetes symptoms were more likely to have early diagnosis. Delayed diagnosis in this US study was often found in healthy adolescents or slightly ill adolescents, and was caused by parents’ misunderstanding of their child’s symptoms as normal or not serious; thus they waited until the symptoms became obvious. Misdiagnosis by healthcare providers, leading to parents seeking further advice for accurate diagnosis, was referred to as a “detour” pathway.

Feelings of being diagnosed with (pre) diabetes

At the time of diagnosis, parents, rather than adolescents diagnosed with the condition, were more emotional. These feelings can be grouped into four categories: unemotional, negative (shocked), positive (excited) and confused (puzzled). Most adolescents (11 out of 16) and nearly 1/3 of parents (6 out of 21) were unaffected or pragmatic, but most parents (15 out of 21) reported being shocked, alarmed, anxious, worried, or sorry, and only three adolescents felt a bit worried. Two adolescents described feelings of being excited and puzzled.

Most adolescents in this study reported feelings of indifference or having no emotion when first diagnosed with diabetes, and provided various reasons related to why they saw the disease as “normal”: 1) inevitability – it will happen so people cannot do anything; 2) no perceived consequences either in terms of teenagers’ looks or debilitating effects of illness – young patients say they look like “normal” teenagers or they do not believe the disease is severe; 3) contextualizing/comparing diabetes with other life events, other diseases (e.g. obesity, migraine and sinusitis) or other matters (e.g. study and admission to a university) which were more worrying. Adolescents and caregivers represented these views in interviews. The first four excerpts present their feelings in terms of “fate,” the belief that no one can control the condition, and of “suspicion” of being ill:

When my aunt told me I had diabetes, I felt that whatever will happen, must happen. [You] can’t force it not to happen when it’s time to be [diabetic]. It’s a must. [I] don’t think too much [Sib-ed, M, 16, diabetes].

[I was] not in despair, not sorry. If it will be [diabetes], [it] must be. [I] can’t inhibit it [development of diabetes]. We can’t help her [Sri]. Only a doctor can do it [treatment]. That’s the only way to help her [Sri’s father, 51].

I thought I would be [diabetic], although no sugar was found in my blood at that time when they checked blood at a clinic [Sib-song, F, 13, diabetes].

I was unaffected. I felt that it would be like this one day even though [I] didn't take him [Sib-haa] to see a doctor. So if [we] know now [that he is diabetic], [we] may control it [disease]. I think one who has not yet been [diabetic] may become diabetic one day...like his father (Sib-haa's father had diabetes) [Sib-haa's mother, 44].

The three examples below describe two young men and one mother who felt indifferent because they considered other diseases to be more severe than diabetes. As noted earlier, these three respondents had pre-diabetes. Therefore, it is possible that they were less concerned because they were told by their doctor that they were not yet diabetic, and family members who had diabetes were not concerned. All three described the reasons for not being concerned:

[I] felt indifferent about this [diabetes]. Even though [I] saw my father had diabetes since I was a child, I have not had any fear. I am more scared when [I] get sinusitis or migraine [Sib-haa, M, 16, pre-diabetes].

[I felt] unemotional because [I] was worried only about his obesity and for diabetes: his father [her husband], despite being [diabetic] already, was quite indifferent [Sib-sam's mother, 47].

[I] did not panic...no feelings, I mean. When the doctor told me that my sugar was high, I was not worried about this as it was when I was (studying for exams) to get entrance (to a university) [Sib-hok, M, 19, pre-diabetes].

One father of a young man with diabetes explained that he was not worried because his son looked healthy. This father appeared to misunderstand diabetes, possibly because he

had less diabetes-related information because he had a low education (primary school) and no one in his family had diabetes:

We're not alarmed because we see from his appearance that he is not depressed or sad. He looks strong but diabetes may make him pale, like having yellow skin like jaundice [Kaow's father, 76].

Most parents who were shocked, alarmed, anxious, worried and sorry were likely to reject the "bad" news that their child had diabetes, as they had never known before that diabetes could occur in children and adolescents. Most of them did not expect that this could happen to their child because of his or her young age:

When I knew he had [diabetes], [I] felt that it could not happen to him because he's still a child. We had to look after him. I was sorry.....um [I] really didn't know diabetes can occur in children. I thought it could be the disease of the elders only. When I realised this, I was shocked and sorry that it had happened to him. I asked his doctor why it's found in children and he [the doctor] told me that it [diabetes] can happen because of heredity [Sib-ed's younger aunt, 49, type 2 diabetes].

I thought that she [Sib-song] wouldn't have diabetes because at that time she was so young. And younger children are growing and need more food, meaning that [they] have to eat until they are full. But now my daughter [Sib-song] eats only a little bit [Sib-song's mother, 47, type 2 diabetes].

[I] was alarmed and sorry. [He] shouldn't have been [diabetic] so young. [I] was sorry for him as he's still young. And life in [his] adolescence will pass unhappily as he must control and live with it [diabetes] longer [Haa's father, 55, type 2 diabetes].

A few young patients described their feelings as being moderately worried or anxious.

Their worry is related to eating or taking medicine:

[I] was worried a bit, especially when I wanted to eat; I wasn't allowed (to eat snacks) [Nueng, M, 14, type 2 diabetes].

[I] was stressed. My mother was also stressed and worried. I didn't want to be [diabetic] because I would be different from others. Others were not [diabetic] but I was, and I must see a doctor and take medicine. [My] life is in trouble because [I] have to take a pill at an exact time following the doctor's prescription [Sri, F, 15, type 2 diabetes].

Other feelings such as being excited and puzzled are described by Song and Sib-sii. Sib-sii cannot explain clearly his feelings of being puzzled, because he was only 10 years old at the time of diagnosis and he did not know what his illness was. Song had a positive feeling (excitement) when she was told she was diabetic. In contrast to Sri who did not want to be different, for Song, the idea of self-injecting was exciting, as this would make her different to other people and would attract others' attention:

At first, I was excited that I had the disease (diabetes). It's like I had a mental problem (laugh). I felt good that I would inject the drug at the university and that would be something strange to others. It's exciting because many people will look at me [Song, 19, type 2 diabetes].

According to healthcare providers' perspectives, when comparing young patients with type 1 diabetes with those with type 2 diabetes, the latter are less likely to be alarmed because, as already noted, most of them see a doctor with mild or no symptoms and their diabetes is usually detected accidentally, through a blood examination. On the other hand, people who have type 1 diabetes usually present to a doctor with acute symptoms, such as hypoglycaemic shock (having shock because of the side effect of too much or wrong dose insulin injection) or diabetes ketoacidosis, and all need hospitalisation to be treated by insulin injection and to be educated for self-insulin injection. Therefore, type 1 diabetes appears to be more serious than type 2 diabetes in

terms of severity of the disease and its more complicated treatment. In addition, those with type 2 diabetes and their caregivers possibly perceive that doctors and healthcare staff do not pay much attention to them because doctors provide few details of the disease and engage in short conversations with them only, compared with type 1 diabetes. Although at the time of diagnosis young patients and their caregivers in my study appear to present with mild reactions, after diagnosis they need to deal with many things in relation to treatment and self-management: obtaining information related to diabetes provided by healthcare providers and other people; changing their lifestyle; adhering to oral medication. In time, they become passively familiar with the disease as they develop gradually the understandings of their illness through the process of learning by doing.

Participants' perspectives of health care services and providers

University hospitals are well known and widely accepted by Thai people countrywide for their high quality, in terms of medical technologies and instruments, quality of health service and health professionals, and reasonable service charges. As a result, these hospitals are crowded with patients every day, and this is one of their limitations. According to my study, the three main problems for access to the hospital, raised mainly by caregivers, included: a slow process of receiving laboratory results; an inequitable system of providing a patient with a waiting-card - the ability to queue jump, especially if a patient knows some hospital staff; and obtaining treatment from different doctors. Parents are dissatisfied with waiting for their blood results for many hours (at least four hours), when blood may be taken at 7 am. This is because many parents and their ill children come from other provinces in the Central Region and they

have to leave from home early in the morning (such as 5 am). One mother shared with me her experience of this slow process:

(We) leave home at five (in the morning), (his blood) is taken at seven, and then we have breakfast. About ten we listen to a lecture to gain knowledge while waiting to see a doctor, rather than having nothing to do. The thing is, the lab result comes very late and normally we get it at the earliest around eleven. But sometimes we get it at 1 pm and we live far from here in another province. This is the only problem I face. Everything else is fine [Song's mother, 49].

Some parents and adolescents commented that the order in which patients were seen varied, despite formal queuing, and therefore, they felt that they waited longer than they should have. This problem was raised by Sib-sam and his mother:

The service such as waiting in a queue, (it) should be faster and follow the rules. Sometimes they do not follow the right order, like my queue card is 33, but they (nurses) call 54, 67 and then mine. Instead of calling me first, they call others [Sib-sam, M, 14, pre-diabetes].

If some patients know them privately, I mean a relation or a doctor's assistant, they will get (access) faster [Sib-sam's mother, 47].

One mother also mentioned that she preferred to see the same doctor for treatment for her son because she resented having to repeat her son's story every time to a different doctor. She also commented about an early career doctor who needed to ask a more senior doctor for advice:

The doctor should be the same person, for example, if Dr S is responsible for one case, he should keep following this case. Although we made an appointment with Dr S., actually when we went to see the doctor, we met a new doctor, not Dr S. Then we started telling this new doctor my son's story again. I know that doctors can't remember patients because they see many patients. Some doctors lack (depth of experience) in this area and

some are new. I saw some novices who still asked their seniors or their professional teachers. We should be able to stick with the same doctor, so I don't have to explain what my son eats every day and what his activities are, again and again [Hawk's mother, 46].

As health professionals reported, limitations of taking care of young patients include: inadequate time for counselling young patients and their caregivers due to a large number of patients with diabetes and other endocrine disorders; and lack of diabetologists because endocrinologists in Thailand are responsible for all endocrine-related diseases, including diabetes. In addition, the diabetes care team is incomplete because of the lack of other health professionals from multi-disciplinary backgrounds, such as nurse educators who would visit patients at home and people responsible for a diabetes call centre or hot line.

Healthcare providers and adolescents and their families hold concordant viewpoints on limitations of access to hospitals related to the large number of clients. From the service users' perspective, the hospital service system is slow and unfair, while lack of relevant specialists and other disciplinary health staff, such as nurse educators, is most often mentioned by healthcare providers. Some caregivers also commented on the availability of diabetes education and the diabetes camp provided by the hospital, which needed to be managed practically and beneficially for young patients with pre-diabetes and type 2 diabetes. This issue is discussed below.

The university hospital in this study usually arranges a diabetes class for young patients and caregivers at the outpatient department of the paediatric diabetes clinic, one morning only once a month, while patients wait for laboratory results. This diabetes class provides information about food, exercise and insulin, and leaves time for questions and discussion from patients and families. Most of those who attend are

patients with type 1 diabetes, and their caregivers, because this illness is most prevalent in younger patients. In my study, many young participants and their caregivers had attended the diabetes class at least once or twice. One father commented:

There is a course (diabetes class) during the waiting time for blood results. They talk about this disease in general. But it's repetitive. I listened to it once and the second time I listened, it was the same thing. If (it is) like that, I don't want to attend it again. Once is enough. Another thing is that the hospital should have a schedule of talks, including titles and allocated times [Hawk's father, 48].

One young woman from a private hospital and one man who was a patient at a university hospital addressed the non-existence of camps for adolescents with (pre) diabetes:

I think they should arrange it [the camp] once a month or once every two or three months. For example, they [healthcare staff] encouraged me to join the [diabetes] camp of Theptarin Hospital, but I never joined it because its schedule clashed with my study timetable. I don't understand why they don't arrange camps during semester breaks for children. They like to hold it during the term. I think if they follow what I said, like holding it once a month, it would be good for children like me who would gain from living and playing together, with a controlled diet provided by the healthcare team. We would gain familiarity with these kinds of food [Sib, F, 16, type 2 diabetes].

My aunt wanted me to join a diabetes camp. She asked about this at Chula Hospital (the university hospital where he had been receiving treatment) but there was only a type 1 camp but no camp for type 2 diabetes [Sib-ed, M, 16, type 2 diabetes].

Sib-ed's caregiver saw the benefit of participating in a diabetes camp; other parents shared this view:

(I) prefer to have a two- or three-day camp held during a (school) break that (our) children can go to. They should arrange it more often and we can choose one which is available for our children. If she (Sam) could join the camp, she would learn from the group and talk with others who have the same condition as her. I used to read about the program including learning about diet - food and eating in a proper way. I often tell her about the food she can eat but she doesn't follow my advice. So, if she joined a camp, she might believe others rather than me. But this camp is not held often and sometimes it's arranged by other hospitals and we don't feel comfortable about joining [Sam's mother, 49].

Hospital brochures

According to my observation at outpatient departments, public relation desks and other special clinics in both state and private hospitals in Bangkok, many brochures, articles and magazines are available to patients on health and diseases, including diabetes (see Figure 6.5). Most of these documents are produced by hospitals to impart knowledge to patients and the general public. Whenever I travelled to hospitals, I picked up those relevant to diabetes and obesity and kept them for my document review. Most of these hospital documents were concerned with two main topics – the disease (causes, types, signs and symptoms, complications and treatments) and food (choice and quantity).



Figure 6.5 Hospital documents related to diabetes from different hospitals

The contents provide basic knowledge, but are suitable for adults and older people rather than children and adolescents, with many of the figures on the pamphlets depicting adults and not children. The term “diabetes” is mostly used, rather than specifying the term “type 1” or “type 2” diabetes. It is noticeable that *cor-dum* (darker skin at the neck) is rarely mentioned in these documents.

There are two documents (see Figure 6.6) related to young people: a handbook “Sweet Enough Family” (*khropkruaw on waan*) and a yearly magazine for children and adolescents with diabetes “Sugar Free.” The handbook “Sweet Enough Family” is supported by the Sweet Enough Network and The Thai Health Promotion Foundation or

ThaiHealth.¹⁵ This handbook provides information related to sugar, snacks, food and family, such as a child-rearing, and thus is of benefit to both young people and their families. The magazine “Sugar Free” is issued by the Thai Diabetic Child and Adolescent Support Club, Siriraj Hospital. Its contents include knowledge related to diabetes, stories or experiences told by young patients (mainly with type 1 diabetes), and the promotion of activities such as the diabetes camp and a drawing contest. This magazine focuses on young patients with type 1 diabetes.



Figure 6.6 Thai diabetes-related booklets for children and adolescents

¹⁵ ThaiHealth was established in 2001, funded by “sin taxes” – tobacco and alcohol taxes - and has adopted the model of funding and activities from the Victorian Health Promotion Foundation (VicHealth).

Based on my document analysis, some details about diabetes are out of date. This is reflected in the continued use (in Thai and in English) of the old term “insulin-dependent diabetes” and “insulin-independent diabetes” instead of type 1 diabetes and type 2 diabetes, respectively. Regarding the perspectives of healthcare providers, both young participants and their parents/guardians were especially satisfied with providers with a characteristic of being friendly and kind, providing mental support and encouragement, and paying attention to individuals’ daily life.

CHAPTER 7

EXPLANATORY MODELS OF YOUTH DIABETES

In this chapter, I start by clarifying concepts of disease and illness, as described by Kleinman (1978, 1988), in order to understand the distinction between disease and illness models, through patients' and health professionals' perspectives. Lay explanatory models are categorised into four main groups: including 1) aetiology of diabetes, 2) signs and symptoms, 3) severity of the disease, and 4) treatment and curability. The concepts of disease and illness differ, according to the viewpoints of physicians and patients. Many researchers have indicated contradictions in doctors' and patients' viewpoints in relation to disease and illness, including for diabetes (Eisenberg, 1977; Kleinman et al., 1978; Kleinman, 1986; Conrad, 1990; Gerhardt, 1990; Weinman and Petrie, 1997; Hunt and Arar, 2001). 'Disease', based on a medical explanation, refers to structural and functional disorders of external or internal organs and body systems, and excludes the dimensions of patients' emotion or feeling. 'Illness' represents a person's perceptions, feelings, experiences, and behaviours of sickness. It focuses on patients' constructs, shaped by familial, social and cultural boundaries (Kleinman et al., 1978).

Explanatory models - as elaborated by Kleinman (1978) - are cultural constructions of knowledge and beliefs related to health and illness, emphasising the discrepancy between patients' and practitioners' perspectives. In general, patients explain their illness in relation to one or more of the five issues described in the physicians' models, including aetiology of disease; onset of symptoms; pathophysiology; course of illness (severity/sick role); and treatment. Eisenberg

(1977:11) notes that “disease may occur in the absence of illness.” Adults with type 2 diabetes therefore often have no symptoms of illness despite having the disease (diabetes), and thus do not feel ill (Naemiratch and Manderson, 2008). Jones (1998), in describing issues of noncompliance with treatment, indicates that Mexican-American adolescents with type 2 diabetes do not regard disease as serious, because they were only given oral medication and advice about lifestyle modification (Jones, 1998). Thai adult patients also tend to assess disease as serious depending upon symptomatology and treatment, and so according to their explanatory model of disease (Sritanyarat, 1996; Naemiratch and Manderson, 2006).

Chronic illness is defined as a life-long condition, which may result in impairment and disability and requires continuous medical care. Type 2 diabetes is one such illness. According to Bury (1991), chronic illness has two meanings: 1) the consequences of the onset of symptoms, which interfere with a person’s daily life at home or at work, and people’s efforts to deal with those symptoms; and 2) the identification of the significance of chronic illness influences how individuals view themselves and how they think others view them. The pathway of chronic illness starts with the onset of symptoms and involves stages of the illness, illness management, individual’s experience and sense of identity, and social interaction. Illness symptoms change over time. The nature of the symptoms, the social context in which the person lives, and the perception of symptoms by self and others, all influence individual experience (Bury, 1991). The study of diabetes like any illness therefore explores both meaning and social context (Kleinman et al., 1978; Charmaz, 1990; Bury, 1991).

Lay explanatory models of diabetes

Research on explanatory models of type 2 diabetes has been conducted with adults in different populations, including white Americans, Latinos, Mexican Americans, Mexicans and Thai (Cohen et al., 1994; Jezewski and Poss, 2002; Poss and Jezewski, 2002; Arcury et al., 2004; Naemiratch and Manderson, 2007). All these studies apply Kleinman's explanatory model of illness. Among Thais, adults' explanations of diabetes in aspects of causation, pathophysiology of the disease, the course of illness, and treatment, are based on the cultural notion of *kam* as the consequence of negative or bad conduct, the idea of 'wet' and 'dry' diabetes, and concepts from Thai holistic medicine (Naemiratch, 2004:67-68; 125-127). For example, Naemiratch (2004) indicated that most participants believed that their diabetes was caused by their parents' bad actions, but they avoided speaking ill of their parents, because of the Thai Buddhist belief that blaming parents is a serious sin. They used the term *kammaphan* (heredity) to speak about the effect of parents' genes. Another major cause of diabetes was *pluttikam* (personal behaviours), which referred to the effect of people's misbehaviours, such as eating and drinking excessively or lack of exercise. As Naemiratch (2004:128-131) elaborated, both *kammaphan* and *pluttikam*, classified as intrinsic causes in her study, correspond with biomedical concepts of internal factors, so diabetes is seen as both a genetic- and lifestyle-related disease. Adults in her study identified extrinsic causes of diabetes as environmental and lifestyle factors, such as foods contaminated with chemicals or germs and other dangers outside home. Lay notions of *kam*, based on Buddhist beliefs, influence adults' understanding of *kammaphan* and *pluttikam*.

To explore lay explanations of diabetes among young people and their caregivers, I started with the simple question, "What comes to your mind when you think about diabetes?" Their answers, associated with causes of diabetes, characteristics

of people with diabetes (signs and symptoms), severity, treatment and curability, fall within Kleinman's model. In contrast, although adolescents in my study mentioned the same intrinsic causes (*kammaphan* and *pluttikam*) as did adults in Naemiratch's work, their explanations were similar to biomedical models, not related to the idea of *kam* or *baap* (sin). Furthermore, with respect to types of diabetes, none of adolescents in my study addressed the terms 'wet' and 'dry' diabetes (as discussed later in [types of diabetes]), and only one mother who had low education and low socioeconomic status explained these terms along the same lines as adults in Naemiratch's study.

Adolescent and adult models of the same disease are not to be alike. Adolescents appear not share folk or traditional notions of illness, possibly reflecting changes in basic knowledge in Thailand. The acceptance of medical understanding of pre-diabetes and type 2 diabetes may be related to changes in school education and compulsory education for twelve years. Adolescents are more likely to study topics on health and illness than those in their parents' generation. For example, diabetes is introduced in health education and biology subjects from grade 8 to grade 12, although the instruction is not comprehensive. In addition to obtaining such knowledge in schools, adolescents, particularly those who live in a city, have easy access to health services and medical advice. Information on health and illness is also available in the media (i.e. newspapers, health magazines, hospital booklets TV, radio and internet). They also receive such information from their parents who seem to accept medical advice. Similarly, parents or relatives of these ill adolescents, who themselves have type 2 diabetes, rely on biomedicine.

On the whole, young participants and their caregivers have similar immediate thoughts about diabetes, but adolescents' answers are not entirely consistent with those of their caregivers. Adolescents provide a wide range of ideas about diabetes in relation

to high blood sugar, wounds and complications, and dysfunctions of the pancreas or insulin, respectively. In contrast, caregivers tended to think about diabetes firstly in terms of wounds and dysfunctions of the pancreas or insulin, secondly, in terms of high blood sugar and darker skin around the neck and armpits, and then, their concerns about complications and short life expectancy.

Regarding the respondents' accounts, I recognise the possibility that as young people and their parents talked to me, they may have indulged in post-facto rationalisations. This is particularly the case when talking about stigmatised conditions such as diabetes or obesity, or in relation to not undertaking the management of their condition as recommended by their physicians. It is not possible to know whether their accounts are 'true,' but rather, these accounts may be about 'saving face' in light of the stigma of the condition to an outsider. The following paragraphs present adolescents' and their caregivers' understandings of diabetes in terms of types, causes, signs and symptoms, severity and treatment.

Types of diabetes

All young participants and caregivers used the term *baowaan* to refer to diabetes mellitus. *Baowaan*, a combination of two words – *bao* (to urinate) and *waan* (sweet taste), means sweet urine, and is a translation of the term diabetes mellitus. The construction of *baowaan* disease by adults with type 2 diabetes is associated with high blood sugar that can be diagnosed by observing the fact that diabetics' urine droplets attract ants (Naemiratch, 2004: 116).

In my study, few adolescents with pre-diabetes (but not type 2 diabetes) and their caregivers knew about type 1 or type 2 diabetes, but they knew from their doctors that they were at risk of developing diabetes. Few adolescents and their caregivers

applied the term *baowaan phaeng* (covert diabetes) to identify people with pre-diabetes. All adolescents with type 2 diabetes and their caregivers understood that they or their children had type 2 diabetes, which was not as serious as type 1 and required only oral medication. They had obtained diabetes information, mainly focusing on food and exercise, from their doctors, and thus understood a little bit about insulin. Although most adolescents with type 2 diabetes (not pre-diabetes) and their caregivers knew that there were two types of diabetes, they did not use the term “type 1 diabetes” and “type 2 diabetes.” Instead, they most often differentiated the two types in terms of medication routes: oral drug intake and drug injections, as indicated for type 2 and type 1 diabetes respectively. The oral drug intake type was perceived as less severe than the injection type by all respondents in this study. This perception appears to have a psychological effect for adolescents, as paediatric endocrinologists often threaten those who are unable to control their blood sugar level with changing treatment from oral drugs to insulin injection. This threatening strategy can affect positively adolescents’ blood sugar control, as these adolescents more strictly control their self-management activities until their blood sugar decreases and then loosen their control behaviour. This is not true in all cases. The perceived severity means that those who are frightened of being prescribed with insulin injection were more likely to pursue personal behaviours to control diabetes.

As mentioned earlier, adolescents’ explanations about types of diabetes are based on medical terms. In contrast, two mothers with low education and poor socioeconomic status distinguished the two diabetic types based on folk notions: i.e. wet and dry diabetes, or male and female diabetes, but they could not explain the difference or the origin and aetiology of these diseases. Other Thai adults with type 2 diabetes classify diabetes into two types: wet diabetes (*baowaan paek*) and dry diabetes

(*baowaan heank*), terms used to refer to ‘wet’ wounds that heal slowly and ‘dry’ wounds that are easy to heal (Naemiratch, 2004:125-127; Naemiratch and Manderson, 2007). *Dry* diabetes is perceived by adults in Naemiratch’s (2004) study as less severe than *wet*, because the lesions are dry and not infected, and thus easily healed; *wet* suggests wounds and ulcers that heal slowly. Patients with *wet* diabetes are likely to be overweight and more worried about physical problems due to the effect of moist wounds which are easily infected and difficult to heal, with the risk of necrosis and amputation (Naemiratch and Manderson, 2007). According to adults’ perceptions of diabetes, *wet* diabetes as a form of type 2 diabetes may be regarded as more severe than type 1 diabetes. This was not concordant with adolescents’ and caregivers’ explanations in my study.

In addition to education and socioeconomic status, other factors such as age and stage of diabetes (i.e. pre-diabetes and diabetes) influenced adolescents’ understanding of diabetes. Younger adolescents (aged 12-13 years) knew least about diabetes arguably because they were less mature; shorter period of disease and lower educational levels were also relevant. In addition, those with diabetes tended to have more knowledge about type 2 diabetes than those with pre-diabetes, as they had more experience with treatment and their diabetes had started earlier.

Diabetes identity is obviously presented by young people with diabetes rather than those with pre-diabetes. This was constructed through their experiences of being diabetic, as reflected in their answers, such as “my diabetes is caused by” or “I have diabetes because.” However, diabetes identity is not obvious among people in the pre-diabetic group because, unlike those with type 2 diabetes, they do not perceive themselves as diabetic and they have never experienced hospitalisation. Adolescents with pre-diabetes often use the term *roak baowaan* (diabetes disease) rather than

baowaan khong chan (my diabetes), reflecting that diabetes has not become part of their identity. In contrast, those with type 2 diabetes have incorporated their illness into their biography, “It [diabetes] will be with me throughout my life.” The excerpt below is from a boy with pre-diabetes, responding to a question about the causes of diabetes:

Baowaan, as I studied [in the class], is caused by insulin that works abnormally and this will impact the body. That is, if it [diabetes] gets worse, we have to have insulin injections [Sib-sam, M, 14, pre-diabetes].

Both young people with diabetes and pre-diabetes also obtained related knowledge through various sources: compulsory, health professionals (doctors, nurses and nutritionists), family members (mainly parents or primary caregivers), and public media (e.g. TV and radio programs, internet, newspapers, hospital brochures and health-related magazines). Secondary school was a source of education for older adolescents, for example, in grades 8-9, diabetes is a part of the subject *Sukkhasueksaa* (Health Education), the contents of which include definition, causes, symptoms, treatment, prevention and recommendations. In Grade 10, students study the pathophysiology of diabetes in “Biology.” In Grade 11, the topic “obesity-related diseases” is a part of the subject *Sukkhasueksaa* (Health Education). Both the experiences with diabetes and basic knowledge of diabetes are blended in adolescents’ explanatory models.

Causation

In responding to a specific question, “Why do you have diabetes?” both young respondents with pre-diabetes and those with diabetes and their caregivers identified multiple causes of diabetes in association with *pluttikam* (personal behaviours), *kammaphan* (heredity or genetics), fatness and physical dysfunction. Given by adolescents and caregivers, *pluttikam* was the most common cause of diabetes,

following with *kammaphan* and fatness, respectively. A few adolescents and caregivers identified abnormal pancreas as a cause of diabetes. Only caregivers mentioned side effects of anti-allergic or anti-asthma drugs, or child-rearing, as a cause of childhood fatness which led their children to develop pre-diabetes and diabetes. I elaborate of these four lay understandings of diabetes causes – *pluttikam*, *kammaphan* fatness and abnormality of pancreas and insulin - below.

***Pluttikam* (personal behaviours)**

Adolescents' perceptions of being diabetic originate from their *pluttikam* (personal responsibility: lack of self-control or self-blame associated with “unhealthy” lifestyle), which is relevant to the concept of internalising or internal locus of control (Lefcourt, 1982). Thai adolescents' explanation of *pluttikam* as an internal locus of control was similar to understandings of Caucasian adults with type 2 diabetes regarding a Western concept of selfhood (Lawton et al., 2006; Lawton et al., 2007). According to Price (1993), personal considerations include personal preference, self-efficacy or self-ability and available resources (time, money, social support and diabetes-related information and knowledge) that can adjust lifestyle-related behaviour or self-management choices. Personal considerations could be one of the most important factors of diabetes management among these adolescents. (Price, 1993). In my study, self-efficacy and perceived barriers (e.g. study, time, fun) strongly affect adolescents' self-management activities. For example, adolescents who did not adhere to diabetes control often reported, “I can't control myself when eating,” or “I have no time to exercise because of a lot of project assignments.”

Pluttikam as a cause of diabetes was defined by young participants and their caregivers as personal responsibility in relation to unhealthy behaviour. Most respondents identified food quantity and food types (eating large quantities and eating fatty and sugary foods) as the most dominant causes of diabetes, in combination with other causes such as lack of exercise, *kammaphan*, fatness and physical abnormality. This is represented in Nueng's account below:

I have diabetes because of myself and *kammaphan*. If I hadn't eaten a lot, I wouldn't have had diabetes. Because I didn't control my fatness; I ate until I became fat... When I was a child, I ate chicken...KFC, snacks or sweets, and sugary foods.... *kin pen ga-la-mung*¹⁶ (buckets full). I never exercised at all. Just only walking. I was too tired... there's nothing I wanted to do ... I only wanted to eat [Nueng, M, 14, type 2 diabetes].

Like Nueng, many adolescents in this study blamed themselves for lack of self-control in relation to exercise and their eating behaviour, such as excessive eating, or their preference to eat specific types of food and to eat and drink too much (e.g. rice, sweets, sugary food, fried chicken, and Pepsi).¹⁷ Consequently, they became fatter during childhood and then developed pre-diabetes and in some cases, diabetes in early adolescence. Caregivers indicated not only their children's *pluttikam* but also their own misconduct in raising their children, such as introducing or providing unhealthy food for them as described by one mother:

¹⁶ The metaphor of *kin pen ga-la-mung* implies eating too much - as much as two big noodle bowls. *Ga-la-mung* is an enamel basin and the expression is often used in Thailand ironically to describe eating a huge amount of food, as "bucket" might be used in colloquial English.

¹⁷ Pepsi is competitive with Coca Cola, in Thailand. None of the young respondents in this study mentioned Coca Cola. Young people in my study preferred Pepsi to Coca Cola, possible due to the effect of advertising and marketing: A slogan of Pepsi is "Pepsi – the drink of a modern generation."

There are many things which led to her [Sri] diabetes. But one main cause is that she has rarely exercised. She usually watches TV. I wasn't with her after she was born as I worked in Bangkok and came home only on weekends. So almost every week, I took her to eat KFC because I would like to entertain her as I was with her only on the weekends. I think KFC may be a cause of her diabetes because of eating it often and eating a lot of it [Sri's mother, 52].

***Kammapan* (heredity or genetics)**

Kammapan is the second most common cause of diabetes reported by both adolescents and their caregivers. Both of them explained the meaning of *kammapan* in terms of heredity and genes. Regarding *kammapan* as heredity, one adolescent described, "It is the descending of a family line. My grandparents and my father have diabetes, so I am more susceptible to it than others." Another explained that "it means obtaining different traits from family members, for example, I got diabetes from my grandmother and my mother." Similarly, caregivers understood *kammapan* as a descending blood line to further generations or through a connection through the blood line; they believed that there must be at least one person in each generation with diabetes. This meaning of *kammapan* is concordant with the meaning of heredity in the Collins English Dictionary (HarperCollins Publishers, 2002:236): i.e. "passing on of characteristics from one generation to another." A few adolescents and their caregivers provide descriptions of *kammapan* in terms of genes. As a whole, these adolescents and their caregivers understood diabetes as a "family-related" disease.

Unlike *pluttikam* (behaviour), *kammaphan* (heredity) is non-modifiable or out of control, concordant with the concept of externalising. Both concepts – internalising and externalising - are described by Caucasians and South Asians (Pakistani and Indians in the UK) in Lawton et al. (2007), in reference to the internal and external locus of

control (Lefcourt, 1982). The idea of *kammphan*, as explained by adolescents in my study, is concordant with the biological concept: “if peopoe have genes carrying dibetes from their parents, it’s out of control and they will become diabetics.” This is regarded as an external locus of control. Some adolescents who believed their diabetes mainly caused by *kammaphan* were likely to non-adhere to treatment or their self-management as they could not change their gene defect.

Fatness

Young participants frequently mentioned fatness as the effect of their *pluttikam* (such as eating a lot) related to unhealthy lifestyle, and believed that both fatness and *pluttikam* caused their diabetes. Two underlying factors of childhood obesity, child-rearing and side effects of medications were only given by caregivers. Despite blaming their children’s eating behaviours (e.g. eating a lot, eating without restraint, and eating “unhealthy” food) and lack of exercise, some caregivers also regarded childhood obesity as a consequence of their child-rearing (as discussed in Chapter 5).

Three caregivers mentioned side effects of medications that caused their children’s fatness. The parents of Sib-sam, Sib-sii, and Hawk believed that anti-allergic drugs or anti-histamines were also a cause of diabetes because they had gained information about side effects of using those drugs. All of them described side effects of these drugs as enhancing or stimulating children’s appetites. As a result, their children ate more food and gained weight. According to pharmacological evidence, one of the anti-histamines – cyproheptadine¹⁸ – has adverse effects, including increased appetite and weight gain, dizziness, sedation, dryness of mouth, anorexia, nausea, vertigo,

¹⁸ This drug has indications for allergic rhinitis, allergic conjunctivitis because of inhalants (e.g. hair spray, deodorant sprays and air fresheners) and allergic in foods.

fatigue, headache (The RxList Inc., 2009). Although caregivers know that overweight can be a side effect of taking anti-allergic drug, they paid little attention to this, as they needed their child's allergy to be treated. Furthermore, for some, childhood overweight or *jummum* is a perceived benefit of allergic treatment, because of parents' preference for a chubby child, saying "seeing children enjoy eating is better than seeing them not eat" or "it's better to have a fat child than a thin child."

Almost all caregivers believed in the effectiveness of biomedical prescriptions for diabetes rather than traditional medicines for their child. As one caregiver stated:

I don't believe it [a herbal drug] can cure my illness [diabetes]. Despite advertisements of prices from 500 to 3,500 baht for five usages, no one in this house, even me, believes it. I trust Western medicine not herbs, because there is no formula or ingredients shown on a package of these herbs. I've just only heard from people claiming that they [herbs] are effective [Sib-ed's aunt, 49, type 2 diabetes].

Only two carers, Nueng's cousin and Kaow's mother, allowed their children with diabetes to use herbs or traditional drugs (in addition to oral prescribed drugs) because they had gained information about the effectiveness of these medicines to cure diabetes from their relatives or other patients. Nueng used *thongphan chang* (as discussed in Chapter 8) while Kaow took a traditional drug (see Figure 7.1), which his mother bought from a temple. This drug is black and round, with tablets packed in a small plastic container with the label indicating its action in lowering blood glucose, although it did not provide information of the ingredients. Most caregivers in this study, with high educational levels, questioned the safety of traditional drugs, because most Thai traditional drugs have not been approved by the Thai Food and Drug Administration (FDA). In contrast, Naemiratch (2004) and Sritanyarat (1996) found that

adults were more likely to use traditional or herbal medicines and a combination of prescribed medicines, complementary and alternative medicines.



Figure 7.1 A traditional drug used by a young patient with diabetes

In Thailand, a variety of unconventional or traditional medicines is available countrywide. The terms “unconventional” and “traditional” are used interchangeably among Thai people, although they are referred to also as “unscientific” medicines. Traditional herbal medicines or medicinal plants are usually used to enhance or complement modern medicines. Examples of anti-diabetic medicinal plants include *Fa thalai chon* (*Andrographis paniculata*), *Phayap mok* or *Ya nuat maeo* (*Orthosiphon aristatus*), used by boiling fresh or dry leaves to produce a supernatant for drinking – and *Bora phet* (*Tinospora crispa* (L.) Miers), used by eating the fresh vines (Wongsatit, 2005; Patcharawadee, 2008). Some Thai people, particularly the elderly or those who live in rural areas, who have low education and low income, still believe in the

effectiveness of these medicines (Naemiratch, 2004; Kosachunhanun and Chimplee, 2007), although Kosachunhanun and Chimplee also suggest that urban professionals with a high education also used herbs to manage their general health. Patients who use herbs do not always inform physicians because they are not confident that their doctors will allow them to use so, and they rarely obtain information about herbs from doctors. A few endocrinologists ask their patients about using herbs or provide suggestions about herbs and their side effects (Kosachunhanun and Chimplee, 2007).

Abnormality of pancreas and insulin

Not many adolescents or their caregivers understood diabetes in relation to the functions of the pancreas and insulin. Most of them correctly indicated that the pancreas produces insulin, but despite using the medical term “insulin” they did not know exactly what it was. Although they may not understand diabetes fully and correctly, their explanations seemed to be similar to medical explanations provided to them. For example, three young participants explained the causes of diabetes in the following ways similar to others in my study:

Being diabetic may be because the body cannot produce insulin, which changes sugar to other forms to be used. This makes our body have high blood sugar, which causes cells to fail to work and die. I know it [diabetes] will be with me for the rest of my life because people say that my pancreas can't produce insulin. I think, living with it [diabetes] through my life, my pancreas won't produce insulin incidentally one day, if it [pancreas] can't make insulin at the beginning (Sib, F, 16, type 2 diabetes).

Diabetes results from a lack of exercise. The pancreas, which builds insulin, doesn't work. It can't burn blood sugar, so sugar in the blood is up (Sib-ed, M, 16, type 2 diabetes).

With diabetes, the sugar in the blood is increased abnormally because the pancreas can't produce insulin to reduce the high blood sugar. Therefore, we must be injected with insulin or take a tablet in order to lower blood sugar. That is what I used to study [in high school] (Sib-hok, 19, M, pre-diabetes).

These three excerpts illustrate that adolescents with pre-diabetes and type 2 diabetes understand that diabetes is caused by the inability of the pancreas to produce insulin, which plays a role in reducing blood sugar. As a result, blood sugar is high due to a lack of insulin, or abnormalities of insulin or the pancreas, which leads to diabetes. The understandings of these adolescents are not completely correct, however. Compared with the paediatric endocrinologist's explanation of the same issue:

Unlike people with type 1 diabetes, those with type 2 diabetes still have insulin, because their pancreas can produce insulin. However, their insulin does not function well or it's ineffective. This leads to a condition of insulin resistance. Consequently, the body cannot take sugar through the cells to be changed into energy for the body use. This causes the increasing accumulation of sugar in blood until it can be detected in both blood and urine.

Adolescents' explanations are not wrong if they are referring to type 1 diabetes. What they misunderstand is that these explanations do not apply to the cause of their diabetes, i.e. type 2 diabetes. In contrast, the caregivers' explanatory model of pathophysiology is different from the adolescents' model and the endocrinologist's model, as addressed by Nueng's cousin:

For people with diabetes, because their body cells demand sugar, they crave (food). When they eat (food) again and again, their sugar leaks into the urine. It seems that we try to compensate (the need for sugar) by eating food, but it flows out via urine. Like, (you) eat and void (it). It's because their cells request sugar (Nueng's cousin, F, 31).

Nueng's cousin did not understand the role of the pancreas in regulating blood sugar through insulin. She pointed out that before Nueng got diabetes, his eating behaviour was different in that he did not like eating sweets or sugary food. She assumed that because diabetes caused abnormalities in his body cells, his behaviour had changed resulting in him eating more sweets and foods. It was not his personal preference or habit, but it was because of the "messages" from his cells. In other words, physical abnormalities cause behavioural changes. Therefore, according to this caregiver's explanatory model, people with diabetes have common characteristics of eating a lot, eating sweets or sugary food, and drinking sweet drinks or soft drinks.

In summary, all adolescents with pre-diabetes and with type 2 diabetes in this study knew what caused diabetes and were able to explain why they had diabetes, through knowledge or information that they gained from various information sources (such as doctors, parents or caregivers, and compulsory education) and their experience of living with the disease. Compared with the caregivers' explanatory model, the adolescents' explanatory model of pathophysiology was closer to the endocrinologist's model. However, the adolescents' model was limited as their explanations were based on a basic knowledge from their compulsory study, which did not provide details of the distinction between type 1 and type 2 diabetes. As mentioned above, I analysed the contents of the primary educational curriculum (2001) about the aetiology of diabetes. I found that the contents regarding dysfunctions of the pancreas and lack of insulin were similar to adolescents' explanations. Some diabetes-related information in the text may confuse young people, as the information they receive from their doctor is more detailed and deeper. For example, one text book (Poramutthapon and Waiyapoka, 2001:112) reports that "Older people are at high risk of developing diabetes. The onset of diabetes is usually found in people aged over 40." Another example is that "People have diabetes

because they lack insulin, which is produced by the pancreas. Insulin plays a role in metabolising sugar in cells (ibid.).” Adolescents wondered why they have diabetes or pre-diabetes so early. Some caregivers too believed that diabetes rarely occurred in children, as they had obtained similar information.

Adolescents’ eating behaviours and caregivers’ explanatory models of the aetiology of diabetes are concordant with the biomedical model in that *pluttikam* or personal behaviours, such as diet and sedentary lifestyle, are most important causes of diabetes. Based on medical research, it is now clear that the dominant aetiology of type 2 diabetes among children and adolescents is related to lifestyle factors such as over-nutrition and sedentary activity, rather than hereditary factors (American Diabetes Association, 2000). Adolescents’ eating behaviour was a major cause of their disease; most of them were overweight or obese, or had a history of childhood overweight or obesity. When visiting a doctor, the most common advice that they receive is weight reduction, discussed later in the section on treatment.

Signs and symptoms

Based on medical explanations, symptoms of the two main types of diabetes – type 1 diabetes and type 2 diabetes - are different, in that children with type 2 diabetes may be asymptomatic, even at time of diagnosis, as symptoms develop gradually and slowly. Some patients may have wounds healing slowly, more frequent urination, acute weight loss, or evidence of insulin resistance. However, most young patients lack symptoms of diabetes. This asymptomatic group is usually diagnosed as having high blood sugar accidentally, through a blood examination (e.g. during yearly health check-up, and when visiting a hospital with other health problems).

Most young participants and their caregivers identify some specific characteristics of people with diabetes: having high blood sugar, *cor-dum*, and wounds which turn dark or heal slowly as signs and symptoms of type 2 diabetes. High blood sugar is frequently explained in relation to functioning of pancreas and insulin and used as an indicator of being diabetic. Other symptoms, such as weight loss, craving sweet things, and shock because of exercising too much, were identified by the caregivers, but not the adolescents. Weight loss, expressed by adolescents, does not correspond with caregivers' views. Adolescents with pre-diabetes and diabetes perceived that people with diabetes, especially youths, are overweight or obese rather than thin, as they see that many of them in their age group are overweight or obese, and so they did not note their own weight loss as problematic. In contrast, some primary caregivers in this study thought that people with diabetes would become thin, because of their own experience with other relatives or with other people who lost weight. According to self-observation, some adolescents noticed that they had a headache whenever their blood sugar levels were high, and a headache if they ate too much high fat food. Some caregivers also suspected that the headache may be associated with being diabetic.

Severity of diabetes

According to the interview data, the majority of young participants (12 out of 16), both with pre-diabetes and with diabetes, considered type 2 diabetes to be “non-severe.” This perception came from their own experience: they had not yet experienced any apparent symptoms of the illness, other than having high blood sugar that they did not “feel”; they were able to be treated only by controlling food and weight with or without taking tablets, and did not require insulin injections; those who had been diagnosed as having pre-diabetes were asymptomatic and were told they could avoid developing diabetes

through behavioural change. Although some of them were aware of others who had had complications (e.g. going blind, renal failure and death), they thought that their cases were still “mild” or “non-severe.”

On the other hand, those who considered diabetes to be “severe” perceived severity in relation to the development of complications both in general and in their particular case. They understood that people with diabetes will inevitably arrive at that stage – developing various complications; they expected themselves to be in such a situation in the future, particularly if they were unable to control their blood sugar. In the following paragraphs, the two sub-categories – perceived non-severity and perceived severity – are presented.

Perceived non-severity

Of course, it [a complication] has not happened to me yet, so I don't have any fear. If so, I may feel that [fear]. And maybe it's because I have no symptoms, like being faint and shocked. So I'm not concerned about its dangerous effects. And diabetes is just having high sugar in blood. It's just like that and nothing happens [laugh] [Song, F, 19, type 2 diabetes].

As reflected in this excerpt, because of the perceived non-severity of her diabetes due to the absence of any symptoms, Song does not comply with the recommendations to take medications nor does she make changes in her lifestyle; she does not see this as necessary for treatment nor to prevent the development of complications. She is like others in my study who thought of themselves as not being ill and therefore neglected their self-management of illness. Three main reasons why most adolescents in this study think that diabetes is not severe include the absence of symptoms or complications, as a result of which they are not anxious and regard other matters as more serious than diabetes, or those with pre-diabetes believe that they are not diabetic. With these

perceptions, consequently, adolescents ignored advice to take care of their health, despite knowing the risks for developing complications. For example, one young woman said, “Nothing is serious about diabetes as I am fine despite having high blood sugar. (I) haven’t made any changes, not even my eating behaviour, not at all.”

Some respondents viewed that other diseases or things were more serious or important than diabetes. Therefore, diabetes self-management was frequently ignored. As one young man explained, “It’s the period of entrance examinations, so I forget about diabetes. And I used to have asthma which was more serious than diabetes.” The concern about other health problems is also illustrated by some caregivers. For example, one mother was more concerned about her son’s cigarette smoking than his diabetes, because her father had died from Chronic Obstructive Pulmonary Disease (COPD), caused by smoking; she was also concerned about the development of lung cancer. As discussed in terms of *wet* and *dry* diabetes by adults in Naemiratch’s study (2007), without the notion of *wet* and *dry* diabetes, young participants in my study did not have a picture of type 2 diabetes as severe.

Nearly all adolescents diagnosed with pre-diabetes believed that they were not yet diabetic, so their condition was under control. One young man indicated, “I’m not diabetic so it’s not important. Fatness is my focus.” One mother also shared the idea: “He [Hawk] just has covert diabetes [pre-diabetes] and his blood sugar is under control.” Adolescents with pre-diabetes generally viewed that diabetes is not a part of their lives because they did not perceive that they have diabetes. Most of them also viewed themselves as “normal” people and perceived their health condition as non-severe. As a result, they paid little attention to their health behaviours, particularly in relation to food and eating. In contrast, those who perceived the severity of diabetes (mostly have diabetes) illustrate the ways in which they integrate the disease with their

self-identity as a whole, as reflected by statements that included *baowaan khong chan*, reflecting that diabetes is part of their life: “I will not be cured as it [*baowaan*] will be with me forever.” Like the pre-diabetes group, some adolescents with diabetes tried to neutralise their illness, through the view of self-identifying as “normal” and behaving like other people, such as eating food without any limitations regarding quantity or quality. Most adolescents with pre-diabetes perceived that their condition was not serious, and so were less likely to change their lifestyle. If behavioural change does not occur at this stage, it may be too late to prevent the development of diabetes and complications.

In addition, young participants perceived the non-severity of diabetes in relation to their age – *wairun*. As discussed in Chapter 3, being a *wairun* captures both positive and negative aspects of behaviours, including being energetic, joyful and curious, as well as aggressive and careless. They are focused the immediate short-term enjoyment and disregard the long-term consequences of diabetes:

Because it’s my age – teens, I’m not worried about dying. Death is not my fear, although my father told me that being *baowaan* [diabetes], I won’t live long, if I don’t take care of myself. It’s like I’m a *wairun* [teen], I want to live first. I don’t want to be worried about this [diabetes]. Leave it [for the moment] (Ha, M, 19).

Despite holding a similar explanatory model to adolescents, some caregivers explained their perceptions of non-severity in different ways. For example, Sri’s mother indicated:

Diabetes is now not our focus and I feel indifferent about it because she [Sri] doesn’t take care of herself and I get used to it [diabetes]. Whatever will be, will be; let it be because it’s up to her [practices]. Actually, I’m more worried about her study. And I’m so stressed with my workload and problems related to work [Sri’s mother, 52].

According to this excerpt, Sri's mother, who suffered emotional stress especially during periods of uncertainty after diagnosis, could not integrate her child's illness situation and management with her personal and family life. The concept of normalization (Deatrck et al., 1999; Knafl and Deatrck, 2002), suggesting a process of defining the situation and managing the illness, can be applied to explain the failure of Sri's disease management. This is because Sri and her parents cannot adjust diabetes management tasks or fit them into their daily activities as "normal" or "routine." To avoid the conflict due to Sri's diabetes management, the mother focussed less on diabetes and more on her own work. Sri did not present any symptoms of the illness, and both Sri and her mother became insensitive to her diabetes and perceived her illness as non-severe.

After the initial diagnosis, caregivers were more worried about their children's illness but failed to help their children to control diet, exercise and adhere to prescribed medications. A few years later, they felt indifferent or less worried, excused themselves of their responsibility by shifting the responsibility onto their children when they became older, and expecting them to show maturity and appropriate behaviours. Sri's father explained this as follows:

We can't help her [Sri]. One way to help her is to take her to see a doctor, and I've done that. Now it's her turn to respond and follow the doctor's instruction. We can't fuss over her as she is now an adult, not a little child [Sri's father, 51].

This father speaks about the partnership between the parents, children and doctors. However, the child, supported by the parents and doctors, has to adopt the advice.

Two young women, Sam and Sib-jed, were exceptions as both of them were likely to adhere to their self-management although they perceived their diabetes not to

be severe. This is because other factors, possibly such as having other health problems, maternal involvement, authoritative parenting style, self-efficacy, body image concern and having life goals (i.e. academic achievement and the ability to control the disease), are involved. Of all adolescents with diabetes in this study, Sam had the most health problems, including liver disease, amenorrhoea (at aged 17 at the time of being interviewed), stool incontinence and obesity. Her mother was the primary caregiver, while her father was the bread winner. Because of her multiple health problems, her mother looked after Sam. The mother overprotected her as *khai nai hin* (as discussed in Chapter 8), and the family identified Sam as a sick child but due to other health problems not diabetes. Therefore, when compared with the other families in this group, Sam had gradually adjusted her lifestyle, such as playing badminton and practising basic yoga with her mother before having dinner; she had reduced the amount of food consumed. Important strategies used by this mother included participation in the child's diabetes management and lifestyle modification and enhancing the child's willpower (i.e. using positive statements) and her life goal – having a high education.

Despite perceived non-severity of the illness, Sib-jed also had positive health behaviours. She was able to change her lifestyle and stayed healthy in order to control her weight and her blood sugar. Sib-jed's perception of non-severity does not affect her behavioural changes, and thus it is interesting to investigate other factors affecting her perceptions and behaviours in successful diabetes management. Factors influencing self-management of diabetes and lifestyle modifications among young participants, including Sib-jed, are discussed in Chapter 8.

Perceived severity

Young respondents mainly perceived the severity of diabetes in relation to its complications, not as a result of the diagnosis itself. Diabetes in their understanding referred to having high blood sugar, and did not functionally affect their daily lives. As one young participant said, “Diabetes, it’s just high blood sugar. I thought, because my dad had diabetes, I would get it too. But I think diabetes is just diabetes. Nothing happens, though.” Young participants were most concerned about possible blindness or other complications, while their caregivers were more worried about death at a young age. This can be explained in terms of their age. Adolescence is seen to be the beginning period of “life” or a period of “growing”, “blooming” and “curiosity” (as described in Chapter 3), and people at this age have just started to learn about their life. Therefore, it is too early to think about death at this age.

In twelve families, none of adolescents perceived that diabetes was severe while a few parents or caregivers perceived this. In four families (those of Nueng, Sib-song, Sib-sii and Sib-pad), both caregivers and the adolescents perceived diabetes to be a serious condition because of the risk of complications. All four adolescents mentioned their fears of developing complications (e.g. blindness and trachoma) and/or the need to have insulin injections, while their caregivers reported their greatest concern was the possibility of early death, the development of complications, and the progression of the child’s illness from pre-diabetes to diabetes and to its complications. These caregivers perceived that children who had diabetes would have a short life, as they saw many adults with diabetes, whose disease had progressed, develop severe complications, such

as diabetic retinopathy (*baowaan khuen taa* in lay terms),¹⁹ or renal failure, which required dialysis. Some of them had also cared for parents who had these complications. Therefore, when the caregivers reinforced to their children the need for good diabetes control, they often used a family member living with diabetes as an example in order to reinforce the importance of adherence. This threatening strategy was most successful in the case of Nueng. For example, Nueng was often told by his aunt and other family members that if he did not reduce his blood sugar to a normal range, then he would go blind, would always stay in bed, become skinny because of weight loss, and would later die in his sleep. These messages made Nueng worried about his difficult life in the future, and that inspired him be able to change his unhealthy eating behaviour and to exercise more often.

Among these four families, Nueng and his caregivers held the strongest perceptions of diabetes as a severe illness, and were most strict about the need for him to control his diabetes, changing the diet of the whole family, often exercising, and ensuring he was adhering to his medications. Nueng had been hospitalised for a 10-day treatment program to receive insulin injections, to have his blood samples monitored, and to follow a prescribed diet for diabetics; he had also seen relatives with diabetes develop complications (i.e. going blind, having a finger amputated, having injections, and dying from diabetes-related complications). Both Nueng and his cousin also perceived that diabetes affected the whole family, as his cousin explained:

He (Nueng) is scared of having injections and developing complications – blindness. When people have diabetes, their mind gets anxious because

¹⁹ *Baowaan* means diabetes; *khuen* means to appear/occur; and *taa* refers to eyes. This term means that a diabetic symptom occurs visibly in the retina, with the characteristics of abnormality of small blood vessels, bleeding of these blood vessels in vitreous humour, and retina detachment. This complication may lead to blindness.

they have to be aware of their blood sugar going up, when eating food. This also makes people around them worried. Like, when he [Nueng] is sick, I wake up in the night and watch him, as I'm afraid that he'll pass away quietly in his sleep. Sometimes, my mother [Nueng's aunt] stays up with me for this reason [Nueng's main caregiver, F, 31].

To sum up, the majority of young participants perceived their condition (both pre-diabetes and diabetes) to be non-severe rather than severe. This appears to affect their self-management behaviours, i.e. their inability or reluctance to control their diet or exercise regularly in order to reduce or control their blood sugar and to change their lifestyle. The minority of those who perceived diabetes to be a severe illness tended to self-manage successfully and believed they were capable of adopting a "healthy" lifestyle. The perception of illness as severe reported by the primary caregivers is similar to that reported by their children. The presence or absence of illness symptoms and/or complications and experiences of living with relatives or family members having diabetes with or without complications most commonly affect the perceived (non)severity of diabetes in this study.

Adolescents' and caregivers' understanding of treatment

Like adults with diabetes in Naemiratch's (2004) study, adolescents and caregivers in my study commonly viewed their blood sugar results as a way of detecting cure. They looked happy when their blood sugar level decreased (compared with that of the previous blood check-up). If their blood sugar reverted to within a normal range (80 – 100 mg %), some of them believed that their diabetes was cured. With this notion, ensuring a blood sugar level close to a normal range among people with diabetes is a major focus of their self-management.

In response to the specific questions to both groups “Do you think that (pre) diabetes can be cured or not? and why or why not?,” More than half of adolescents (9/16) and their caregivers (17/25) believed that diabetes was an incurable disease. The majority of adolescents (10/16) and caregivers (19/25) believed that diabetes was a controllable disease and that it needed to be controlled, regardless of their perception of the curability or incurability of the disease. Out of 10 adolescents who perceived diabetes to be a controllable disease, half perceived that it was curable and half believed that it was incurable. 12 out of 25 caregivers perceived the disease to be incurable but controllable, and another seven perceived it to be curable if controlled. The remainder (six adolescents and six caregivers) perceived others: four adolescents and five caregivers perceived diabetes as an incurable and uncontrollable disease while two adolescents and one caregiver perceived it to be curable and uncontrollable. These perceptions are presented in Figures 7.2 and 7.3.

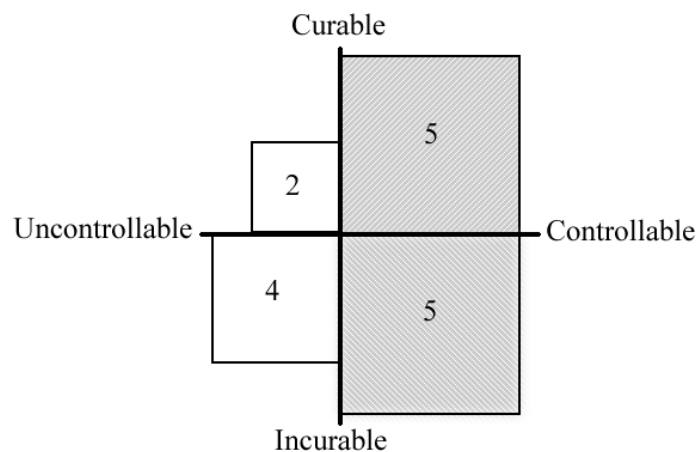


Figure 7.2 Adolescents' perceptions of diabetes curability and controllability

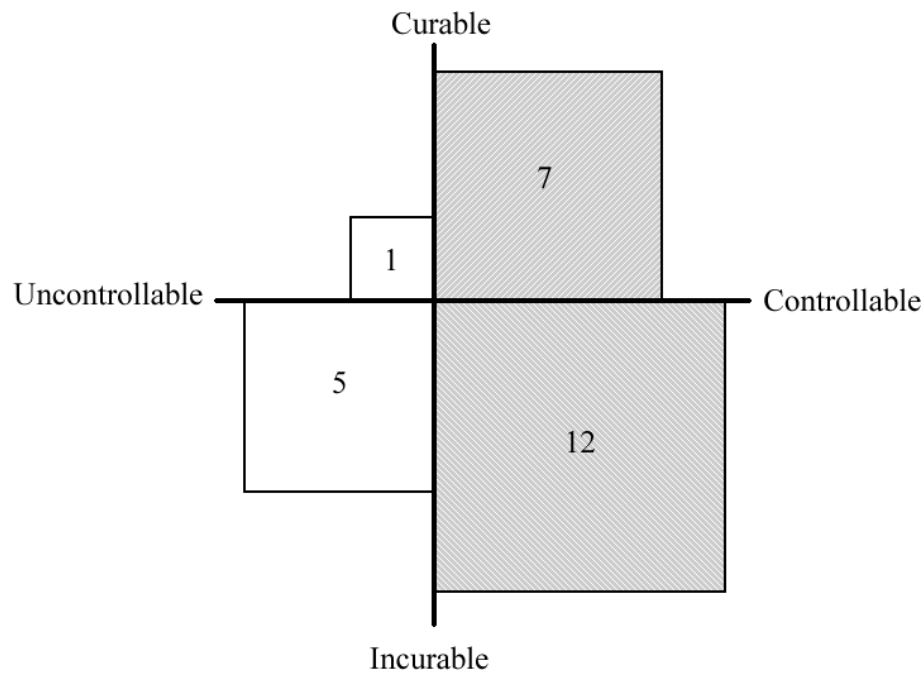


Figure 7.3 Caregivers' perception of diabetes curability and controllability

In Thai, the term *haai*, in the context of health or illness, refers to a condition that can be cured or healed, or to recover, and *haai khaad* means completely curable, the desired consequence of treatment. The Thai notion of *haai* derives from lay understanding of health, disease and illness (Naemiratch, 2004: 107). The general meaning of *haai* actually comes from the understanding that people or things disappear, or are absent. When *haai* is used in the context of illness or disease, as *roak haai*, it translates as “the illness/disease is gone or has disappeared,” which correlates with the meaning of *haai puay* or *haai jaak roak* (recovering or cured from illness/disease). Adolescents and their caregivers in this study defined *haai* and *haai khaad*, in relation to diabetes treatment, as “curable.” When I asked them to clarify the meanings of *haai*, most respondents in both groups provided various definitions which can be grouped into five categories, as set out in Table 7.1. Some respondents provided more than one meaning.

Table 7.1 Lay understanding of *haai* (curable diabetes)

The meaning of <i>haai</i> (curable)	Adolescents	Caregivers
Stop taking medicine	X	X
Having a normal blood sugar level	X	X
Diabetes disappears temporarily	X	X
Pancreas becomes normal	X	-
Diabetes disappears permanently	-	X

“Stop taking medicines” or no medication use was the most frequent meaning of a curable illness, given by both groups of respondents. The second most common response was “having a normal blood sugar level.” No adolescents defined curable as “diabetes disappearing permanently,” although some of the caregivers mentioned this. These understandings of *haai* or *haai khaad* presented in the second category - blood sugar levels falling within *khaa pakkati* (the normal range) - and the third category - diabetes disappearing when it is under control and reappearing when people lose their control - are concordant with those of Thai adults with type 2 diabetes (Naemiratch, 2004:155).

The analysis of the interview data demonstrates that two main patterns of understanding type 2 diabetes – “incurable but controllable” and “curable if controlled”- are most often recognised among adolescents and their caregivers. One similarity in the two patterns is *the concept of control, which originates from physicians’ messages*. Doctors frequently tell adolescents (both pre-diabetes and diabetes) to control lifestyle factors (such as food and eating, and exercise), keep blood sugar levels low, and maintain medication use. Both young participants and parents claimed that their doctors frequently encouraged adolescents to control their blood sugar through controlling food consumption and exercise. I observed similar messages being given by the doctors when

I was in an examination room with young participants and their parents. Some interpreted this advice to mean they can control the progress even though they cannot cure their illness. In the following sections, I provide the two patterns of understanding diabetes treatment in detail.

Diabetes is incurable but controllable

Respondents indicated that in providing them with diabetes-related information, the doctors commonly suggested to them that they control food, weight, or blood sugar levels. This was the case whether the doctors said explicitly that the disease was “incurable but controllable” or (ambiguously) implied the possibility of recovery or temporary absence, then recurrence, of the disease. The excerpts of two young participants below present messages that they recall receiving from their doctors:

Perhaps it [diabetes] will come back, if I don't control the sugar. The doctor told me that it [diabetes] will return when I get older. If blood sugar is normal, no medication is needed. If blood sugar is up again, then medication is continued [Sib-song, F, 13, type 2 diabetes].

The doctor told me that I have a chance to be cured if I exercise and reduce my weight. But I don't care because I wouldn't do it anyway. I do not believe I'll be cured, but it's just to keep the blood sugar controlled [Sib-ed, M, 16, type 2 diabetes].

Some caregivers, however, cite doctors' messages about diabetes as incurable. Sib-jed's mother explained this below:

It's incurable but it can be controlled by limiting food and [as a consequence] not needing medication. It's just to inhibit the disease. And I don't believe that she [Sib-jed] is cured, because the doctor said that this disease cannot be cured [Sib-jed's mother, 56].

Like Sib-Jed's mother, most caregivers who perceived diabetes as an incurable but controllable disease believed that their ill children could not be cured because the doctors told them so. One mother addressed that her son's health had improved since he had accepted the need to adjust his behaviours consistent with his doctors' advice (e.g. regular exercise, diet control and adherence to medications).

Caregivers of young respondents with pre-diabetes, who shared this explanatory model of illness (diabetes is incurable but controllable), believed that pre-diabetes could possibly be cured. They considered pre-diabetes to be a mild stage of diabetes, from which they can either get ill (i.e. become diabetic) or get better (i.e. revert to their health status prior to pre-diabetes). This is presented in an excerpt from an interview with Sib-pad's mother:

It's impossible to be cured [from diabetes], but it's [illness is] controllable and it needs to be controlled so that it doesn't progress to a severe stage. And the doctor said he [Sib-pad] had only pre-diabetes not diabetes. I think Sib-pad will be cured as he has not developed diabetes [Sib-pad's mother, 48].

Paediatric endocrinologists in this study reported that they explained that people with pre-diabetes can prevent or delay the development of type 2 diabetes through lifestyle modification; this has been proven by research (Tuomilehto et al., 2001; Li et al., 2008). An intervention study in China suggests that adults with pre-diabetes who have obtained active intervention (diet plus exercise) for over six years can prevent type 2 diabetes for up to 14 years after the intervention (Li et al., 2008). Based on the two previous studies and doctors' interviews, however, there is no evidence that pre-diabetes is reversible or can be permanently cured as understood by my study participants.

In terms of incurability of diabetes, most doctors confirmed that diabetes cannot be cured but it can be controlled:

It [diabetes] can be cured meaning that it [diabetes] can be preventable by diet control and behavioural modification. They [patients] cannot be cured so they have to maintain these [diet control and behavioural modification]. Whenever they increase their weight or whatever, their diabetes will come back [Dr Bee, paediatric endocrinologist].

Most adolescents who perceived diabetes to be incurable but controllable were likely to ignore guidelines and recommendations for self-management, and tended to eat too much food, avoid exercise and forget to take prescribed drugs. There are two explanations, according to my analysis, of this pattern. One is that the perception that there is no way to cure the disease, particularly among adolescents who are diagnosed with type 2 diabetes. These adolescents felt that nothing much could be done and they should just “let it go;” whatever they might do to try to treat their illness, the disease would be with them forever. Another explanation is that adolescents perceive that maintaining diet control, exercise, and/or medication interrupt their social life. Hence, they choose to keep their social life and avoid the behavioural constraints needed to manage their illness.

Diabetes is curable, if controlled

Five of 16 young participants and seven of 25 caregivers perceived diabetes as curable and controllable. Medical advice and evidence of cured patients are the main reasons why some respondents perceived this. Respondents explained their reasons in a positive way, unlike those who adhered to the incurable model. For example, Nueng’s cousin explained:

Diabetics who are treated by taking medicines can be cured because their pancreas still works, while those who have insulin injections can’t be cured because their pancreas does not work. And I think Nueng can be cured as he has not had insulin injections [Nueng’s cousin, F, 31].

This caregiver argues that having insulin injections indicates a pancreas dysfunction, which is an important reason why this disease is incurable. Nueng also believes that he can be cured because there is evidence of a patient who reported that he or she was cured from diabetes:

I also saw someone who had been cured already. I believe and hope that I will be cured...this is my will [Nueng, M, 14, type 2 diabetes].

Nueng had the experience of seeing a patient with diabetes who he believed had been cured by controlling food intake and using herbs. In Nueng's case, in addition to his perception of the severity of diabetes complications and fear of having an insulin injection (as discussed earlier), the perceived curability of illness, if controlled, strongly impacted on his intention to manage the disease by adjusting his lifestyle (i.e. diet control and exercise) and adhering to drug intake.

Like Nueng, Sib-jed and Sib-sii, who also fell within this model (diabetes is curable if controlled), perceived that they could be cured because they had adjusted their lifestyles and their health outcomes had improved. For example, Sib-jed controlled her diet (with her mother's support for cooking), exercised regularly and intensively, and was not prescribed any medication. Similarly, Sib-sii was off medication but still kept exercising (under his father's supervision) and controlled his diet with his mother's help. While Sib-sii's mother thought that Sib-sii could not be cured, his father believed that he could be cured by following the doctor's advice and because the doctor had already taken him off medication:

The doctor said that type 2 diabetes is curable if you control your food and eating, and your blood sugar, but type 1 diabetes is incurable as it is caused by genetics [Sib-sii's father, 42].

As noted, all caregivers who adopted the belief that diabetes is “incurable but controllable” were the mothers or other female caregivers, while most fathers believed that the disease is “curable, if controlled.” As the main caregiver, the mothers usually took their ill children to hospitals and stayed with them during doctors’ examination. Therefore, they received information directly from doctors and then transferred these messages to the fathers. Hence, mothers had access to more medically accurate information related to health and disease than fathers did.

However, there is inconsistency in the medical advice given to patients regarding whether diabetes can be cured or not be cured. Based on my participant observation in examination rooms, young patient’s mothers asked the doctor whether diabetes can be *raksaa dai* [treated] or not. The doctor explained that “diabetes can be *raksaa dai* (treated) but it cannot be *haai dai* (cured), because it is a chronic disease. It can be controlled.” I also asked health professionals whether type 2 diabetes can be cured or not; most healthcare providers confirmed that there is no cure for diabetes, but that it is treatable. However, doctors explained it in different ways, as illustrated by Doctor A:

In practice, we usually tell our patients that this disease can *haai dai* [cured] by having good blood sugar control. The term *haai dai* means not being diabetic and having a normal blood sugar level. But theoretically, diabetes is actually an incurable disease, like an inborn disease because of a genetic predisposition and patients can control it so that no symptoms appear. According to medical textbooks, diabetes is treatable and preventable but not curable. This disease can be treated by taking medicines and controlling diet. Once patients can control their blood sugar in an acceptable range, we usually stop our drug prescription [Dr A, paediatric endocrinologist].

This doctor continued to explain that he thought it was good if doctors told patients that diabetes can be *raksaa dai*, because this message would be helpful and beneficial for patients to develop hope or the willpower to maintain their disease management. Indeed, he continued “if they can control their blood sugar levels successfully, they will delay the development of diabetic complications, although in the long run, they may have high blood sugar levels again in the next 20 years.” According to the excerpt above, Dr A did not intend to provide incorrect or false information to the patients when using the term *haai dai* (which is the opposite advice provided by other doctors), but he also added conditional information using the term “*haai dai* if ...” or “but...” Rather, healthcare providers tend to compromise information, such as by using positive expressions like “curable but” or “if...” instead of “incurable” to enhance their patients’ positive attitudes to the disease, even when this is inconsistent with the terminology and description or explanation provided in biomedical texts.

Doctors explain to patients that diabetes can be cured by controlling diet, doing exercise and taking medicine, but that it will come back when they get older, or they explain that diabetes can be treated by taking medicine and controlling food and weight. Young patients and their families may misinterpret this advice. For example, some adolescents understood the meaning of *haai* as “completely cured” and ignored conditional accounts (such as “if you control” ... or “but...”). Others interpreted the term “treated” as having the same meaning as the term “cured:” the term *raksaa dai* (treatable) in Thai is often regarded as synonymous with *haai dai* (curable) by patients and in general. People view both *raksaa dai* and *haai dai* as a consequence of treatment, while physicians refer to the term “treatable” as a process of treatment and the term “curable” as an outcome of treatment. Doctors’ messages may be misinterpreted by patients and caregivers. As doctors stated that diabetes can be *raksa dai*, patients

interpreted incorrectly that this disease can be *haai dai*. This misinterpretation seems to have a positive effect on disease treatment and self-management and thus may benefit young patients as they are more likely to be able to control diabetes well when they perceive it to be curable.

Young participants who believe they cannot control or change their behaviour are not likely to think their illness can be cured. If they think diabetes can be cured, through lifestyle modification, they still may not change as they find difficult to control or change that behaviour. As one young woman explained:

Yes, I have heard that people can recover from diabetes, meaning that they do not take medicine but need to control food and eating. But I don't think I will ever be cured because of my behaviour like this...no self care. I can't control my diet [Song, F, 19, type 2 diabetes].

Song has low self-efficacy (according to her account) in changing her diet behaviour. Here in this study, low self-efficacy in controlling diabetes appears to have a greater influence on the individual's willingness to change behaviour than the perceived curability of diabetes.

Disease-related information provided by health care providers can have a positive or negative impact on the adolescents' self-management of diabetes. According to my data, adolescents' and caregivers' perceptions of diabetes are influenced not only by health professionals' messages, but also by the experiences of their relatives or others with diabetes and by the perceived difficulty of diabetes self-management. Even though doctors tell young patients that they have a chance to *haai*, or the young patients themselves have heard that some patients end up being *haai*, they do not believe that they are able to *haai*. This is because they find it difficult to follow doctors' advice, which interferes with their social life. For these people, eating less fatty food or

avoiding sweets and doing more exercise seems extremely difficult. Ambiguous advice or information provided by doctors can motivate intention or self-efficacy of some adolescents in managing their illness if such advice provides practical ways to prevent or delay the progression of the disease. However, the need for simple, correct and clear messages from health professionals is most beneficial for people with chronic illness and families in managing their illness at home.

The findings in this chapter focus on lay understandings of the meaning, causes, severity and treatment of type 2 diabetes. Both young patients and their primary caregivers interpret illness based on a Western medical model in relation to the concept of disease and abnormalities of the body function (Barry and Yuill, 2002). However, the interpretation of illness is shaped also by individuals' own background, beliefs, environments, and socioeconomic, religious and cultural aspects (Kleinman et al., 1978; Kleinman, 1988). Such illness perceptions have an effect on self-care behaviours, for example, the perceived controllability or curability is associated with active coping behaviours in order to relieve the illness symptoms and to treat the illness; the treatment needs to be perceived as effective and not complicated (Griva et al., 2000; Hagger and Orbell, 2003). In my study, exploring lay explanatory models has led me to understand how young patients and their primary caregivers understand the development of the disease and manage the illness. The issue of behavioural and lifestyle modification, which is a part of self-management of diabetes, is discussed in the next chapter.

CHAPTER 8

DIABETES SELF-MANAGEMENT STYLES

In the beginning of this chapter, I focus on the two components: perceptions of illness and management behaviours. Themes and sub-themes of each component have emerged from the adolescents' and caregivers' (mainly mothers') perspectives, summarised in Table 8.1. I then compare similarities and differences among these themes and sub-themes among the 16 families, to identify the patterns of diabetes self-management, as illustrated in Table 8.2. Based on thematic analysis, four major diabetes management styles are identified: thriving; accommodating; indulging; and indifferent. All of them are discussed in relation to adolescents' lifestyles and health outcomes at the time of conducting the interviews. Additionally, I provide two case illustrations in Figure 8.1 and 8.2, which represent adolescents' lifestyle before and after the diagnosis. I summarise the diabetes self-management styles with all themes, lifestyle change scores, and the health outcomes of each young respondent (Appendix 9).

As already addressed in the theoretical framework section (in Chapter 3), I used Knafl's and Deatrick's family management style as a theoretical framework to help me to analyse the data on diabetes self-management. I then identified four diabetes self-management patterns across many themes/subthemes within the two major domains; perceptions and behaviours, as described below.

Perceptions of living with diabetes

It is important to find out how young people and their caregivers define their situation in relation to pre-diabetes and diabetes. This situational context leads to insight into different individuals' behaviours in managing their illness and how caregivers respond to their child's illness. The following paragraphs present six main themes and their sub-themes related to living with the illness among adolescents and their caregivers (see Table 8.1).

Table 8.1 Perception and management behaviour themes and sub-themes

Components	Themes	Sub-themes
Perceptions of living with diabetes	Child's view of self	Healthy/Well/Normal/Unwell Fat/Plump/Not fat Diabetic/At risk/Non-diabetic
	Caregivers' views of their child	Healthy/Normal (not ill) /Ill (not well) Fat/Plump/Normal (not fat) Diabetic/At risk/Non-diabetic
	Child's view of the impact	Affected (mental/physical) Unaffected
	Caregivers' views of the impact	Affected (mental/physical) Unaffected
	Family focus	A child's illness (i.e. diabetes) Others (body image/study/ career/friends /cartoon)
	Self-ability	High confidence Low confidence No confidence
Management behaviours	Caregivers' involvement	Mother/female relative Father Both parents No parental involvement
	Child's life goals	Related to diabetes Related to life - body image, study and career None
	Self-management practice	Proactive response Passive response Reactive response Inactive response

Child's view of self

This theme refers to how adolescents view themselves in the context of illness. Adolescents' perceptions of themselves vary based on their health status and appearance, health-related behaviour, and ability to do activities. Most respondents perceived themselves to be fat, although were six adolescents with diabetes and one with pre-diabetes reported "they are well or healthy." Only one of them perceived herself to be healthier than before she developed diabetes because of adherence to exercise and eating healthy food. The other five perceived themselves to be well for various reasons related to strong appearance, being happy, and being able to engage in normal physical activities. For example, one young woman, explaining her good health in relation to her mental state and physical ability, elaborated:

My mental health is rather good (often laughing). For my physical health, I look like "normal" people as I can walk up the stairs to the sixth floor like other people, although I walk slower [Sib, F, 16, diabetes].

Only one young man expressed the idea of imperfection:

If other people look at me, my look, they see I'm fit. I also see myself strong, but it's not what they would think if they saw deeply inside (my body). That is what I usually keep in mind and I can't explain why that is [Hawk, M, 12, pre-diabetes].

This perception of being imperfect was identified in Thai adults with type 2 diabetes, who used the term *tamni* or "flaw self" (Naemiratch, 2004:214). Naemiratch (2004) explained that adults in her study with this perception did not report their loss of sense of self, while the young man in my study mentioned his decreased self-confidence. He felt frustrated when people told him about eating healthy food, or if his parents turned

on health- and diabetes-related TV programs, because he was overwhelmed with this repetition.

Among seven adolescents who saw themselves as obese but not diabetic, five acknowledged that they were at risk of diabetes as their parents and doctors had told them so. The other two explained that they did not have diabetes because their blood sugar levels had returned to normal or they were off medication. Out of sixteen, nine respondents perceived themselves as physically unwell because of having a disease (i.e. diabetes and obesity) or often visiting a hospital; a lack of physical capacity (e.g. less capable of running around a football ground than others or unable to participate in an exercise class); and unhealthy behaviours (e.g. lack of exercise and eating unhealthy food). Surprisingly, the adolescents who reported that they were not well had pre-diabetes, while those with diabetes reported that they were “normal.” This is because adolescents with diabetes have a long experience with doctors’ advice and treatment, and even hospitalisation. They may have been encouraged by their doctors to “Live normally despite diabetes.” I also gained these messages when I participated in the Siriraj diabetes camp during my fieldwork. Therefore, the term “normal” frequently emerged in my conversation with adolescents with diabetes and their families, reflecting their attempts to negotiate their difference and to reject diabetes identity. In contrast, adolescents with pre-diabetes perceive health to be associated with having a disease in terms of germs based on biomedical models. Although they perceived that they are not yet diabetic (but nearly), because of elevated blood sugar, they feel they are “not well” despite a lack of illness symptoms.

The statement “Live normally despite diabetes” from healthcare providers draws on the concept of normalization, as healthcare providers try to encourage patients and families to integrate medical regimens within their daily life as a *new* normal life

(Deatrick et al., 1999). Normalization is a complicated process aiming to minimise life disruption caused by the illness condition, and is interpreted variably by patients and families depending on the illness situation and family context. Therefore, patients may distort this concept to avoid performing their diabetes tasks (Broom and Whittaker, 2004). For example, some adolescents in my study who refused to manage their diabetes tasks evoked the term “normal life” to avoid strict self-management. One young man spoke about this as follows:

I am what I am. They (relatives) told me to make things or to live as a normal man, and I follow that. Nothing needs to be changed. I eat what I want [to eat]. I do not want my life to be strict or stressful because I can't eat this and that food [Sib-ed, M, 16 type 2 diabetes].

According to the excerpt above, Sib-ed's caregivers did not support change in his behaviours, possibly compromising his long-term health outcomes. Subsequently, Sib-ed rarely controlled his diet and exercised. On the other hand, adolescents who adhere to self-management of their illness follow the advice of their healthcare providers. For example, one of them said, “The doctor told me that I can *live normally*, only if I can control my food and exercise more. That's it.”

Caregivers' views of their child

Compared to children, the majority of caregivers were more likely to perceive their child as “normal,” “not ill,” or “well,” despite having the disease or being fat. This is because their children had not presented any symptoms of illness or complications; their appearances were not different from healthy children's; and their child's ability to undertake activities at school and in everyday life were the same as others'. Only a few caregivers viewed their children as being ill and they saw disease in the same way as the adolescents who viewed themselves as unwell: their children often had to visit a

hospital and presented with symptoms of illness such as chronic headache, allergy and sleep apnoea due to obesity; and caregivers were concerned about the severity of complications caused by diabetes.

All caregivers had changed their attitudes towards fatness from a perceived good or healthy appearance to the perceived risk to health after their child had been diagnosed with diabetes and/or obesity. As already noted, Thai families commonly prefer chubby children and it is not surprising that all adolescents in this study were obese prior to their diagnosis. This reflects child-rearing patterns among Thai families, particularly in the past, with parents encouraging their children to eat as much as they want, without limitations, and rewarded children with food.

After the diagnosis, some parents or caregivers became too protective, as they viewed their affected child to be “vulnerable.” For example, the “vulnerable” children was usually kept at home, in the family’s sight, and were not allowed to go out alone, because of his/her health status. They were seen as *khai nai hin* children (similar to the English expression “mollycoddled”). The term *khai nai hin* literally derives from the concept of protection by keeping a fragile egg (*khai*) in a rock (*hin*), symbolising rigid protection from external environments or dangers. It metaphorically means “too protective,” and refers to children who are nurtured intentionally and carefully by parents because of some condition: they are sick, they are the first child or the only child, and were born in a rich family. This expression is commonly used in a negative sense, to refer to children who are weak due to their illness or spoiled, brought up permissively, or in families with a high socioeconomic status.

Child's view of the impact of disease

The majority of adolescents reported that their illness/condition had little affect on their lives for various reasons: the absence of illness symptoms, the perceived non-severity of the disease, and having little interest in their illness/condition and health. A minority reported the impact of their illness/condition on themselves in relation to emotional aspects, such as fear of developing complications and having insulin injections. The view of life as unaffected by diabetes suggested young people were living as usual, with little or no change with regard to self-management behaviours (i.e. diet control, exercise and medication). This perception was one barrier to diabetes self-management in this study. However, there were three exceptions. Other factors including internal and external motivations, such as personal goals and parental involvement, respectively, influenced Sib-jed (female, 17), Sib-sii (male, 13) and Sib-pad (male, 16) to improve their lifestyles and health outcomes. These influencing factors are discussed later in this chapter.

As one example of young participants, Sib-ed demonstrates how the lack of a role model regarding self-management behaviour in the family influenced his ideas about the significance of diabetes:

Not (affected) at all. (Others in) my family also have diabetes. Why should I be concerned, as many are like me - 'diabetic' family. And they told me to see myself as normal, so I live normally and I am not worried. Nothing has changed either before or after I became diabetic as I live life like this (without control) [Sib-ed, M, 16, diabetes].

In contrast, a few adolescents (Nueng, Sri and Sib-song) believed that diabetes had both mental and physical impacts on their lives. Mental impacts include fear of developing complications and/or having insulin injections, life burden, and a shortened

life; physical impact frequently involves inability to study, undertake various activities, and work. However, Sri was the only one who also viewed her treatment - taking medication and visiting her doctor for regular follow-ups - as a burden. She told me that she felt different from others: "Life is more difficult." At the time of being interviewed, Sri had rejected all treatment and had been unhappy when visiting doctors for about two years; this directly affected her blood sugar. Sri's mother had difficulty taking her to the hospital and felt that their relationship was dominated by arguments, because Sri refused to see a doctor:

Actually, we haven't gone (to the hospital) for a long time because the doctor usually makes an appointment on Wednesday and she (Sri) often claims that she is busy with her class at school. I think she actually doesn't want to go and I don't know exactly why. Since she was younger, Ooh! Fighting! (I) had to start waking her up from 5 am but she didn't want to do so. I forced her. Then she stayed longer in the bathroom. I had to knock on the door and forced her to hurry up. After taking a shower, she delayed by arguing that she didn't have clothes and shoes, so she couldn't go to the hospital. There's a lot of pressure on us both and the feeling of fear is spreading in us. She really doesn't want to go and I am scared of taking her, as I have to really drag her out. That's really stressful [Sri's mother, 52].

Over time, this mother became indifferent and less focused. Instead, she became more concerned about her own work commitments and paid greater attention to her daughter's study than diabetes. The mother was also worried about her daughter's lack of social skills and confidence as a result of her obesity. In Sri's case, a disruption of the daily life caused by treatment or a doctor's appointment, personal habits (i.e. being isolated and quiet) and psychosocial factors (i.e. low self-efficacy of and less intention to either general or particular self-care) predominantly affect Sri's self-management.

Additionally, the family context, including conflict mainly between Sri and her father, poor role models of others in the family with diabetes (e.g. the grandmother on the father's side), limited parental involvement in self-management of diabetes, and health risks in the household (e.g. the ready availability of snacks, sweets and high fat foods), all inhibited self-management. Research suggests that conflict between parents and children is associated with poor disease management (Weinger et al., 2001; Anderson, 2004). Unlike Nueng and Sib-song, Sri and her mother cannot integrate her diabetes management into the family's and her own life

Compared with Sri, Nueng and Sib-song perceived the severity of diabetes: they feared developing other complications and having insulin injections. Both managed the disease by changing their lifestyle. Sib-song had no conflict in her family to do so. Nueng, but not Sib-song, found it stressful to control his diet: "I'm so stressed when I crave for food and I can't eat it." Nueng and his caregiver initially argued about diet control, but later he understood and accepted his caregiver's strict advice on controlling his food choice and eating:

I fought with my cousin (his caregiver) about buying *khanom* (snacks and sweets), as she used to prevent me from eating them. But now I understand why she was rather strict with me about my food and eating. When she says "No," I know and I don't eat (that).

Caregivers' views of the impact of diabetes

Like the young people, some caregivers perceived diabetes to have little or no impact. However, the number of caregivers who identified diabetes as having an impact was greater than among adolescents. When I compare adolescents' and caregivers' views, there is disagreement among the five pairs of adolescents-caregivers - Sam, Ha, Hawk, Sib-sii and Sib-ed. Caregivers believed that their children's lives (and their own) were affected, while adolescents said they were unaffected. Shortened life was the greatest

concern of caregivers. Caregivers' perception of this impact could serve either as a reinforcement or as a barrier to their child's self-management, depending on how caregivers responded to that perception. For example, one father was worried about his son's shortened life expectancy and, consequently, he allowed his son to live and enjoy life without any control of food, despite the fact that his son risked worsening his disease (i.e. through increased weight and blood sugar levels). The father explained, "When I knew he had diabetes, I really wanted to let him go and leave him do whatever he wants because he will not live long like his brothers [Sib-ed's father]." This father's response, influenced by concern about a shortened life, was identified as a barrier to his child's self-management, because there was no parental control and involvement in disease management.

An example of the perceived shorten life positively influencing adolescents' self-management was demonstrated by Sib-sii's parents. Consequently, among these five adolescents, Sib-sii had better disease management than others – Sam, Ha, Hawk and Sib-ed. This is because Sib-sii's parents' involvement and his age influenced this. Sib-sii's father was involved in his taking medicine and took him to exercise almost every day. This was motivated by his parents' perception of life cut short by diabetes and its complications; for example, Sib-sii's grandmother had developed renal disease and died when she was 65 years old. His mother had graduated in nutrition and ran her own business (a bakery shop), allowing her flexibility to take care of her son, particularly preparing food. At 13 years of age when interviewed, Sib-sii was dependent on his parents, willing to have their close involvement in his life and to adjust behaviour as needed.

Caregivers identified other ways diabetes impacts on adolescents' life, by including developing complications, difficulty or the burden of disease management, and bodily incapability. Three pairs of adolescents-caregivers shared the same view of the impact of diabetes on the adolescents' life: Sri and her mother, Nueng and his cousin, and Sib-hok and his mother. While Sri mentioned that having diabetes made her life difficult (previous section), her mother expressed her great concern about Sri's physical incapability and her lack of confidence caused by diabetes and obesity:

Due to being diabetic, I'm worried whether she will be able to study and work hard to meet her dreams or not. Being diabetic may worsen her study and obstruct her career path, as some jobs may not be suitable for diabetics. (Is that) right? I'm also worried about her fatness, affecting her development, as she feels shy and is not confident to go out and meet other people; thus she usually keeps herself at home, is not going out to learn life and social skills. That is isolating her [Sri's mother, 52].

Despite these three pairs perceiving a negative impact of diabetes, only Nueng was able to manage his illness. To explain these case studies, below I identify other factors which both impede or support self-management practices and discuss those potential factors.

Many caregivers who identified their children as "unaffected" were not worried about the impact of the disease because they mentioned their confidence in the children's self-care competency and maturity, other priorities and the perceived non-severity of the disease. One mother stated, "Once she gets older, she can take care of her self better." Some parents focused more on their child's obesity than diabetes:

I do nothing about diabetes right now, because the concern is "fat" disease (*roak uan*, i.e. obesity as a disease). And this (fat disease) covers everything, including food and eating. If diabetes (treatment) requires controlling food and eating like the "fat" disease, then his diabetes benefits from (managing) the "fat" disease [Sib-sam's mother, 47].

According to the excerpts, the caregivers' perception of "unaffected" children's life appears to be a barrier to adolescents' diabetes self-management as caregivers possibly ignore or less involve in diabetes tasks.

Family focus

As noted above, about a quarter of adolescents' caregivers (eight out of 32) believed that diabetes affected their children, although only two indicated that diabetes was the family's focus. Nueng's and Sib-sii's family were greatly concerned about having insulin injections and going blind, but their caregivers identified their greatest concerns related to the possible shortened life expectancy of the children. Most caregivers were concerned about their child's study and future possibilities, while two caregivers were not: "Study is not always the most important thing in human life, but how he (the young participant) lives and survives, that is important." Most caregivers who thought that diabetes was not a priority regarded their children as "normal" or "healthy," and their main concerns were achievement of study and employment options. Nearly all young respondents defined life priorities not only in terms of study and future careers, but also in relation to body shape, weight, and social life with friends.

Some parents were distracted from their child's illness management because of their greater focus on children's academic achievement and thus their children have to concentrate more on what their parents require, as illustrated by Sib-haa's family. Being the first child of the family, Sib-haa is expected to be able to maintain the family lineage and continue to run the family business. Therefore, he has been strongly affected by his parents' expectations, compared to his sibling. Particularly in relation to academic achievements, Sib-haa feels worried and stressed. For example, his father compares him negatively with his nephew (the son of his older brother) and labels him as less

intelligent, with lower educational potential. Sib-haa was upset with his father's negative statements, as his mother explained:

[Sib-haa] said to me, "papa (the father) speaks like he is looking down at me." And papa said, "Someone like you, nothing. See your uncle's sons, even though their parents are less clever than your parents, they can get high marks and study in a scientific area. Only my sons are dull." Then I only told him [Sib-haa], don't worry about it. Papa wanted to pressure you in order to make you smarter and to be more thoughtful [Sib-haa's mother, 44].

Sib-haa also spoke to me about his parents' pressure:

My parents usually got grade 4 for their examinations,²⁰ so they both expect me to be like them. But I really don't like this because it pressures me. The more they put pressure on me about my study, the lower marks I get because I'm so stressed. My parents don't understand what it feels like to get a low mark. They frequently compare me and my brother with my uncle's sons, because despite my uncle's low education, all of his children study science area. So my father pressures me to study in this field [Sib-haa, M, 16, pre-diabetes].

Body image and social life with friends are possible positive and negative factors affecting diabetes self-management among these adolescents. Those who spoke about body shape were all young women (Song, Sib-song and Sib-jed); those who highlighted social life with friends were young men (Ha, Kaow and Sib-ed). Among the young women, Sib-song and Sib-jed were able to manage their illness and Song had started to comply with taking medicine. The young men, however, rejected doing so.

²⁰ In Thailand, the grading system in secondary schools is generally divided into five levels: 4 = over 80%, 3 = 70-79%, 2 = 60-69%, 1 = 50-59%, F (Fail) = less than 50%.

Self-management ability

Self-management ability refers to adolescents' perceptions of difficulty or ease in managing their diabetes tasks, including diet control, regular exercise and prescribed medication use. I identified three degrees of adolescents' confidence in their disease management: high, low and no confidence. The classification of having high, low and no confidence derives from my own data in relation to personal characteristics and perceived ability to self-manage diabetes as presented below:

- a) High confidence –The respondents in this group were able to do things in their daily lives by themselves, such as cooking their own food and/or cooking for their family, seeing the doctors by themselves, making their own decision about buying clothes and food, and trying to find a solution when having a general problem (i.e. friends and study). Additionally, their accounts reflected a perceived ability to manage their illness and they were usually positive: “I’m sure I can do it”, “I think I can do all things that the doctor told me.”
- b) Low confidence –These adolescents rarely demonstrated independence in their everyday tasks. For example, few reported that they ever cooked their own meals. When discussing their ability to follow their doctor’s advice, they were less certain that they could do it: “I can do it but sometimes I can’t”, “I’m not sure.”
- c) No confidence – Adolescents in this group felt unable to manage their illness at all. For example, they reported that they could not control their diet according to the doctor’s advice, or restrain themselves from eating food high in fat and sugar. Few reported that they had no confidence and were unhappy with their body size, and thus they frequently stayed at home.

High confidence was least common. One young man and two young women (Nueng, Sib-song and Sib-jed) fitted this pattern. All perceived diet control as the most difficult activity, and taking medicine as the easiest task with which to comply. Below are examples illustrating their high confidence in self-management:

(I) have to take care of myself, adjust my behaviours, and know myself what I can or can't eat. If not, I may have to have injections or go blind [Nueng, M, 14, diabetes].

I'm not satisfied with this (weight) as I want to lose more (weight) to about 50 kilos. And I'm sure I can do it [Sib-jed, F, 17, diabetes].

I think I can do all things that the doctor told me because I don't want to have insulin injections [Sib-song, F, 13, diabetes].

Here, underlying factors motivate adolescents' confidence: fear of having insulin injections and developing complications such as blindness, and the desire for a slimmer body shape. These negative and positive reinforcements are important factors in their successful self-management practice.

The most common degree of confidence was low confidence and the second most common was no confidence. Eight adolescents had "low confidence" and the other five indicated "no confidence." Most with low confidence identified controlling food and/or taking medicine as difficult tasks. A few of them perceived that exercise was difficult, as they claimed that they had no time and were too tired to exercise because of heavy study demands, many assignments, and a focus on examinations; and they had no friends or family members to socialise with.

Adolescents who had low or no confidence provided different reasons related to diet control: internal factors (i.e. personal habits and behaviours) and external factors (i.e. having a lot of food available at home, family ceremonies related to food, and

others providing them with unsuitable food). Poor self-control in diet consumption was commonly identified as a key barrier to young people changing their lifestyle, as presented by Song:

But my mum said, “Even I, by myself, can’t control myself [in eating food], so who can control me?” That’s right. But I’d like to have someone control me, you know, as I seem to have had lots of freedom all my life. It’s boring. And my mum can’t control me.

Although Song’s relationship with the mother was very close after she was diagnosed with diabetes, her mother was unable to force her to adhere to self-management. The excerpt above reflects the fact this adolescent was raised in a liberal environment, and so faced difficulties in changing her unhealthy habits and behaviours upon her diagnosis. Lack of self-control because of limited parental control also appears in Hawk’s case:

When I’m hungry, I eat whatever I see, like *taam jai paak* (eating without control). When coming back from school, no one is home. And I’m alone in the evening, so I find something to eat such as cooking instant noodles because I didn’t have breakfast and lunch, or only a little bit of lunch. When my dad comes back from his work, I want to eat again with him. Therefore, I wait to have a dinner with him around 9 pm every day, and my mum sometimes joins us [Hawk, M, 12, pre-diabetes].

Like many adolescents and their caregivers, Hawk used the term *taam jai paak* to define eating without self-restraint. Hawk’s lifestyle is common for adolescents in this study. That lifestyle included getting up very early in the morning to go to school by himself or with the parents; skipping breakfast because of waking up late, or having too little time to finish a meal, and saving money for other purposes (e.g. buying calling cards, online-game packages and cartoon books); and waiting to dine with parents who return home late from work. Skipping breakfast and having dinner late are interesting

issues as the former would affect blood sugar negatively as a result of not having the tablet with the meal, and the latter would increase body weight.

Thai children often have inappropriate meal patterns as they skip meals, particularly breakfast. Approximately 30% of Thai children (6-11 years old) do not have breakfast and this eating behaviour increases among older young people (Luangkaew, 2008). Skipping a meal can harm school-age children's health and school performance, as they need sufficient nutrition and energy from food, especially from breakfast and lunch. According to a US longitudinal study, those who skip breakfast are more likely to gain weight (Berkey et al., 2003) and increase blood lipids (Resnicow, 1991). This is possibly because breakfast skippers eat more later in the day, eat snacks or sweets instead of meals, and may be less active (Wolfe et al., 1994). From my findings, a significant minority of respondents (6 out of 16) do not take their medicines because they skip a meal, usually breakfast. In Hawk's case, because he misses breakfast, he misses his prescribed medication for diabetes treatment in the morning, and he compensates for fasting by eating an excessively large evening meal. His parents did not take action for this, as they claimed that they could not control him when he was at school. Others gave various reasons for skipping meals: having no time to have breakfast because of getting up late, and being bored with food. However, despite skipping breakfast, they bought sweets, snacks and sweetened drinks during short morning class breaks.

Hawk's family ate dinner late, resulting in Hawk's difficulty to control or lose his weight and ease in gaining weight. Some young respondents mentioned their doctors' advice to have dinner no later than 6 pm and to sleep early. Hawk's parents were advised by the doctor to arrange his dinner earlier, and they did follow this advice. And so, instead of having dinner once, Hawk had dinner twice – first with his mother,

early, and the second time with his father, whose routine work continued until late evening. When his mother ran her own father's business, she also came home late:

We talk to each other about the need to follow the doctor's advice – that we should give him his dinner earlier. We did. When I came home early, I had dinner with him [Hawk] around 6 pm. After that when his father came home around 8 pm, again he insisted on having dinner with his father. If I didn't allow him to eat, he was upset and sat there without talking to us. So we didn't know what to do and finally we had to let him eat. This is the main problem [Hawk's mother, 46].

Three main reasons given by many adolescents for non-compliance with medication include: skipping breakfast, forgetting to take medicine, or intending not to take it. Skipping breakfast, as discussed above, is a problem related to missing oral medication, because young people understand that they have to take a tablet *with* breakfast. Generally, young patients with pre-diabetes and type 2 diabetes are prescribed at least one tablet in the morning with or after their breakfast. These adolescents and their caregivers do not inform their doctors about missing the morning tablet and difficulties of timing, and so doctors believe that young patients in their care adhere to prescribed medication. If young patients and their caregivers discussed their problems of treatment regimens with their doctors, it would be possible for doctors to work out an appropriate regimen which could be integrated in their daily life. This happened with Song, who had never complied with medication because she skipped breakfast. She discussed this problem with her doctor:

Do you ask her (Song) why she doesn't take a pill?

Mother: She said that she didn't have breakfast because sometimes she had a morning class and couldn't make it in time.

Have you (Song) ever asked the doctor about this problem? Like if you can't take a tablet in the morning because of skipping breakfast and what should you do?

Song: I just did that at the last visit. And the doctor adjusted it, as at the beginning the doctor told me that I must have breakfast every day because it was good for me like this. But I never woke up in the morning during the previous semester, as I had all classes in the afternoon. So I woke up at noon, then took a shower and had lunch which was my first meal of the day. That's why I never took the medicine. Now the doctor had adjusted the treatment plan for me to allow me to take a tablet either in the morning or afternoon depending on me, but I have to take the correct dose - two tablets a day. It means I have to take one in the morning or afternoon and another tablet in the evening. That's it.

Forgetting to take medicine is a common reason given by young respondents with “low” confidence; those with “no” confidence said that they did *not want* to take a medicine. Forgetting medication is common among many young patients, so parental support is essential. On the other hand, the intention to non-adhere to self-management is problematic among young respondents as they pay less attention to their illness and do not want to take care of themselves, as illustrated below:

I'm too lazy (to take a pill or exercise) [Sri and Sib-sam].

I don't care much about the disease (or health) [Sri, Ha, Sib, Sib-ed, and Sib-sam].

I don't want to make myself suffer with dieting [Sib-ed].

Management behaviours

Three main themes – caregivers' involvement, child's life goal and self-management practice - influence management behaviours regarding health and illness.

Caregivers' involvement

The majority of primary caregivers participated in their child's diabetes management. A few parents (of four adolescents) were not involved in children's diabetes tasks. Among the other twelve adolescents, maternal involvement was dominant, then the involvement of both parents, and single adults: one father and one female cousin. Of the twelve adolescents, six caregivers were consistently involved in self-management. In the other six cases, the involvement was based on the caregiver's priority. This included taking their actions seriously and actively, participating in children's everyday activities, encouraging child's willpower, using different strategies to influence their behaviour, providing knowledge of self-management practice to their children, and having a close relationship with their children. Young respondents' diet control frequently involved caregivers. Nueng's cousin provides examples of the family's active involvement:

People in this house threaten him [Nueng] as we know he fears having insulin injections and developing complications such as blindness. For example, when I heard from others that a boy who ate a lot and couldn't control his diabetes died before the age of 15 because of having [a hypoglycaemic] shock, I told him if he ate a lot, he would be like that. We tell him that it's threatening. As a result, he tries to limit himself not to eat much. For sweets or snacks, I allow him to eat in front of me, not to eat alone or behind me, and thus I know how much he eats. Otherwise, he may cheat by eating food behind me if I forbid him to eat certain foods. Allowing him to eat is a good way as he can learn how much he can eat that food, and then he develops a sense of self-control. Therefore, I'm not

worried about Nueng regarding cheating with food, which I often hear about from other parents speaking about their child who behaves like that [Nueng's cousin, F, 31].

Nueng's caregiver knows Nueng is concerned, and this is critical for his achievement in controlling diet, exercising and adhering to medication. She helps him to control his food consumption by threatening him and compromising to allow him some unhealthy food such as sweets. She is flexible in some situations. Once Nueng had controlled his eating strictly for a few months, and his blood sugar had decreased after regular follow-ups of his blood examination every three months, the caregiver loosens her control of his diet. This is because she understood that people with diabetes often crave for sweet food because of the nature of this illness. However, Nueng was advised to eat only a limited amount of sweets or other unhealthy foods. Nueng and his caregiver were more relaxed and his caregiver was not worried that he would hide food and eat it behind her. Successfully managing Nueng's diabetes, his caregiver uses both strict and flexible strategies, depending upon context and Nueng's current health status.

Sib-sii's parents are also good examples of consistent parental involvement. Sib-sii's mother is especially involved. Both parents share their time and responsibilities for Sib-sii: his mother is responsible for diet control (e.g. preparing less fatty food for the boy), while his father takes responsibility for advice, education, exercise and medication:

I keep telling him [Sib-sii] to love himself, care for himself and love me also, because I don't have anybody, just only the two of you [sons]. And I'm now old. If something wrong happens to you, who will take care of me? That is the way I flatter him. And he is growing more, learning and developing his thought. So I keep telling him [that] every day [Sib-sii's mother, 43].

I prepare (tablets) for him. In the morning, I force and watch him take his medicines, and I do it again after dinner [Sib-sii's father, 42].

In a rare case of father's involvement, Sib-song's father is the main caregiver in this study, taking care of Sib-song's mother and Sib-song, both of whom have diabetes. This father is actively involved with both, particularly in preparing food for the family. Sib-song's mother was neither the main caregiver nor a good role model. She had insulin treatment, but did not adhere to self-management: she drank coffee with added sugar, drank soft drinks and juices when going out, and failed to self-monitor blood glucose, which is important for those who need insulin injections. Sib-song has good self-management possibly because of her capability, her personal goal (i.e. to be slim), and her supportive father. Moreover, Sib-song follows a healthy role model, the landlord's wife who has type 2 diabetes; Sib-song walks with her about 45 minutes in the morning every weekend. Sib-song and her parents also gained diabetes-related information from the landlord's wife (e.g. a print-out of food lists for people with diabetes).

Inconsistent involvement refers to caregivers taking part variably in their child's self-management activities (i.e. taking it seriously for a short period and then lightening their involvement):

At that time, we controlled (Hawk) seriously by providing a light breakfast - plain boiled rice (congee) together with fried fish without using oil, swimming and going to fitness classes. Despite [the fitness membership fee] being costly, it worked: his weight was not up but he had not lost it either. We were happy with this and then we loosened our control. After that, his weight increased. Now it really depends on us [Hawk's father, 48].

Caregivers whose involvement was consistent used authority to control the young respondents' self-management behaviours. On the other hand, caregivers with limited or

no involvement in their child's diabetes tasks failed to control their child's behaviours, as they claimed that poor adherence was due to the "nature" of *wairun* or adolescence (i.e. disobedience, resistance and independence), or because they wanted to let their child enjoy their life because they expected their child to have a shortened life, as I have already discussed. Other main caregivers, for example Sib-ed's aunt – who had diabetes - perceived that despite having diabetes, children could live normally. However, parents or family members sometimes compromised children's self-care. For example, Sib-ed's father believed that whoever had diabetes, would die sooner or later. He thought it was better for him if he did not know whether or not he was diabetic. Sib-ed's father was indulgent, buying him whatever he wanted, such as a motorcycle, and giving him money to go out with friends. Although the father and the aunt did not agree with Sib-ed going out, they could not prevent him, because he would disobey and insisted on autonomy.

Sometimes parental involvement may not be helpful because of the way they communicate with their children, including negative statements or complaints, and inconsistent involvement. Sib-haa's mother is an example. To adjust Sib-haa's dietary consumption once the family knew of his blood results - that he had high blood sugar level - his parents, especially his mother, began to strictly limit his food and eating behaviour, and verbally inhibited her son from eating unhealthy food. Sib-haa's mother focused on repeated instructions and complaining, rather than taking concerted action with regard to Sib-haa's food consumption:

But we usually tell him [Sib-haa]: "Don't eat salty [food] like this and like that." But when his aunt cooks steamed fish or whatever, [she] puts soy sauce – which is extremely salty, [I] say directly "don't take [it], son. Then his aunt gets angry with me...it's like I usually resist everything. I also have to tell Sib-haa "don't take (it)...no, no, no....not salty food.

You can eat only fish flesh.” Now his father seems to prohibit [him] more often than before. At that time, he felt that I was unkind...like...when the child (Sib-haa) wanted to eat ice-cream, I didn’t allow him to eat it. Or when he wanted to order *khanom* (sweets), I said “enough...stop, don’t order.” Sometimes I say to my other son, “okay, [if you] want to eat, then eat, but Sib-haa, [you] can’t [eat]...not for you.”

In comparison with the primary caregivers in other families, Sib-sam’s mother is less engaged in her son’s everyday life, such as physical activities and in other activities in his spare time, and in the management of his illness. For example, a doctor suggested to the boy and to his parents that he reduces his weight, given that his BMI indicated as obesity. Sib-sam has little opportunity to exercise or play sports, according to his parents, including because of a lack of time due to his parents’ workload, difficulties in exercising due to a lack of the family’s and the boy’s attention, and arguments about whose responsibility it is - the mother’s or the father’s. Consequently, the boy spends his spare time playing the computer games, reading comic books, and watching television. Sib-sam mentions that he exercises every day by walking for 10 minutes from home to school. His understanding of daily walking for 10 minutes as an exercise (but insufficient to reduce weight) may be a barrier to reducing his weight. Below, his parents’ comments indicate limited support and poor role modelling for exercise within the family:

The father never takes the son to play sports because, even himself, he too has never exercised and never thought to take the son out. If the son wants to play [football], the father asks me to take him out....and are there any mothers playing football with their sons [high voice]? And I make an excuse because I have a heart disease. So I avoid exercising. I say I will (exercise) but I have never done it [laughs out loud]. And it’s not possible...you know, it [exercising] seems to be a matter which is too much for me [to do] [Sib-sam’s mother].

We do nothing much. What I do with my son is just walking around a department store. I let him play sports by himself because sometimes I have no time and sometimes I am exhausted from working and I have to do house tasks also, such as ironing a heap of clothes [Sib-sam's father].

In addition to caregivers' involvement, I identified two other external factors inhibiting young respondents' diet control: food available at home and food prepared by other people. These factors are illustrated through stories told by adolescents with "low" or "no" confidence in their self-management ability:

When I crave (food), I open the fridge and find something to eat. Normally there are some chocolate and sweets stored in the fridge as my father likes buying these things. So it's easy to just open (the fridge), then eat it [Sib, F, 16, diabetes].

In this excerpt, Sib has low confidence to restrain herself not to eat sugary and high fat food already there in the fridge. Another excerpt below demonstrates a young man with having no confidence in controlling his diet because of others' influence.

My aunt always cooks and if anyone argues about her food, she is usually not happy with that. For example, when I tell her to reduce cooking oily food, I can feel that she starts being in a bad mood [Sib-haa, M, 16, diabetes].

Some respondents pointed out other external factors, such as purchasing food cooked by food vendors who usually add a lot of oil, fish sauce and sugar when cooking and serve it with a large amount of rice. Eating out with friends or families is another potential factor. Eating out, especially for dinner and special events such as parents' and/or children's birthdays, has become a part of the contemporary Thai family lifestyle. Eating out (already discussed in chapter 5) is also a family strategy which parents use to

reinforce children's achievements (usually academic). Thai food and desserts from restaurants and street stalls are tasty, with a lot of additives and chemicals such as monosodium glutamate, vegetable oil, sugar, salt, fish sauce and vinegar. It is difficult for adolescents to avoid all these external factors.

Child's life goals

The majority (12 out of 16) identified life goals. Of the 12 adolescents, three had goals related to improving their diabetes. Nueng and Sam wished to be cured from the disease; Sib wanted to control the disease and have normal blood sugar. As noted, Nueng focused more on diabetes management and disease. Only one adolescent, Sib-jed, had life goals both related and unrelated to diabetes: she wished to be cured from diabetes and to be slimmer. Among eight young respondents with life goals unrelated to diabetes, two young women (Song and Sib-song) identified their priority life goals related to body image, while young men tended to focus more on study and career. Both the focus on the disease and body image led to improve adolescents' self-management behaviours (Nueng, Sib-jed, Song and Sib-song) with regard to their diabetes. This may imply that paying attention to and having life goals related to diabetes and/or body image had a positive effect on their management behaviours.

In contrast, about a quarter of adolescents (Sri, Kaow, Sib-sam and Sib-ed) had no idea about life goals and the future: "No idea. Just live day by day: study, eat and play game. That's it," "I haven't thought anything about that (the future), as I only think how my tomorrow will be." Lack of ideas about their future does not mean that they are without the life goals, but some appeared to be reluctant to speak about their desires. Others may never think about their life in the future as it is a distant event. This may be a starting point to adjust these young patients' attitudes, perceptions and then behaviours.

One of healthcare providers who participated in this study had worked as a nurse educator, and had provided knowledge and practice for patients with both type 1 and type 2 diabetes for many years. She strongly suggested that knowing patients' life goals was necessary, as it seemed to be an important tool to motivate them:

How to motivate young patients to adjust their behaviours varies. It depends on individuals. Between the two main behaviours which are related to both food and exercise, I'm not worried about exercising among the young group as they do it (in school or at home), but adjusting their food and their eating behaviours is quite difficult. How to make these young patients concerned about their health and take care of themselves is not providing them only knowledge, but also requires encouragement to build their inspiration. This makes them able to see their life goals and then they would try to meet those goals...something like this. Although it's a difficult job (motivating patients), I enjoy it because it challenges me in that I have to find out which point I say can make them think or feel. Or which point that I say makes them cry or turn against me. It's really interesting for me to learn how to communicate with and gain experiences from these different patients [Khun Pueng, advanced practice nurse].

This nurse drew attention to the different life goals in different age groups and argued that healthcare providers needed to take account of these differences:

For the young group, commonly their life goals are about future careers. So I often talk to them about taking care of their health in order to delay the development of complications which may occur in the next 15 or 20 years after the diagnosis. This would be a critical point and starting point of their change. On the other hand, among adults and older people, it does not work with saying like this. Instead, I point out issues related to a general concern and achievement of their children and grandchildren. For example, as I know, the elderly don't want to depend on and be a burden to their children or others. Therefore, I take this point and warn them to

take care of their health in order to avoid leg amputation, developing blindness and disability. I also draw the point of following their children's achievement which is a motivating point for them to care for themselves that is different from the younger group [Khun Pueng, advanced practice nurse].

This nurse uses positive attitudes and active responses when counselling patients with diabetes. The way she communicates with them makes them feel that they are valuable and that someone, at least her, really worries about them. The good relationship and trust between this nurse and her patients allows her to discover their life goals and successfully motivate them.

Adolescents' self-management practices

Taking into account diet control, exercise and medication, four major types of adherence to diabetes self-management include being proactive, passive, reactive and inactive. Passive adherence is the most common following with the equivalence of reactive and inactive adherence among adolescents in this study. Proactive adherence is very rare. Only two adolescents, Nueng and Sib-jed, are representatives of this practice. In proactive adherence, young respondents actively adhere to all three self-management practices. They are more likely to have self-control, self-learning and self-confidence than other groups. In other words, these adolescents know what kinds and amount of food they can and cannot eat; they have self-discipline to exercise routinely; and they comply with their doctors' prescription. In addition, they enthusiastically seek their own ways to achieve their illness management to suit their daily life. Nueng provided an example of his own strategies to control his food and eating behaviour, which he considered the most difficult activity to conduct:

I cut down the amount of rice from four to two ladles, avoid fried and oily food, curry with coconut milk, sugary food and sweets. For example, if I

eat sweet fruits such as 4-5 rambutans, it [my blood sugar level] is up, so I must not eat [them]. And if I crave for some *khanom* (sweets and snacks), such as chocolate éclairs, I used to eat before, I try not to eat it or eat only half of a piece. But now I don't buy food for myself. Instead, I often spend money to buy other things such as a ring and a towel for my [adopted] parents [his aunt and aunt's husband] or food for other family members. This can reduce my craving for food. I found this [way] is better, as I fear having injections and going blind if what I eat makes my blood sugar high. I independently thought like this and got used to buying things rather than food. I'm happy now [Nueng, M, 14, diabetes].

Sib-jed's example of proactive adherence to self-management provides a different way of diet control. This was setting up a meal plan with limited calorie intake (1,200 calories in this case):

During two years of intensive control, I had the food plan in my mind and followed it strictly and exactly. My mother helped me a lot by cooking food without frying and not using oil. Actually, I intended to reduce my weight, so I cut down my food and exercised, such as swimming and aerobic dancing, which I did it for about 2-3 hours every day. I danced alone at home and some days I did it all day. Back to my food control, what I ate each day was limited to 1,200 calories that I had to figure out every day and I learnt this from doctors and nutritionists when seeing the doctor for 3-month follow ups. My tip was eating less rice but more side dishes with little oil. I'll give you a sample of my meal plan. Breakfast: 250 cc of low fat milk, half a ladle of rice with side dishes (e.g. fried vegetables with meat and/or omelettes with 1 teaspoon of vegetable oil). My lunch and dinner were the same as breakfast. If at school, I bought food there and couldn't control food like at home because of the large amount of rice provided by food vendors. I ate snacks sometimes, such as cookies, but I ate not more than three pieces a day. I drank a glass of milk in the morning and another glass in the evening and I usually ate an apple and guava [Sib-jed, F, 17, diabetes].

Some adolescents' parents ordered or demanded that they practice self-management, and they passively accept and follow their parents' messages and instruction. The supportive caregiver, in this group, is the most powerful person influencing adherence to self-management activities. Drawing on the concept of external-internal locus of control (Norman and Bennett, 1996), these young respondents seem to have an external locus of control, as they were dependent and usually engaged in self-management because of parental control. On the other hand, those who had proactive responses have more internal locus of control; they were more likely to respond actively to their health and be involved in health-promoting activities. Six young respondents, including Sam, Hawk, Sib-song, Sib-sii, Sib-hok and Sib-pad, passively adhered to the doctors' and parents' advice. These adolescents had parents or other family members to prepare medicines and food, remind them to take medicines after meals, or warned them to control their food before their medical check-up.

Reactive adherence refers to the young respondents who usually do not adhere to their diabetes tasks, but they can take active responsibility if there is a critical event alerting them, such as a doctor's appointment approaching. The main characteristics of this group include fluctuation in adherence to diabetes self-management and the indulgent or less active parental involvement in diabetes self-management. They are more independent than the previous group. Four adolescents (Song, Ha, Sib, and Sib-haa) are representatives of reactive adherence. Sib remarked:

Last time my blood sugar was good – 109 (mg/dl), but HbA1c [accumulated blood glucose] was 9.8 (%), that's not good. This was because I dieted for a week before seeing the doctor. And the doctor told me that anyone can lower their blood sugar level by fasting, so he needs to use accumulated blood glucose. I think it's true [laughing].

This excerpt illustrates that Sib controls her diet intermittently without parental control. Parents' control distinguishes between passive and reactive adherence: young respondents with reactive adherence to their diabetes tasks were likely to have less parental involvement than those with passive adherence.

Inactive adherence refers to adolescents who do not have any response to their health and self-management, even though events or caregivers might stimulate them. The young respondents in this group include Sri, Kaow, Sib-ed and Sib-sam. All are likely to be inactive and disobedient regarding their self-management. Adolescents often used negative words: "lazy," "no idea," "not interested," and "don't want to do it" in order to avoid to exercise, monitor their blood sugar, do household tasks, eat vegetables or talk about health and illness. In addition, these adolescents' parents were never or very rarely involved in diabetes tasks. Sib-ed and his caregiver (aunt) illustrate an inactive response:

At the moment, I don't use it [glucose meter], as I'm too lazy to test it, not because I'm busy. Sometimes I don't eat any food, but sometimes I eat a lot, more than others [family members] do [Sib-ed, M, 16, diabetes].

He got used to it [non-adherence to diabetes management]. I used to help him to control his diet just for half a year. After that, he did not want to control it and he ate what he wanted. He doesn't follow me when I tell him not to eat this and that at school. So now I don't control his food anymore as he is disobedient and doesn't want to control it [diet]. A reason why he doesn't do it [control diet] is maybe that he got used to living with his diabetes [Sib-ed's aunt, 49].

According to the components of perceptions and management behaviours, all themes, sub-themes and patterns of management presented above are summarised in Table 8.2.

Table 8.2 Diabetes self-management styles across given themes

Themes	Diabetes self-management styles			
	Thriving N = 1	Accommodating N = 5	Indulging N = 6	Indifferent N = 4
Child's view of self	Healthier	Unwell	Well	Unwell
Caregivers' views of child	Well	Unwell	Well	Well
Child's view of the impact	Unaffected	Mostly unaffected	Mostly unaffected	Mostly unaffected
Caregivers' views of the impact	Unaffected	Affected	Affected / unaffected	Affected / unaffected
Diabetes priority	No	Yes / No	No	No
Self-ability	High confidence	High / low confidence	Low / no confidence	Usually no confidence
Caregivers' involvement	Consistent	Consistent	Inconsistent	No involvement
Child's life goal	Yes	Yes	Yes	No idea
Self-management practice	Proactive	Passive	Reactive	Inactive

Diabetes self-management styles

Diabetes self-management styles refer to patterns of illness management based on adolescents' and caregivers' perceptions and behaviours. Four management styles - thriving, accommodating, indulging and indifferent - are identified in Table 8.2. According to the findings, the indulging was the most common style and following with accommodating and indifferent management styles, represented by six, five and four respondents, respectively. Thriving management style is a rare pattern; only one young woman presented this style.

In my study, the findings of the perceived lifestyle change were quantified as a rating scale for lifestyle change; this was not a measurement tool for data collection. I displayed the rating score for lifestyle change of the young respondents in the format of a table with numbers. My reasons for converting qualitative into quantitative data were to reduce unwanted texts and to manage or simplify the complications and ambiguity of the text data (Sandelowski et al., 2009). The degree of lifestyle change presented in numbers assisted me to provide a clear picture of the individuals' self-management in controlling food, exercising and taking medicine, than would have been the case were I to present this in text form. That is, the higher score is interpreted as the positive lifestyle change. I display Table 8.3, describing the criteria of a rating scale for lifestyle change, and Table 8.4, showing my evaluation of adolescents' lifestyle change. I also provide a snapshot of illness management behaviours against selected domains, including the lifestyle change score in Table 8.5.

Table 8.3 Description of the rating scale for lifestyle change

Indicators	Description of scale				
	0	0.5	1	1.5	2
Diet control	No healthy food, no diet control	Less healthy food, more flexible	Some healthy food, flexible diet control	More healthy food, rather strict	Healthiest food, strict diet control
Exercise	No exercise	Light, not every day	Medium-heavy (<1hr /d), 3 d/wk; or Light, every day	Medium-heavy (at least 1hr/d), 3d/wk	Medium-heavy, (at least) 1hr/d, every day
Medication	Non-adhere	-	Right dose -not every day; wrong dose - every day	-	Adhere to prescription Right dose- every day
BMI	Obese 3	Obese 2	Obese 1	Overweight	Normal
FBS mg/dl (HbA1c in percent)	> 200 (8.5+)	141-200 (< 8.5)	126-140 (< 7.5)	100-125 (< 6.5)	< 100 (< 5.5)

BMI = Body Mass Index; FBS = Fasting Blood Sugar; Hb A1c = Haemoglobin A1c

Table 8.4 displays an assessment of lifestyle change among the 16 young respondents. As indicated, the assessment of lifestyle change is based on three self-management practices and two health outcomes: 1) diet control; 2) exercise; 3) medication; 4) body mass index (BMI); and 5) blood glycaemic levels - fasting blood sugar (FBS) and haemoglobin A1c (HbA1c). A total score is equal to 10 points, divided equally among the five indicators. The total score is the summation of each score from the five indicators. The column scores stem from interpreting the meanings of the indicators, rating from zero to two. The higher the total score, the greater the lifestyle modification and its effects (e.g. lower BMI), implying a healthier lifestyle.

Table 8.4 Young respondents' lifestyle change scores

Respondents	Lifestyle change score					
	Diet control (2)	Exercise (2)	Medication (2)	BMI (2)	FBS/A1c (2)	Total (10)
Sri	0	0	0	0.5	0	0.5
Kaow	0	0.5	0	0	0.5	1.0
Sib-ed	0	0.5	1.0	0	0	1.5
Ha	0	0	1.0	0	1.0	2.0
Sib-sam	0	0	1.0	0	1.0	2.0
Sib	0	0	1.0	1.5	0	2.5
Hawk	0	1.0	1.0	0	1.5	3.5
Sib-haa	0.5	0.5	1.0	0	1.5	3.5
Song	0.5	0	1.0	1.5	1.0	4.0
Sib-hok	0.5	0	2.0	0	1.5	4.0
Sam	1.0	1.0	2.0	0	0.5	4.5
Sib-pad	1.0	0.5	2.0	0	1.5	5.0
Sib-song	1.5	1.0	2.0	0	1.5	6.0
Sib-sii	1.5	1.5	1.0	0.5	2.0	6.5
Nueng	1.5	1.5	2.0	2.0	0	7.0
Sib-jed	1.5	2.0	2.0	2.0	2.0	9.5

Table 8.5 Snapshot of illness management behaviours

Domains	Illness management behaviours			
	Thriving “I can do it”	Accommodating “I need help”	Indulging “I will change it later”	Indifferent “I don’t wanna change it”
Personal characteristics	Problem-solving skill, Independent	Dependent, Obedient	Problem-solving skill, Disobedient	Disobedient, Aggressive, Isolated
Illness perception	Non-severity	Severity	Non-severity	Non-severity
Management behaviour	Proactive	Passive	Reactive	Inactive
Psychosocial factors	Self-efficacy, Intention, Benefits of weight loss, Internal locus of control	Self-efficacy, Intention, Benefits of treatment, Feeling of fear	Barriers to healthy - behaviours, Lack of self- control	Barriers to healthy - behaviours, Ignorance of treatment
Support systems	Supportive - caregivers	Supportive - caregivers, Doctors’ messages	Low caregivers’ involvement	No caregivers’ involvement
Life goals	Body shape, Study	Study, Not being diabetic	Study, Job, Body shape	No life goal
Lifestyle change (score)	9.5	4.5-7	2-4	0.5-2

According to Sigurdardottir (2005), health outcomes usually determine intention to perform actual behaviour, i.e. diabetes self-management in my study. A blood glycaemic level, rather than BMI, is a key index in evaluating self-management practices. Successful self-management is usually assessed by HbA1c level <7.0% (American Diabetes Association, 2000). A study of people with type 1 diabetes suggested that those who ignored their self-management were likely to have a higher HbA1c level (Toljamo and Hentinen, 2001a). Therefore, blood glycaemic value is used as a predictive factor for evaluation of lifestyle modification in my study. The following paragraphs describe each diabetes self-management style.

Thriving style

A thriving management style involves a sense of success, intention, positive thinking, and perceived self-ability. The factors influencing this include perceptions of “no illness” and “being healthy,” holding onto the idea of well-being, the perceived self-ability to manage the illness, having personal goals both related and unrelated to diabetes (i.e. body image and health), having supportive caregivers in diabetes tasks, having plans to control diet and exercise, and taking practical and determined action in self-management.

Normalcy and inspiration are the outstanding characteristics of the “thriving” adolescents. Sib-jed is the only one who represents this style. Sib-jed viewed herself to be healthy, in accordance with her mother who perceived Sib-jed as a “normal” teenager (see Appendix 9). However, Sib-jed was not satisfied with her body image as she felt that she was still chubby; her mother disagreed with this. Sib-jed and her mother were not worried about the disease, and they did not make much of it in the family. Despite her desire to be cured, Sib-jed focused more on her body shape and her desire to have a beautiful body, and this motivated her to lose weight through lifestyle change. Her

healthy lifestyle was a consequence of her active response to her self-management (i.e. setting up a dietary and exercise plan and following that plan strictly).

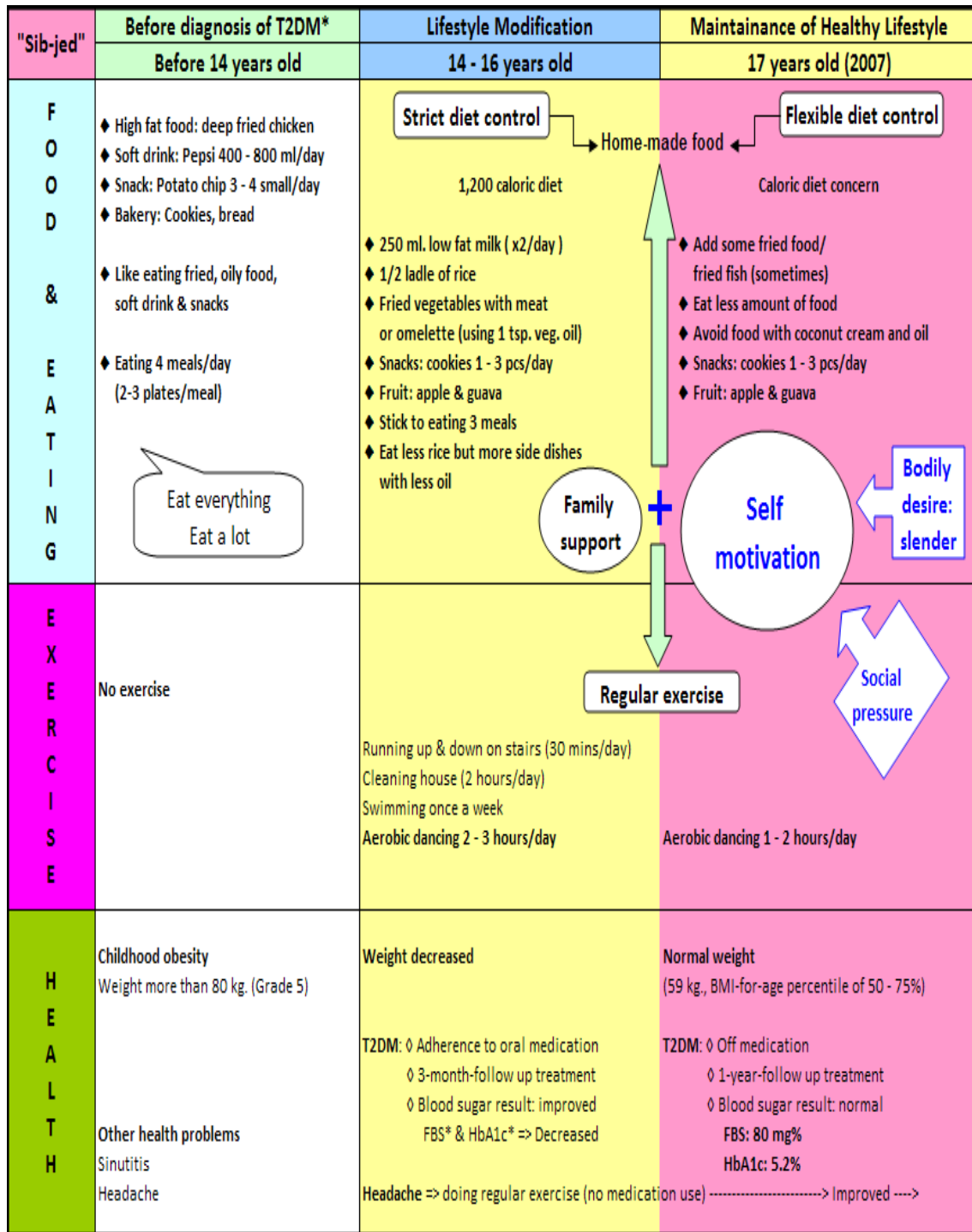
As indicated in Table 8.4, Sib-jed has the highest total score, with a high score for all indicators. Her total lifestyle change score was 9.5. This score implies good health outcomes - healthy weight and normal blood glucose value. On the other hand, Sri has the lowest total score with a low score for all indicators. Some young respondents with a high total score had a low score in their health outcomes, either body mass index or blood glycaemic levels. For example, Nueng, although he has a high total score, has a 0 score for blood glucose level, suggesting that his fasting blood glucose and HbA1c are still higher than medically acceptable. Similarly, Sib-song and Sib-sii, despite high total scores and good blood glycaemic values, had low scores in BMI. Some young respondents, with a total score below 5, had a high score for blood glycaemic level - this is the reverse of Nueng's case. Having high levels of adherence to self-management therefore is not always associated with improved health outcomes. Becker (1985) explained this paradox in relation to healthcare provider errors and patient factors, for example, the diagnosis and treatment may be incorrect or the patient may not respond to a given treatment. In Nueng's case, this paradox may relate to puberty, associated with increasing insulin resistance, thus accelerating blood glucose levels, having a strong family history of diabetes (i.e. his parents, siblings, grandparents and relatives have diabetes), and long duration of having diabetes (5-6 years) (Goran et al., 2003a; Hannon et al., 2005; Gong et al., 2008).

Lifestyle modification is a part of diabetes self-management activities. In order to study lifestyle modification, it is useful to examine cases that succeed in changing lifestyle and maintain healthiness. The two representatives of thriving and

accommodating management styles – Sib-jed and Nueng, respectively - show some similarity in behavioural models (i.e. self-efficacy, intention and locus of control).

As illustrated in Figure 8.1, Sib-jed's lifestyle model shows the impact of internal motivation and negative social pressure, underlying her intention to self-manage through lifestyle modification and adherence to oral medication. The model shows Sib-jed's lifestyle from childhood to adolescence. Sib-jed started gaining excess weight when she was only 11 months old and her weight was over 80 kilos when she was still in a primary school, in the 5th grade, at the age of about 12 years. She was cared for by her mother only, because her father died when she was five years old.

Sib-jed was diagnosed with type 2 diabetes at the age of 14. She had a family history of diabetes, including her father, grandmothers, and one of her mother's sisters (Appendix 7.15). Sib-jed followed an unhealthy lifestyle and so was at high risk of developing type 2 diabetes early in her adolescence. For example, she liked eating high fat food (deep fried chicken), soft drinks (Pepsi 400 – 800 ml/day), snacks (potato chips, cookies and bakery breads); she ate large quantities of food (2-3 plates of rice with other dishes at meals) and frequently (eating four meals/day); and she rarely exercised. When firstly diagnosed with type 2 diabetes, Sib-jed had had chronic headaches for a month and her diabetes was detected with blood laboratory results. She did not have insulin injection and was not hospitalised, however, as her blood glucose was not very high (over 300 mg/dl). She was advised to take oral medication (i.e. metformin).



*T2DM = Type 2 diabetes; FBS = Fasting blood sugar; HbA1c = Haemoglobin A1c

Figure 8.1 Sib-jed’s lifestyle model

Between the ages of 14 and 16, Sib-jed decided to change her lifestyle to be healthy because of the pressure on her from family members to do so. After gaining knowledge about diabetes, nutrition and calories from a nutritionist, Sib-jed developed her own dietary plan, limiting food intake to 1,200 calories (cal)/day. She was also aware of the amount of food she ate: “I think eating 1,200 (cal) is enough. Yoghurt has about 200 (cal), milk 100 (cal), and *khanom* (cookies or bakery breads 3 pieces) 200 (cal). Eating and exercising.” She also asked her mother to measure vegetable oil when cooking food: “When my mother cooked food such as omelettes, I told her to use a teaspoon of vegetable oil as that was the doctor’s message, and she did it.” In addition to strict diet control, she exercised strenuously, such as aerobic dancing 2-3 hours a day. She followed healthy behaviours strictly and continuously for two years, motivated by her desire to have a beautiful body. She also motivated herself by posting figures of her favourite female superstars on a wall in her bedroom, and often looked at them. These star images seemed to be a motivating factor for her. Because she lived in an extended family, i.e. with her uncle (her father’s brother), Sib-jed felt social pressure from her relatives, including blame and complaints about expenses for her illness, her education and other general matters during her childhood. Her relatives would say to her “[You] are often sick...how much money [you] waste,” or “[If you] don’t study, you’ll be a fool.” Sib-jed used these negative pressures to motivate herself to achieve illness management and education. However, her mother was most supportive and did not put much pressure on her. Rather, her mother reinforced her study goals: “If [you] can do this [study] well, it will be good for you. If [you] cannot do [study], [you] will be blamed or looked down by others.” In addition, her mother was closely involved in her daughter’s nutrition mainly focusing on cooking food according to Sib-jed’s requests,

e.g. limiting the amount of oil and preparing steamed vegetables rather than fried vegetables.

As a result, Sib-jed's health improved continuously. In 2007, when she was 17, from her own report at the interview and from laboratory results, her blood glycaemic levels had returned to normal: HbA1c < 6.5% and FBG < 100 mg%; her weight and BMI were normal; she had been off diabetes medication for one year; and her headaches had improved without medication.

To maintain her healthy lifestyle, after a two-year-strict plan, Sib-jed modified her dietary and exercise plan. She added a small amount of fried food and sweets as well as maintaining a medium to low exercise program almost every day. However, she remained self-aware of food caloric intake and food choices when she bought and ate food and still had body image and weight concerns. Sib-jed therefore was able to control her diabetes and used various strategies to maintain healthy weight, normal blood glucose level, and a healthy lifestyle. In addition to her own bodily concerns and social pressure, her self-confidence and self-capability played a key role in her self-management behaviours. She stated that her self-confidence derived from her intent to do things herself and she rarely asked for anyone's help. Interestingly, when I asked her what else helped her achieve a healthy lifestyle, she responded, "One needs inspiration and actual intention to lose weight, and that comes from yourself and it depends on personal habits as well." Internal motivation and intention is reflected in her accounts and her facial expression (e.g. sparkling eyes and smiling with pride): "Do your best. [You] do it better, keep improving gradually until succeeding."

The diabetes self-management style followed by Sib-jed and her mother is similar to the thriving family management style in Knafl et al's (1996) study, conducted in the US, although this focuses more on parents' viewpoints. Knafl and colleagues

(1996) reported that parents who followed a thriving family management style viewed the ill child as “normal” and treated him or her as normal. Working as a team, the mother and the child were described as having developed a “nice routine” in everyday life in relation to a treatment regimen for diabetes. Moreover, parents responded to their child’s illness as a couple, rather than as two individuals acting separately. The proactive management approach used by these parents included an advanced plan and they used personal commonsense derived from experience to avoid problems or to deal with them effectively (Knafl et al., 1996). For example, children with type 1 diabetes have to ensure that they prepare insulin and keep it in a cold pack and have needles, extra food and candies in case that they have low blood sugar. This is not required for type 2 diabetes. In my study, a proactive management approach focuses on alteration to healthy food consumption and exercise. Adolescents and their caregivers may have a meal plan, and they usually keep in mind the importance of eating healthy food. Another difference between Knafl’s thriving style and mine is familial pressure as a result of disease. In Knafl’s thriving families, there was no evidence of negative pressure from family members because of their child’s illness, and the authors did not mention family structure, such as extended family, where relatives may have a negative or positive effect on the child. In contrast, in the thriving family in my study, there was the impact of the ill child on the family members or the other way round. Interestingly, the thriving adolescent was able to use this negative pressure as an internally positive force to achieve her goal of illness treatment.

To sum up, based on thematic analysis (Ryan and Bernard, 2003), through searching similarities and differences within and across themes, I identified only one case of good self-management (thriving) is an exception, while other cases present a fair pattern (accommodating) and the two patterns of poor self-management of diabetes

(indulging and indifferent). My grounded theory approach explains this exception: the internal locus of control, intention to control diet and reduce weight, self-efficacy, perceived benefits of weight loss, proactive practices in illness management, and caregivers' involvement were all present in this case, but not in the others.

Accommodating diabetes management style

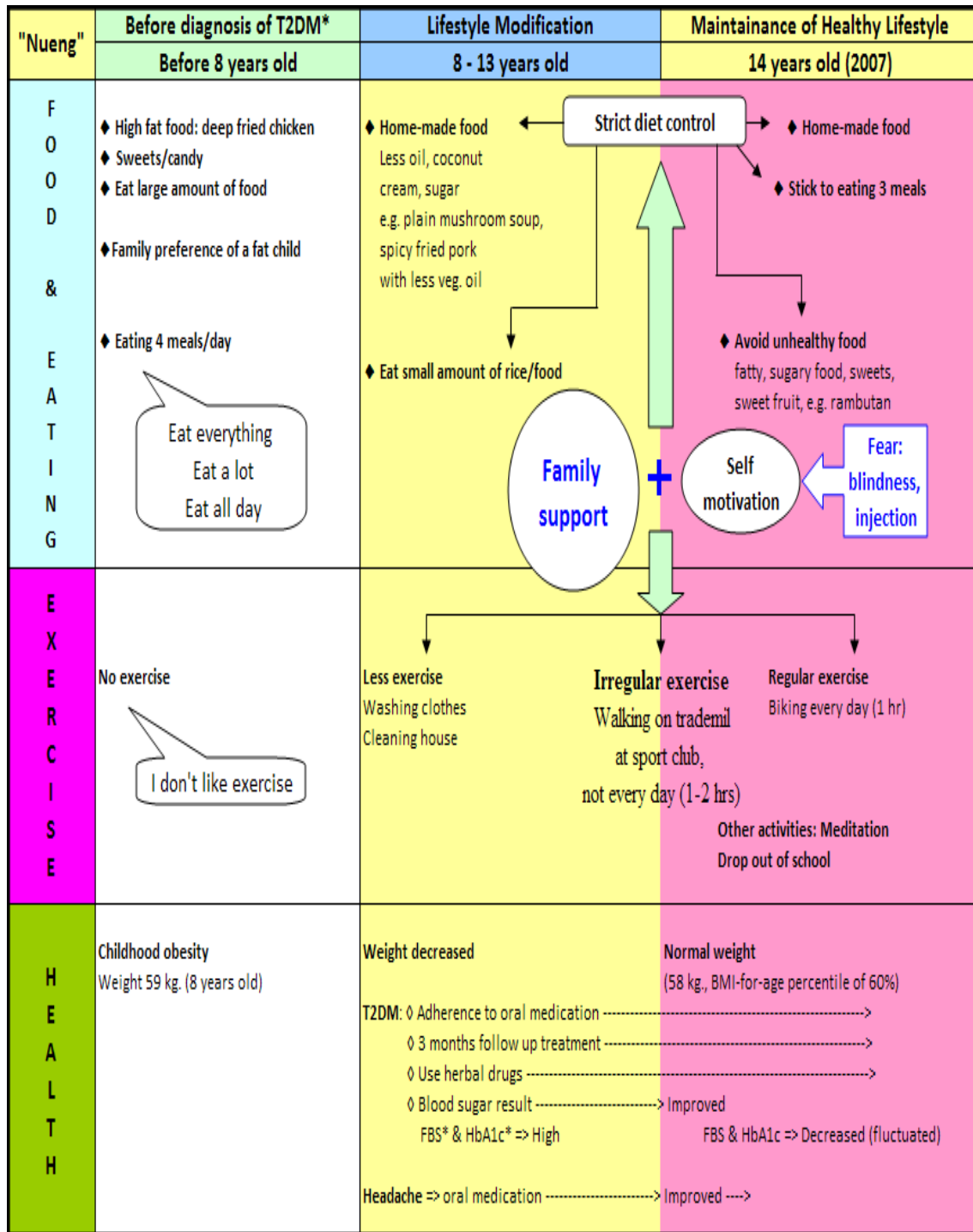
This diabetes management style allows for compromise or negotiation between the adolescent and the caregiver to balance life and illness. Compared with other diabetes management styles, caregivers working closely and continuously in diabetes management are most supportive and active, and they are more likely to be concerned about their ill child. They view adolescents as “ill,” and their child's illness impacts adolescents, mainly in relation to study and future career.

In contrast, the “accommodating” adolescents viewed themselves as “ill” or “not well” because they felt that they had something wrong inside their body, but the illness did not affect their lives due to the absence of symptoms and their ability to maintain routine activities. They usually perceived difficulties in managing the disease, although a few adolescents were highly confident about their capability of self-management. They had various life goals which may not be related to diabetes, such as study, jobs and body image. Diabetes may or may not be the family focus. Most of these adolescents were passive respondents, who usually adhered to self-management practices under their caregivers' supervision. The caregiver moved to be most important for “accommodating” adolescents to succeed in disease management.

In this study, approximately a third of adolescents – Nueng, Sam, Sib-song, Sib-sii, and Sib-pad – represent this management style. Nueng, Sib-song and Sib-sii were early adolescents (aged 12-14 years), while Sam and Sib-pad were older adolescents (aged 15-17 years). Most of them had changed their lifestyle significantly in order to be

healthy. The exception was Sam, who had less change because she had other health problems, including amenorrhea and hormonal imbalance, and high birth weight (as discussed in Chapter 6), which made it difficult for her to control her diabetes. Only Nueng and Sib-song reported high confidence in undertaking all diabetes tasks, while the others had low confidence. Nueng's total lifestyle score was the highest (7) of the five "accommodating" adolescents, whose scores varied from 4.5 to 7. Lifestyle scores over 5 implied improvement of lifestyle. Their health outcomes were usually poorer than among the thriving adolescents, with higher weight gain and high blood glycaemic levels. However, Nueng and Sib-sii, the first and the second healthiest, respectively, had one good health outcome: Nueng had achieved normal weight although he had failed to lower his blood glucose in the normal range, while Sib-sii had failed to reduce his weight but succeeded in controlling blood glucose in the normal range. Compared with the others, Nueng and his caregiver represented the combined intention and effort to manage the illness. A close relationship between the adolescent and the caregiver in disease management, active responses of the caregiver in taking care of the adolescent, and supportive family members and family environments, determined this style. This is illustrated in Figure 8.2 – Nueng's lifestyle model.

Nueng's lifestyle model tells his story from before he developed diabetes at the age of 8, to the age of 14. From his birth in Bangkok, his parents, who had five other children and faced financial problems, did not raise him. Nueng had a distant relationship with his parents, and instead grew up in his aunt's family, with the full of support and love from all members. He felt like he was the last son of his aunt, who had two sons and one daughter.



*T2DM = Type 2 diabetes, FBS = Fasting blood sugar, HbA1c = Haemoglobin A1c

Figure 8.2 Nueng’s lifestyle model

His aunt's daughter, aged 31 years, was the main person taking care of him. He was diagnosed with type 2 diabetes when he was 8 years old. He has a strong family history of diabetes, including his parents, one of his siblings and relatives on both parental sides (Appendix 7.1). At the time of being interviewed, his weight had returned to within normal range. However, he had chronic headache (migraine), which affected his study (i.e. inability to read due to blurred vision) and he dropped out of school while studying in grade 8. Nueng developed diabetes early in childhood for various reasons: he ate excessively and frequently (four meals per day); he preferred to eat sweet and fried foods (especially fried chicken); he rarely exercised; and his family preferred chubby children.

Like other families in this study, Nueng's caregiver mentioned overfeeding the child during his infancy because of the family's preference for a chubby child. In this respect, overfeeding by the family during infancy and childhood probably triggered the development of type 2 diabetes in adolescence (Wang et al., 2001; Gutierrez, 2008). Nueng's caregiver remarked:

I think he [the child] became diabetic because he ate...but he was thin very thin...thin like a child, lacked nutrients during his infancy [6 months]. Since being in the care of my family, he has been fed a lot due to our preference for a chubby child. And our belief is that fat children look healthier than the thin ones, and having chubby children means that we are praised as being "good" parents and have provided them with abundant food, even though we are not a rich family.

Nueng was taken to see a doctor when his caregiver noticed ants gathering around his urine droplets. When firstly diagnosed with type 2 diabetes, he was admitted to hospital for a 10-day-treatment course to lower his high blood glucose (approximately 500 mg/dl at that time) by having insulin injections and diet restrictions. After the treatment was

completed, the doctor suggested that Nueng had insulin injections at home. He also scheduled a 3-month follow-up at the outpatient department of the paediatric diabetes clinic, and Nueng and his caregiver were advised to control his diet and exercise regularly.

Between the ages of 8 and 14, Nueng modified his lifestyle with the support from the whole family: the family changed their meals to have more vegetable and food which was low in fat and sugar; he often exercised and used both medical and alternative treatments, including Thai herbs (e.g. *thongphanchang*) and merit practices based on religious beliefs (e.g. doing meditation, offering food or basic, essential things to monks) to improve his health. Nueng learnt how to prepare herbal drinks from his caregiver, and he often did this himself. He was told by the family that if he used herbs for a long time, the side effects would affect his liver. For this reason, he stopped using this herb when his blood glucose was down and started using it again when it was up (>150 mg/dl.).

The Thai literature related to medicinal plants has not reported any therapeutic actions of *thongphanchang* in reducing blood sugar (Wongsatit, 2005; Patcharawadee, 2008). Instead, Wongsatit (2005) suggests that *thongphanchang* could prevent or relieve itching, such as from insect bites, while a study of adults with type 2 diabetes in Bangkok mentions other herbs in lowering blood sugar such as *ham*, *krathin*, and *borapetch* (Naemiratch, 2004:165). Nueng's family also believed that meditation could help the child recover, with the concept of "mind masters body," by transmitting *pa-lung jit* (a form of energy originated from meditation) to the child. The whole family hoped to treat the child's illness:

We set our hopes on him having a chance to recover. Have you ever heard that doing meditation can treat illness? With meditation, cancer can be

cured, of course, while for diabetes, I think it is possible to be cured but I'm not sure. The child, due to his migraine, is unable to do it often. But everybody in the house has done this to distribute *bun* [merit] for him and this may help him to be cured [Nueng's cousin, F, 31].

In addition, food and basic essential things were offered to monks on the belief that these acts would lessen Nueng's *bad kam* or *baap* in a past life. The caregiver played the most important role for this young man in his diabetes tasks, for example, providing both general and diabetes-specific knowledge and self-management practices; presenting a good role model by cooking and eating healthy food; reading food labels before buying food products; and being both strict and flexible, as appropriate, to control diet and exercise. For example, the caregiver did not complain when the young man sometimes could not control his diet and ate sweets. Instead, she encouraged him to tell her what food he was eating and how much he ate when he was out of control, and she allowed him to eat sweets or unhealthy food in a limited amount when he was with her. However, when his blood sugar increased, she strictly controlled his diet: by not allowing him to eat fatty and sugary food and sweets; avoiding buying such foods; and threatening him about the severity of diabetic complications through other patients' stories. Additionally, this caregiver used different ways to help Nueng exercise, such as taking him to a fitness centre to exercise as often as possible. Taking medicine was not a problem, as he had self-discipline and his family members often observed him and reminded him to do so.

Consequently, Nueng changed from following an unhealthy to a healthy lifestyle, which had a positive effect; his weight returned to a normal weight. However, his blood glycaemic results were not affected. Nueng and his family were not satisfied with his blood glucose level, which decreased only a little even when Nueng adhered

strictly to self-management. To help Nueng to be cured, the family kept seeking alternative treatments, mainly related to herbal use, and Nueng intended to adhere to all self-management activities and to follow his caregiver's advice.

The two healthy lifestyle models of these two adolescents (Sib-jed and Nueng), have various similarities and differences. I compare them with the other adolescents to suggest which factors and strategies led to healthy behaviour. In case of Nueng, the whole family's support was most influential in changing his unhealthy to healthy behaviours and adjusting his attitudes towards food and exercise. For example, he was told that people with diabetes can eat the same food, even sweets, as healthy people, but in a limited amount; people with diabetes can exercise, not too strenuously but as often as they can. This attitude towards food and exercise derives from healthcare providers as it is concordant with the doctor's advice to young people with diabetes and the family, according to my observations in an examination room of the diabetes clinic. Flexibility and compromise, rather than rigidity, was a management strategy which Nueng's and other caregivers used, particularly in relation to diet control.

With family support (i.e. providing knowledge, advice, warmth, affection and encouragement), and the caregiver's effort and attention to every detail of his routine life, Nueng's internal motivation was built gradually. For example, the caregiver stopped buying fat free milk which Nueng drank every day. Instead, she made soy milk without sugar for him. She found that no fat milk still contained sugar and this, in her opinion, caused an increase in blood glucose level. She did not buy fresh soy milk from the market, because she found out that many vendors added milk powder to make it more concentrated. During interviews, no other family mentioned the significance of little bit of sugar in low fat or no fat milk. Some parents did not know this and they rarely read food labels. Reading a label of ingredients on food products is not common

practice among Thais, except for this caregiver (with high education) who also educated Nueng to read food labels when buying other products. A US study related to food labels comments that although nutrition labels are beneficial for people's food choices, adults and young people incorrectly understand the labels (Levy et al., 2000). My data support this argument. Another limitation is that many food labels use a very small font which is difficult to read.

In contrast to Anderson's (2005) study, the caregiver in this example, despite not being Nueng's mother, was involved intensively in diabetes management in terms of educating him about diabetes, such as appropriate food for diabetics, seeking other treatments, taking him to doctors' appointments, and encouraging him to adhere to self-management. Nueng, in the beginning, rejected his caregiver's supervision because he was too young to understand why he could not eat what he used to eat, and resisted doing things that he disliked, such as exercise. However, subsequently, he was more mature and understood why his family, especially the caregiver, took seriously his adherence to diabetes-related practices and sought different treatments to cure him. He felt the family's love and warmth flowing to him. These things influenced his motivation and intention to manage his illness, to be cured, in his opinion.

In addition to the supportive caregiver, self-motivation and self-control are internal factors which motivated Nueng to stay healthy for several years. Such attributes derive particularly from his aunt and primary caregiver, who trains, teaches, supervises, suggests and nurtures him. His negative emotions, such as fear of developing blindness (because a relative with diabetes had lost sight) and having insulin injections (due to his experience of hospitalisation) had a positive impact on his intensive self-management. There was some evidence of fear from his account when simple questions regarding food were raised:

Are you hungry if you eat only soy milk or a bit of fruit for lunch?

Nueng: Sometimes I want [to eat more] but can't eat because I know [its consequence]....so I avoid to eat [much] or don't eat because of fear of being injected and going blind. These really frighten me.

Could you tell me what kinds of food suit children with diabetes?

Nueng: Not oily, not sweet and not salty because too salty food could cause kidney disease. If [food is] too sweet, you could get diabetes in eyes, this could lead to being injected. That scares me.

With regard to health outcomes and lifestyle scores, Sib-jed was off medication (because her blood glycaemic results were normal) and had normal weight, while Nueng was still on medication (although his blood glycaemic level had decreased but was still higher than the normal range) and he had normal weight. Sib-jed's health outcomes were better than Nueng's and were probably a consequence of changing her lifestyle to a greater degree, both by adhering to a 1,200 calories/day diet and doing vigorous exercises for two - three hours every day. This implies that Sib-jed controls her diabetes more strictly and diligently than Nueng, due to her stronger internalisation.

Like Nueng, other "accommodating" adolescents, including Sib-sii and Sib-song, had high lifestyle scores (6.5 and 6, respectively), but they had unacceptable health outcomes. This indicates that having a healthy lifestyle or adhering to self-management may not improve metabolic control (i.e. body mass index and blood glycaemic values). This finding is in accordance with Toljamo and Hentinen's (2001) study. These two researchers examined adherence to self-care and glycaemic control among Finnish adolescents and adults (aged 17 – 65 years) with type 1 diabetes. They reported that generally, patients who adhered to self-care had better glycaemic control than those who neglected self-care (Toljamo and Hentinen, 2001a). However, this was not always the case. This quantitative study did not provide possible factors which

might have affected glycaemic results among the participants, despite their adherence to self-management. Scientific studies reported that strong family history of diabetes is associated with blood glucose levels (Gong et al., 2008) and insulin resistance (Goran et al., 2003b). In the case of those who still had the blood sugar high despite good adherence to diabetes control, including Nueng, it may be a consequence of having strong family history of the disease, worsening their illness. However, good adherence to self-management is likely to benefit Nueng, by delaying the development of diabetic complications and preventing other diseases related to obesity, because of his achievement in weight reduction.

Indulging diabetes management style

Being “normal” or “well” is the most commonly perceived identity among adolescents and caregivers adhering to an indulging diabetes management style. Diabetes is not a significant concern for the “indulging” family. Unlike the two previous management styles, a key element in the “indulging” adolescents includes *taam jai paak* (a lack of self-control in eating food). Permissive caregivers of these adolescents allow them to do things without any control. Subsequently, *taam jai paak* becomes a habit, which is difficult to change later. Neither adolescents nor caregivers saw diabetes as an individual or family priority. Child’s life goals were various and not related to the illness. In addition, they perceived their self-ability as low or reported no confidence in self-management practices. The self-management practice of “indulging” adolescents differed from other groups: they usually had reactive adherence to self-management tasks. This meant that they did not adhere to their diet control, exercise and medication, but they often returned to strict adherence when their doctor’s appointment was approaching; caregivers’ involvement in diabetes tasks was not continuous and

consistent. As a result, the adolescents failed to change their unhealthy lifestyle, which led to poor health outcomes.

Approximately a third of young respondents – two young women and four young men - represent this management style. Their lifestyle scores are low, ranging from two to four points, and their health outcomes were unsatisfactory: overweight or obese with high blood glycaemic levels. These results reflect an unhealthy lifestyle and poor adherence to self-management.

In addition to all factors mentioned so far in terms of perception and behaviour themes, there are other multiple factors, such as late adolescence, parenting styles (as described in Chapter 5), the role modelling of family members who have diabetes, food availability and accessibility, and diagnosis of the illness (pre-diabetes and diabetes), with potential effects on the young respondents' self-management. Compared to adolescents with other management styles, those in the indulging management style are of various ages and have various parenting styles (see Appendix 9). Two adolescents, Song and Ha, aged 19, were raised in a permissive and authoritarian parenting styles and had poor self-management. It is common in Thailand that young people of this age study at a university and often live with their friends; therefore, they are out of their parents' control and this may make them vulnerable, and exposed to harmful social activities (e.g. smoking and drinking alcohol). Ha, for example, described his first time of living away from home as follows:

I lived in a dorm [dormitory] when I was the first-year student of a university. I was so excited, like I stepped out from a small world to a very big world [laugh]. It's freedom. When staying at home, I do things routinely, for example, I spend time with my family until around 8 pm and then I take a shower, watch TV and go to bed. But living here [in the dorm], I can go out, come back and sleep any time. I mean no one

interferes with my private life. Actually, I don't like staying at home as there's nothing for me to do, but here I have friends to chat with and go out. You know...many people in my department like drinking [alcohol]. Diabetes and drinking alcohol are my weakness and I usually drink the first two months after my doctor's appointments and then stop drinking for a month before the appointment for my blood check-up once comes every three months [Ha, M, 19, diabetes].

Unlike Ha and Song, although at 19 years of age he lived with his family, Sib-hok also faced difficulty in controlling food. This was because his family arranged Chinese ceremonies for the memorial of the ancestors and other Chinese events, such as Chinese New Year, almost every month. These family occasions were often associated with high fat food available at home. Availability and accessibility of food at home also occurred in Sib's family, although not related to cultural arrangements. Instead, Sib was able to order freely fast food delivery (e.g. Pizza and Kentucky Fried Chicken) and asked a housemate to cook food, mainly food high in protein and fat, with little vegetables. In the extended family, many food items, including chocolates, sweets and juices, were readily available in the fridge, and Sib often ate those foods when she stayed at home and had nothing to do.

On the contrary, Hawk, Sib and Sib-haa, aged 12 – 16, raised by authoritative, permissive and authoritarian parents respectively, were more dependent and had more parental involvement. Their parents were not involved continuously in their diabetes tasks, because the parents were focused more on their business and spent less time participating in their children's everyday lives. All three of them were usually in the care of relatives who lived with or near the family. Sib-haa usually spent time with his younger brother after school. Both young men usually had dinner (prepared by their aunt) by themselves, and played internet while waiting for their parents, who often came

home late. Sib usually had dinner outside because she had private tutorial classes in the evening and came home late. Hawk seemed to be a “home alone” child; he often stayed home alone after school and made instant noodles for his dinner, or dined with relatives living nearby. Other adolescents also faced this phenomenon, as demonstrated in some parents’ accounts: “We have to work and come home late, so we don’t have time to cook at home, but buy food or eat out to save our time” or “There is cooked food in the fridge so our children can prepare their food by putting it in the microwave, or they can make instant noodles or omelettes which are easy to cook, and they are grown up now.”

Song’s father had had type 2 diabetes, but had poor self-management behaviours and died from viral hepatitis:

About four or five years before he died, his father [my husband] had the liver disease as well. And diabetes was not serious because he was on treatment with insulin injection. His death was from his liver disease, I thought. He usually had dinner with many friends outside and drank a lot of wine and alcohol. Although he was diagnosed with hepatitis C, he didn’t stop drinking alcohol and wine. Once he had diabetes, he was told to stop drinking. He did stop drinking whisky but still drank a bottle of wine a day with his friends. He was a sociable man, having many friends around every day. In the evening, he loved to eat out, either with friends or the three of us. When I warned him, he often said “leave me alone” [Song’s mother, 49].

Song’s personality was similar to her father’s, according to her family; she was sociable and gregarious, and had many friends. When her father was alive, she had no good role model of healthy living, as her parents usually had lunch and dinner outside and no one liked exercising. Although her father had diabetes and viral hepatitis, he did not adhere to disease management. This may have contributed to her poor self-management, in addition to the permissive parenting style and her autonomy. However,

Song could achieve self-management and lifestyle change with her friends supporting her healthy lifestyle, if her mother were more involved in controlling her food and exercising with her, if the family reduced eating out and buying food to be stored at home, and if the mother or healthcare staff motivated her through life goals (e.g. having a slimmer shape).

However, the role model of family members with a healthy lifestyle does not influence “indulging” adolescents’ lifestyle modification and self-management. Three adolescents - Ha, Sib, and Sib-hok - had parents as healthy role models because their parents were concerned about health and illness. Ha’s parents lived a healthy lifestyle because his father had type 2 diabetes and developed eye complications. Despite having no diabetes, Sib-hok’s parents and aunt, who lived with the family, agreed to change the family diet, and his parents exercised almost every day when they became aware of Sib-hok’s illness. Sib’s father had had diabetes and had a stroke and followed a special diet. With the progression of his illnesses, he strictly adhered to eating food appropriate for people with diabetes. Sib mentioned her father’s food to me:

My father doesn’t eat like us. He usually eats tofu and vegetables with rice. I think if I have food like him, I’d definitely be bored. My father said “See. If you don’t follow doctors’ suggestions and eat like you eat now, one day you will have to eat like me.” [Sib, F, 16, diabetes].

Sib’s mother described the food which Sib favoured and often ate, indicating she has not changed food preferences and eating behaviour:

She likes eating pizza, fried pork and fried chicken, like all of my children; they don’t eat vegetables. Like our lunch, we sometimes eat out and order some special food such as fish fins and Peking duck...something like this. Our children developed this [eating habit] from parents. I mean, eating food like this. In the past, when our children

were very young, they didn't eat vegetables, so we fed them fried pork and fried chicken almost every meal [Sib's mother, 49].

In summary, having either good or poor role models in the family does not necessarily affect unhealthy lifestyle change and the adherence to diabetes tasks among these "indulging" adolescents. Despite good role models, these adolescents do not follow healthy behaviour. This is possibly because both parents who have diabetes, and those who have no diabetes but are aware of their child's illness, had poor self-management in diet control and exercised less in the past. Since their illness had deteriorated and they had developed some complications, they had acknowledged the importance of adherence to self-management and became a good role model within a few years. But, the adolescents in these families may still have images of past poor models in their memory, or be familiar with unhealthy behaviours among their family members, or think that complications will develop when they are much older. Therefore, a good role model over a short-time frame would not affect the "indulging" adolescents' behavioural change. Perceptions of themselves as not being diabetics, among adolescents with pre-diabetes, also inhibited self-management, as they did not consider their condition to be serious (as discussed in Chapter 7).

Indifferent diabetes management style

The last management style is the poorest among all management styles, as both negative perceptions and poor management themes predominate: the perception of having no confidence in and practicing inactive adherence to self-management; no caregivers' involvement; and no life goals. The major characteristics of "indifferent" adolescents are ignorance of health, illness, life goals and self-care. Instead of paying attention to health and illness, they often prefer to maintain their social life with friends. This is especially the case with young men in mid (15-17) and late (18-19) adolescence. Early adolescents (12 – 14 years old) are less sociable, and tend to play the internet and read cartoon books without parental control and parental complaints.

The four adolescents presenting this management style include one female (Sri) and three males (Kaow, Sib-ed and Sib-sam). All grew up in families with parenting styles characterised as "indifferent." All, except for Sib-sam who was 14, were older adolescents. Like "indulging" adolescents, those in this management style had family members with diabetes who did not adhere to self-management and did not change their unhealthy lifestyle. The relationship between "indifferent" adolescents and their caregivers was rather distant and problematic, as the adolescents usually did not consult their caregivers when they had problems, but kept their problems to themselves and did not even tell their friends. These adolescents usually ignored problems rather than found their own solutions. Most also had conflicts with their caregivers and/or other family members. For example, Sri had conflicts with her family, particularly her father, because he often blamed her and was angry with her when she was disobedient and did not follow his instructions or advices. Her grandmother, who had diabetes and lived in the same house, also complained that Sri was lazy as she did not do any household tasks, even cleaning her plate, and she often ignored things that her grandmother asked

her to do. Sri also had conflicts with her mother in relation to her disease management, mainly about seeing doctors regularly and non-adherence to self-management. On the whole, “indifferent” adolescents, more than others, were likely to have conflicts within their families, unrelated to self-management but related to their personal habits and behaviours, such as going out with friends and undertaking risky behaviours (i.e. fighting, showing off as a gang leader, and riding motorcycles, as represented by Kaow and Sib-ed).

Family conflict may not be initiated by adolescents but by their parents. For example, Sib-sam had a close relationship with his parents, but sometimes his parents argued with each other. His mother often blamed his father for his failure to take responsibility for Sib-sam’s diabetes tasks. His father, who also had diabetes, did not adhere to his own self-management, and did not take Sib-sam to exercise or play football.

The lifestyle scores of adolescents with indifferent management style, ranging from 0.5 to 2, lead to poor health outcomes, similar to those in the indulging management group. Sib-sam had the highest lifestyle score (2 points), while Sri had the lowest score (0.5 points). Compared with Sri, Sib-sam was relatively obedient and had no conflict with his parents. This probably encouraged Sib-sam, rather than Sri, to increase adherence to self-management as his parents reduced their conflict and focused more on Sib-sam’s illness and were more involved in his diabetes tasks.

Sri, Sib-ed and Kaow all face difficulties adhering to self-management and changing their lifestyles. These difficulties, according to data from their caregivers, relate to the adolescents’ personalities, in relation to their age (*wairun*), such as aggression, disobedience, and lack of confidence because of large body shape. In addition, familial factors, such as a neglecting parenting style, poor attention from

caregivers, and having a poor role model in the family, contribute to adolescents' non-adherence to self-management. Hence, these adolescents lack internal motivation; they have never thought about their future goals.

“Indifferent” adolescents have difficulties not only with their diabetes self-management, but also with their daily lives (e.g. paying less attention to study, disruptive friends) and personal behaviours (e.g. isolated and aggressive). It is possible that familial factors, such as child-rearing styles, family financial problems, family conflicts (i.e. parent-child and father-mother) and low parental involvement, all lie behind these adolescents' perceptions and behaviours.

CHAPTER 9

DISCUSSION

In this final chapter, I discuss factors (as summarised in Figure 9.1) affecting adolescents living with (pre) diabetes and their self-management by comparing with theoretical aspects (i.e. combined behavioural models and explanatory models). Gender differences, diagnosis and treatment problems and public health policies in relation to food labelling, regulation of added sugar content, and food advertising laws are also discussed. I also consider the implications of my study and present recommendations for further research.

Factors affecting adolescents' diabetes self-management

Over the past three decades, Thailand has experienced economic growth, a rise in the nuclear family, and the growth of middle class lifestyles – family members' employment commitments, purchasing ready-to-eat food, limited exercise, time competition, and inadequate sleep, pressures on working families, the expansion of unhealthy urban built environments, and the adoption of Western diets. This environmental context has been shaped by rapid urbanisation, industrialisation, and Westernisation (Feng et al., 2010). Bangkok and its surroundings do not allow people, especially children and adolescents, to enjoy an active lifestyle: adolescents commonly go to school by vehicles, there is a lack of public green spaces and standard sports fields, and the city has experienced an expansion of 24-hour convenience stores and internet shops. According to a project of the Bangkok Metropolitan Administration (BMA) on the quality of life among residents of Bangkok, a total of 1,261 Bangkok

sports fields are unsafe and provide inadequate sports equipment (Bangkok Public Relations Division, 2010). Living in an unhealthy environment, children and adolescents easily absorb an unhealthy lifestyle, which is a key factor of childhood obesity and the development of pre-diabetes and type 2 diabetes. Therefore, overweight or obese adolescents who have pre-diabetes or type 2 diabetes have been affected by this built environment and face difficulties in modifying their lifestyle and adhering to the self-management of diabetes. Parents' health beliefs and personal behaviours, and parenting styles, are also underlying factors of childhood obesity.

Successful lifestyle modification needs an individual's intention, self-motivation or self-efficacy, and self-discipline. External supports, such as consistent parental involvement in self-management practices, are also important and helpful for young people, as they are immature and dependent on the family. To manage diabetes tasks, adolescents in this study have been affected by lay explanatory models and many variables (i.e. perceived severity of the disease, perceived barrier of treatment, perceived benefit of action, perceived self-efficacy, intention or motivation to self-management, feeling of fear and significant others) outlined in behavioural theories: the health belief model, the theory of planned behaviour, locus of control, and self-efficacy. These combined behavioural models can explain people's adherence decisions and management styles; a single behavioural theory cannot comprehensively explain complex human behaviours. They can be applied to explain potential factors underlying either achievement or failure in managing illness and to predict health promoting behaviour.

Explanatory models of diabetes for both adolescents and their caregivers in this study, although based on medical explanations, are not fully comprehensive and correct. It is possible that lay explanatory models are invalid because of misinterpretation

(Kleinman 2006:147) and confusion, as a result of overwhelming and/or discordant information. Most adolescents in my study do not adopt folk or traditional ideas of health or illness that may interfere with medical treatment. Medically based explanations from participants derive from many sources, however, such as their doctors, medical brochures issued by both public and private hospitals, and health-related knowledge through the internet, TV and radio programmes. Young patients and their families can access health- and medicine-based information, particularly from healthcare providers, much more readily than in the past. However, while information is available and accessible, young people and particularly caregivers need help to filter and interpret this information carefully.

According to perceptions and management behaviours in diabetes activities among adolescents and their caregivers, four patterns of diabetes self-management were identified: thriving, accommodating, indulging and indifferent. The thriving diabetes management style seems to be the ideal pattern, but the majority of young people with pre-diabetes and type 2 diabetes in this study cannot achieve this. Elements of the internal locus of control, actual intention, self-efficacy, perceived benefits of weight loss, and parental involvement play a role for the thriving management style. This management style also results in successful diabetes treatment (i.e. normal blood glucose, normal body weight, off medication and maintenance of health promoting behaviours). An accommodating diabetes management style is the second most common pattern used by the majority of young people with diabetes and lifestyle-related disease. This management style needs supportive caregivers to be involved in illness management. At least one health outcome can be improved: either normal weight or normal blood glucose levels. Despite the unknown future, caregivers who adopt the accommodating style seem to be confident that their child will be able to maintain a

healthy lifestyle because they have educated and informed him or her repeatedly and continuously. In other words, healthy behaviours have been embedded in his or her daily life. In practice, the accommodating management style was common in early adolescents (aged 12-14 years), raised in authoritative families, who are usually obedient and dependent on their caregivers.

The thriving management style identifies that predominantly self-motivation, intention and self-capability, rather than family support, affects lifestyle modification. In contrast, the accommodating management style illustrates that intensive family involvement and support in diabetes tasks and the adolescents' internal motivation have the highest influence on adolescents' lifestyle modification. The two successful diabetes management styles are concordant with Epstein's (1998 and 2000) studies, suggesting that the success of long-term weight control among obese children and adolescents requires change in family food patterns, along with exercise and using positive reinforcement approaches such as parental praise (Epstein et al., 1998; Epstein et al., 2000).

The two successful diabetes management styles suggest factors and strategies in managing the illness effectively, which may be employed by other adolescents with poor self-management and their families. For example, adolescents in the two successful management styles (thriving and accommodating) have life goals related to diabetes and/or body image (e.g. fatness), which strongly affect their intention to change their behaviours. On the other hand, the majority of "indulging" adolescents have life goals not related to diabetes and obesity, and a few "indifferent" adolescents have never thought about life goals. The indulging group's goal, such as finishing a study, could still be a powerful motivation for diabetes management, as the adolescents may wish to avoid complications, which will lead to hospitalisation and absence from school or

university. Providing interventions (e.g. health education on disease and healthy behaviours) and encouraging internal motivation to achieve adherence to self-management is most difficult for the “indifferent” group, which has the worst self-management style as measured by the lifestyle change scores. The “indulging” adolescents are likely to be a potential target for an intervention, rather than the “indifferent” group. The “indulging” adolescents may be able to switch to the thriving group if they have more cooperation of their family and friends, and higher self-efficacy. However, indifferent adolescents should not be ignored by the family and healthcare providers who can help them by encouraging these adolescents to think about their life goals as a first step, and encouraging them shift to the accommodating style as a further step. Goals indicate directions and build motivations for practice. Setting a goal is important in promoting self-efficacy with respect to diabetes management (Sigurdardottir, 2005). Therefore, collaboration among patients, parents and healthcare providers in setting optimal goals suitable for an individual’s lifestyle may potentially result in effective diabetes treatment and management. This is challenging for healthcare providers, particularly nurses, who need to find young patients’ life goals to inspire them to achieve self-management.

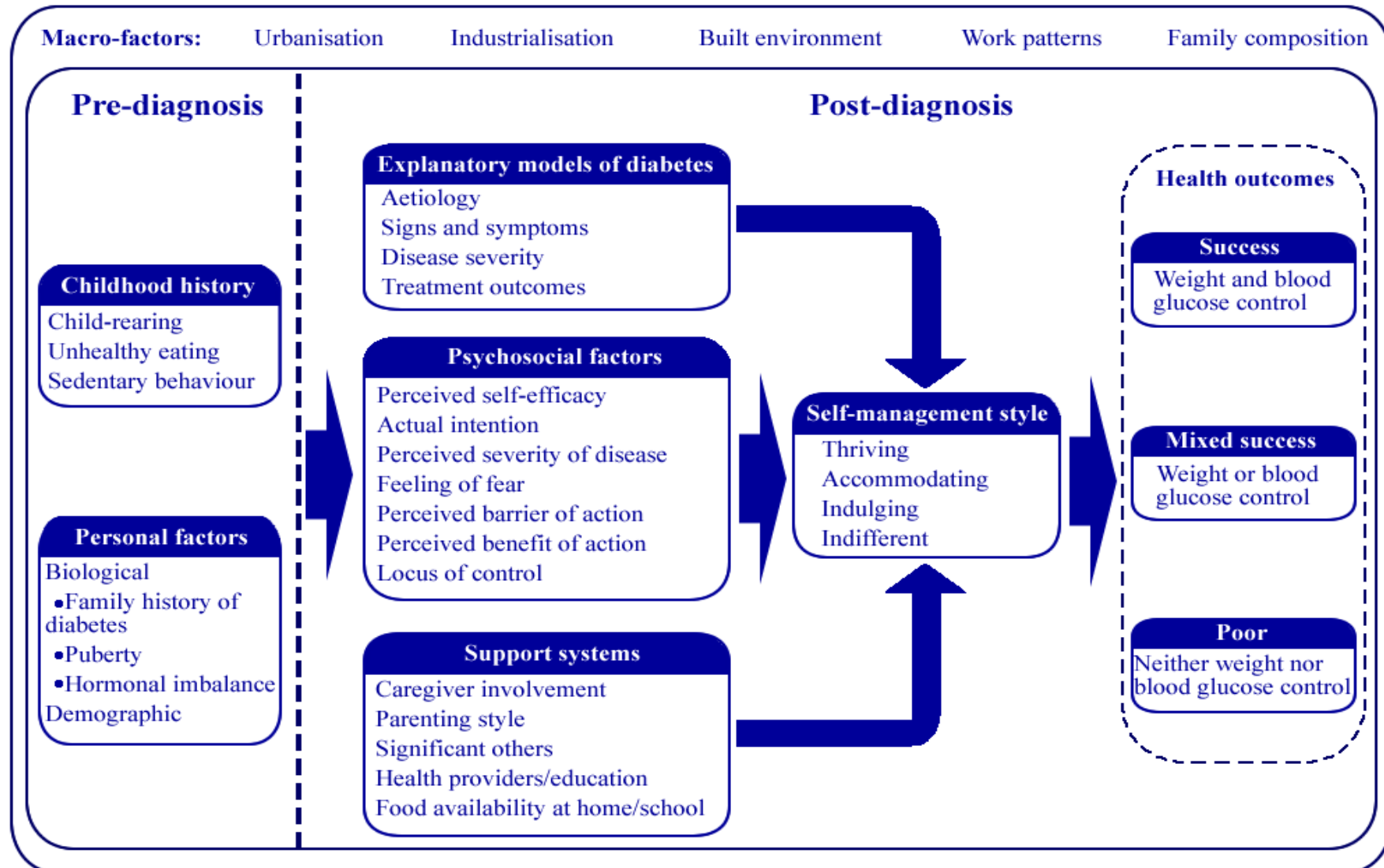


Figure 9.1 Factors influencing diabetes self-management

Figure 9.1 summarises the macro- and micro-factors affecting adolescents living with pre-diabetes or diabetes and their self-management. In this model, childhood experiences, such as parenting styles, unhealthy behaviours or lifestyles, and individual factors prior to the diagnosis of pre-diabetes and type 2 diabetes, underpin psychosocial factors (predisposing factors) in adolescence, after the diagnosis. The most important factor of childhood obesity is parental (i.e. parents' unhealthy behaviour or poor role modelling); children develop unhealthy habits and behaviours from their parents and other family members from childhood to adolescence (Isaranurug and Suthisukon, 2007; Nanthamongkolchai et al., 2007). These embedded habits and behaviours, particularly in relation to food preference and choices, are difficult for young people to change, and so to adopt a restricted diet to address their health conditions (obesity and diabetes).

These predisposing factors also affect adolescents' diabetes self-management patterns – thriving, accommodating, indulging and indifferent – that indicate health outcomes. Likewise, health outcomes can be used as an indicator of diabetes self-management styles. Self-efficacy, actual intention, caregivers' involvement, and healthcare providers' support in diabetes tasks are strong positive influencing factors, while perceived barriers to self-management, unsupportive significant others, and food availability are strong negative factors influencing self-management styles in this study. Adolescents who have a thriving or accommodating self-management style seem to have improved health outcomes, as they have these strong positive factors; they may have other internal or external factors, which are specific in each individual. For example, accommodating adolescents tend to feel fearful about injections or complications of diabetes and worry about the potential complications, compared with those with the thriving style in which significant others (i.e. relatives) trigger the

adolescents' intention in achievement their goals. On the other hand, indulging and indifferent adolescents are occupied with the perceived barriers to self-management, such as social life disruption.

Significant others seem to have a negative rather than a positive influence on almost all young participants who have an extended family. This is because grandparents and close relatives in the Thai and Thai-Chinese family are commonly permissive, particularly in allowing children to easily access food. Adolescents and parents appear to be reluctant to question the food choices of their relatives, out of respect of older people and kin in general. In some situations, parents, particularly mothers, employed alternative strategies and fed their children prior to visiting their relatives. This strategy was easier than having an argument with the relatives who did not support the healthy eating of their children. Living in a nuclear family may facilitate a change of unhealthy behaviours rather than living in an extended family. Nearly half of the adolescents living in a nuclear family in this study were able to change unhealthy behaviours because significant others did not influence their access to food and/or were not poor role models.

There is a weak association between perceived benefits of self-management and locus of control. For example, some adolescents with negative self-management styles, despite having the perceived benefits of decreasing weight, failed to control their diet and exercise, while adolescents in thriving or accommodating styles who perceived the same benefits achieve their self-management and have the improved health outcomes. In addition, young people, with three self-management styles - thriving, indulging and indifferent - most frequently report diabetes as a non-severe illness because of the absence of illness symptoms and the medical advice to reduce weight and/or take oral medication, rather than having an insulin injection. This suggests that the perceived

severity does not affect these three illness management styles. Instead, there are other psychosocial factors influencing each of them, in different ways (as discussed above). In contrast, the accommodating adolescents were more likely to perceive diabetes and/or its complications to be severe, leading to their adherence to diabetes self-management. This suggests that the perceived severity among adolescents in my study can be used to predict intention of the illness management.

Adolescents in the two positive self-management styles commonly had caregivers' support and involvement in diet control (e.g. home-made food low in fat, sugar, salt and other additives and avoiding storing candies, sweets and snacks at home), exercise (e.g. playing sports together or taking adolescents to gyms), and medication (e.g. preparing tablets daily, or reminding them to take medicine each day). In the built environment, with unhealthy food availability and affordability, adolescents with high or medium self-efficacy and actual intention to adhere to their self-management tended to avoid such kinds of foods, while those with negative self-management styles were the opposite.

Locus of control is a weak predictor of self-management behaviours among adolescents in this study. All adolescents perceive their diabetes to be caused by both their *pluttikum* or behaviours in relation to eating too many unhealthy foods and not exercising, and/or *kammaphan*, and none report supernatural control (e.g. luck, fate, or *kamma*). This suggests that all of them have internal locus of control and are able to change their behaviours, but in fact, some change them and the others do not. Therefore, those with internal locus of control who fail to change unhealthy behaviours need (family) support to act. Adolescents' and caregivers' explanatory models do not strongly influence self-management style, as they are concordant with biomedical

models; therefore, non-adherence to medication is not a significant problem, compared with diet control and exercise.

Few caregivers in this study support adolescents to use traditional medicines because of their concern about toxicity and drug accumulation in internal organs, and perceived childhood vulnerability. The perceived outcome of treatment (cured or not cured) variably affects adolescents' self-management behaviours. Adolescents who believe their diabetes can be cured if controlled more often have positive self-management behaviour. In contrast, those who perceive diabetes cannot be cured but is controllable avoid improving their self-management or changing their unhealthy behaviours because they believe that they cannot control themselves or have low self-efficacy. Adolescents who strictly adhere to self-management, with their blood sugar levels remaining high and difficult to decrease, may be affected by pubertal status (Goran et al., 2003a), strong family history or other health problems (Goran et al., 2003b), as was the case with only two adolescents in my study, Nueng and Sam. Therefore, healthcare providers may blame young patients as lacking responsibility for controlling their blood glucose if they focus only on blood sugar results. This may lead to a conflict between young patients and healthcare providers; young patients may reject treatment or not adhere to doctors' advices.

In terms of psychological issues, a US study suggests that the incidence of depression in type 2 adolescents is higher than in the general population or among patients with type 1 diabetes (Pinhas-Hamiel and Zeitler, 2003). According to my study, the majority of adolescents with pre-diabetes or type 2 diabetes reported that they did not get depressed, and only a few felt isolated, because of obesity, not diabetes. This may be because adolescents who fail to manage their illness ignore the need to change their unhealthy behaviour; they behave like "normal" adolescents. Those who succeed

to manage their illness are able to integrate diabetes activities in their daily lives and accept lifestyle modification. Additionally, many of them perceived their illness was not serious and they had not yet developed complications. Stigmatisation was not apparent or reported among adolescents in this study. This may be a consequence of the increasing public awareness and public health promoting campaigns through TV, radio and newspapers, as well as doctors' messages stating, "*Baowaan* is now a popular disease, as many people have it."

Gender differences

In my small-scale qualitative study, the majority of chronically ill female adolescents were overweight and had diabetes, while male adolescents were obese and had pre-diabetes. My quantitative findings suggest that among healthy respondents who have unhealthy lifestyles, young women tended to pursue the relevant unhealthy behaviours more frequently and intensely than the young men. This may explain female vulnerability to developing diabetes, as there is evidence that girls have a 1.5-3 times higher risk than boys of developing type 2 diabetes as children or adolescents (American Diabetes Association, 2000). In addition, genetic factors (which I do not discuss in my study) possibly play an important role in the development of obesity and type 2 diabetes in females rather than males (Gill-Carey and Hattersley, 2007). Epidemiological studies report the higher prevalence of overweight or obesity among girls rather than boys (Dabelea et al., 1998; Wei et al., 2003b; Santiprabhob et al., 2007; Un-Em, 2007). However, the findings related to gender prevalence have been inconsistent, including in Thailand. As discussed in Chapter 2, one hospital-based study suggests the highest prevalence was found in boys; the authors did not provide an explanation of this (Likitmaskul et al., 2003). My assumption is related to body size difference among boys and girls: parents perceive boys to be *uan* (fat) and recognise

this as “abnormal,” while girls are perceived as *jummum* (chubby) and parents may believe this body size to be “so cute.” Another possible reason is that boys commonly have short hair and thus *cor-dum* around the neck may be more noticeable in boys than girls. Therefore, parents may more often present to hospitals with their obese sons, who may also have other unusual signs. This may indicate that the number of undiagnosed girls is higher and possibly, there are more delays in diagnosis in girls; the latter was not the case in my study.

Diagnosis and treatment problems

Exploring the impact of the social environment on adolescent health status is important; healthcare providers need to understand the process leading from the onset of symptoms to treatment (as presented in Chapter 6). They can subsequently learn where the pathway can be interrupted to provide intervention or prevention of an unexpected illness, severity of illness, or death (Berkman, 1980). In my study, young patients visited doctors under the three main circumstances: having no symptoms (but visiting a hospital for an annual check-up or for life insurance), having diabetes symptoms, or having other illness symptoms. They experienced no delays in diagnosis, unlike adult patients with chronic conditions or illnesses in other studies where diagnosis and treatment were delayed (Naemiratch, 2004; Watkins and Plant, 2004; Manderson et al., 2008; Wei et al., 2009). One explanation of no delay, found in my study, is that parents observed their children closely, were concerned about their children’s health and wellbeing, and promptly presented to healthcare providers if they noticed any unusual symptoms.

Access to paediatric endocrinologists is still limited to Bangkok and the larger provinces, with a lack of these specialists in general hospitals and in areas outside of the capital (Nitiyanant et al., 2007: 77). Given this, I hypothesise that a study in a different

geographic area (e.g. smaller provinces or in rural areas) would demonstrate a delayed pathway to diagnosis for young patients with diabetes. Although there are paediatric endocrinologists working full-time in university hospitals, the number of these specialists (i.e. four paediatric endocrinologists working at the university hospital in this study) is insufficient to provide comprehensive health care to all young patients with endocrine disorders. Another limitation of hospital services reported by young patients and caregivers included slow procedures to obtain laboratory results, an inappropriate and inconsistent system of providing queue-cards for patients, and lack of continuity of care from the same doctor. Currently, diabetes treatment throughout the country is also inconsistent. Although there is a national practice guideline for diabetes, which follows the ADA guideline, not all clinicians use this. In general, clinicians working in the same hospital may use the same guideline, but there is variation among different hospitals. The Endocrine Society of Thailand could be involved in designing these guidelines to be applied nationally.

As presented in Chapter 6, few respondents and caregivers in my study recognised overweight/obesity as a risk for type 2 diabetes or *cor-dum* (Acanthosis nigricans) as a warning sign of type 2 diabetes among children and adolescents. Instead, they perceived these as normal conditions. This finding leads to my recommendations to healthcare providers in relation to sending the message about the two signs as significant indicators for the risk of type 2 diabetes throughout the country: “Acanthosis nigricans or *cor-dum* is an indicator of insulin resistance and later developing pre-diabetes and type 2 diabetes” and “obesity/overweight is an important risk factor of type 2 diabetes.” The Third National Health Examination Survey (NHESIII) in 2004 reported that approximately 1.6 million (53.3%) of Thai people with diabetes aged \geq 15 years had not been diagnosed (Aekplakorn et al., 2007). Aekplakorn and Bunnag

(Aekplakorn et al., 2006) developed a practical diabetes risk score measurement tool (which now already exists) to predict either Thai adults at high risk of diabetes or undiagnosed patients. The risk score measurement was tested in a Thai cohort of 2,420 individuals from different socio-demographic backgrounds. A total of 361 individuals were determined as having type 2 diabetes by this measurement during the follow-up period. Significant variables in this simple tool include age, BMI, waist circumference, hypertension, and family history of diabetes. Sensitivity and specificity of the risk score test are 77% and 60% respectively (Aekplakorn et al., 2006).

This simple method of diagnosing is through the assessment of such particular variables, and thus there is no need for the use of laboratory instruments. Detection of *cor-dum* and overweight-related parameters (e.g. weight range and waist circumference) not only enables young patients and their caregivers to notice and to recognise these characteristics in other people, but also alerts them to discuss these matters with others, particularly their healthcare providers (Kong et al., 2007). Therefore, a modified adult diabetes risk score test for young population should integrate *cor-dum* into the adult tool to yield the most beneficial outcomes for the young group. Further tests can then be done to confirm pre-diabetes or type 2 diabetes. I argue that these two noticeable signs could rapidly identify undiagnosed young patients and young people at high risk, therefore ensuring earlier diagnosis and lifestyle modification, with the possibility of fewer complications. If the importance of obesity and *cor-dum* as practical indicators is widely communicated, the number of young people at risk of diabetes, presenting to clinicians with these symptoms, may increase in the future. This will be beneficial for young people with type 2 diabetes, pre-diabetes, obesity and metabolic syndromes, particularly to prevent the development of type 2 diabetes or complications later in their life through early lifestyle interventions.

Regarding the issue of diabetes-related information, I conclude that, based on the content analysis of details presented in hospital booklets, the booklets cover general information, without specific for two types of diabetes, and some contents are not updated and/or consistent. For example, terms of insulin-dependent diabetes and insulin-independent diabetes are still used which are now referred to as Type 1 and Type 2 diabetes, respectively. The information, indicating that insulin-dependent diabetes (type 1) is commonly found in children while insulin-independent (type 2) is commonly found in adults and older people is out of date and not correct; the diagnostic cut off values of fasting blood glucose for pre-diabetes and diabetes are not consistent (as discussed in Chapter 2); and hospital booklets specific for type 1 or type 2 diabetes are rare, instead, the booklets entitled “Diabetes” are commonly found in the hospitals.

Hospital booklets had positive impacts on attitudes and behaviours toward diabetes of both adult patients and their offspring in a recent Japanese study (Masakazu et al., 2010). Patients in this study reported that the booklets induced relief rather than anxiety, and as a result parents felt that their offspring paid more attention to diabetes than before and changed dietary habits. However, this study had some limitations: it did not have data on characteristics and health conditions of the offspring and all information about the offspring was collected from patients’ views and this was not necessarily consistent with the data directly collected from the offspring. In my study, the findings contribute to the improvement of hospital booklets suggesting the inclusion of updated and/or new information and the development of the specific booklets of type 1, type 2 and other types of diabetes. The specific booklets may alert young people with and without type 2 diabetes, including that this diabetes type can be developed in their age group and rather than among adults only, as presented in general booklets.

Overall, the perspectives of young participants and their caregivers of healthcare services are not positive, as they were dissatisfied with hospital services in terms of the slow processes involved in getting a waiting-card and lab results and seeing a doctor. These data reflect the fact that this is a structural and policy problem and therefore, a practical health policy requires action to solve the problem. The slow process of hospital services is partly the result of insufficient healthcare providers and the large number of patients visiting the hospital each day, although triage and management processes may also need to be addressed. It is necessary to invest into educating new health specialists and concurrently in working to prevent the high turnover rate of specialists and other health professionals from public to private hospitals. Patient education needs to include the concept of self-care, health promotion and illness prevention at home, rather than the concept of going to the hospital and seeking treatment without personal involvement. Therefore, enhancing health centres and community hospitals to play a major role in health promotion is also needed. Furthermore, the revision of knowledge sources such as hospital brochures, health magazines and health education textbooks, and the use of the internet, is important.

My study contributes to understanding how young patients focused self-care may be developed. The findings on lay perspectives of healthcare services and providers have the potential to contribute to the capacity of health professionals, particularly paediatricians, paediatric endocrinologists, paediatric nurses and other health staff taking care of paediatric patients; improving their approaches in dealing with young patients and families in order to encourage adherence to treatment; taking into account environmental, family and personal factors impacting individual adolescent behaviours.

Public health policies and campaigns

The diabetes care system in many university hospitals provides relatively comprehensive services and multi-disciplinary health personnel take care of paediatric patients, despite insufficient staff. However, most diabetes care services, such as the diabetes class, club and camp, serve the needs of people with type 1 diabetes, rather than type 2 diabetes. Health promotion campaigns for children and adolescents with diabetes are limited when compared with adults. However, the “Sweet Enough Campaign” or *Dek thai mai kin waan* (Thai children do not eat sweet [food]) is directed at young people and is well known by the name *Noinoi*, the iconic pink ant.

At the macro-level, the state policy, the responsibility of the Ministry of Public Health (MoPH), has focused on prevention, treatment and rehabilitation of obese paediatric patients throughout the country, by providing funding for both the public and private sector to conduct intervention and education programs and research, and by encouraging participation between the public and the private sector. In response to the policy, several public sectors, such as departments under the MoPH, BMA, schools under the BMA, and the private sector, participate in health promotion campaigns/projects. Over the past five years, Thailand has experienced endemic obesity among young people, and thus has established many health promoting campaigns to prevent this problem. I have discussed some of these campaigns, which mainly focus on childhood obesity. Although most campaigns are related to childhood obesity, all benefit young people with pre-diabetes and type 2 diabetes.

The campaign *Dek thai rai pung* (lit. Thai children have no abdominal fat, idiomatically better translated as “Thai children don’t have big bellies”), conducted by the BMA, has raised awareness about an increase of overweight in children from 9.55% to 10.43% between 2005 and 2008 (Bangkok Public Relations Division, 2009a).

Because of this report, the BMA through the announcement of the Deputy Governor has established four strategies to promote *Dek thai rai pung*. One of the strategies is the regulation to prohibit the sale of soft drinks within and in the vicinity of all schools under the BMA, implemented in 2010. Other strategies have included the development of healthy school environments such as better food in school canteens and training nutrition teachers and school cooks. These strategies are relevant for establishing “supportive” environments (Feng et al., 2010). The campaign *Dek thai rai pung* contributes to supportive environments in school settings with multi-sector collaboration, including the school, community, food retailers and the public sector. If the BMA’s strategies succeed, Thai children in the future may not have “big bellies.”

Similarly, an adult campaign, entitled “Bangkokians (Thai people living in Bangkok) have no abdominal fat” (*khonkrungthep rai pung*), has been established by the BMA and the other two organizations, including The Thai Health Promotion Foundation and Thairaipung network, MOPH (Bangkok Public Relations Division, 2009b). In collaboration with four public universities, the campaign aims at 50% of participants (who are students from nine schools and people from nine communities in the studied area of twelve zones) changing behaviours, and has been followed and evaluated continuously once a month for ten months (July 2009 – March 2010). However, until now the results of the campaign evaluation has not been published. Although the expansion of this adult campaign is expected to cover 50 zones over four years, the children’s campaign *Dek thai rai pung* has been limited to Bangkok and to schools under the BMA. Therefore, the ban on selling soft drinks in schools does not extend to private schools or schools out of the BMA jurisdiction, for example. Further intervention campaigns should be spread beyond Bangkok, and include private schools and other schools throughout the country, to participate in the campaigns to achieve

nationwide benefits. The healthcare providers participating in my study commented that while numerous health promoting programs focusing on endemic obesity were introduced in Thailand in the past five years, there is lack of evaluating the effectiveness and/or the sustainability of those campaigns. Therefore, it is not surprising that this health problem has continued to rise in Thailand.

In addition to focusing on preventing obesity through various health campaigns, the Thai Government has introduced indirect strategies for the solution of childhood obesity through the use of national regulations. For example, recently the MoPH (2007) issued a regulation requiring nutritional labels on five food products: crispy potato chips, crispy corn chips, extruded snacks, biscuits or crackers, and crispy cream wafers (The Thailand Food and Drug Administration, 2007); evaluation results of the effectiveness of this regulation are not available. Nutrition research suggests that there are benefits of using nutritional labels to encourage better food choices, which in turn yield more healthy/nutritious diets (Nayga et al., 1998; Chantaradee, 2003). A quantitative and hospital-based study of nutritional labels usage among Thai adults diagnosed with type 2 diabetes demonstrated that personal factors including high education (i.e. bachelor degree), age (being less than 60 years), and medium to high income increased the likelihood of reading food labels; gender and the duration of diabetes were not significant (Chantaradee, 2003). Knowledge about caloric energy and a nutritionally balanced diet, and understanding of details on food labels, had a positive correlation with label use. Regarding respondents' claims about the food labels, the older group (> 60 years old) provided similar comments to those of young participants in my study, that is a small size of letters on the food labels. In contrast, a US survey study on the same topic conducted among adults with diabetes reported that personal factors did not affect the extent of food label usage; instead, based on the Health Belief

Model, having diabetes was the most significant reason for reading food labels (Kessler and Wunderlich, 1999). The author, however, suggested that although adult patients read food labels more frequently than the general population and obtained nutrition knowledge mainly from healthcare providers, many of them could not apply such knowledge to the practice of food selection. The discrepancy of the two studies is perhaps a consequence of cultural difference (i.e. Americans may carry a small book or newspaper with them to read while travelling on a bus, train, tram and airplane, or when having leisure time. Book reading is less common among Thai people). In addition, there are differences in the studies in terms of methods, such as questionnaires (i.e. the Diet and Health Knowledge Survey Questionnaire of the United State Department of Agriculture vs. the questionnaire developed from literature) and statistical analysis (i.e. Chi-square vs. t-test and ANOVA).

Almost no research has been published on the impact of multiple factors including socioeconomic and demographic factors, and nutrition knowledge, on whether or not people read food labels while shopping, at home, or when comparing brands (but see Nayga et al., 1998). In my study, most youths and their caregivers were concerned about controlling food in relation to their diabetes, and/or they had gained knowledge from nutritionists or nursing educators about the details that are provided on food labels, and about the importance of a nutritionally balanced diet. Yet despite the availability of nutrition labels (as discussed in Chapter 8), most respondents and their primary caregivers paid little attention to reading such labels when they went shopping. They claimed that those labels were too small to be readable. Only one primary caretaker was concerned about reading food labels, particularly on milk product labels in relation to sugar and fat content. This is possibly because diabetes was a focus in her family, and

she believed that the child's illness could be cured if the child followed a good diet and exercised daily.

The actual reasons why almost all adolescents and their primary caregivers lacked concern about food labels was not investigated. Other research suggests the influence of advertisement recall and/or attractive packaging and appearances on children's food choice (Roberto et al., 2010). Another reason why young people may not have paid attention to food labels was because their caregivers had not discussed the concerns relayed to them by nutritionists or nursing educators. It is important to study this issue among people who require a special diet because of diabetes or food allergy, for example, as they are expected to read nutrition labels, and to be able to use the nutrition information to make healthy food choices.

Through the Announcement of the Public Relations Department, Thailand also has a regulation controlling advertising to children of candies and snacks on television, effective from 19th February, 2008 (Matichon online, 2008). This regulation states that advertisement duration cannot be more than 12 minutes per hour, advertising the same product cannot occur more than four times per hour, cartoon characters and super stars cannot be presenters for the products, and providing free toys is not permitted. The impact of this in Thailand is debatable; further the business sector – advertisement companies and TV program producers – not surprisingly disagree with this regulation. They have argued that instead of enforcing this unpractical regulation, the government should focus on providing education for children through the use of popular cartoon characters (Public Relation, 2007). The examples of these regulations demonstrate that the Thai Government has a policy to solve endemic childhood problems associated with cardiac risk (i.e. diabetes, cardiovascular disease and high blood pressure), by considering early prevention from infancy and controlling the unhealthy marketing of

snacks. However again, evaluation results of the effectiveness of the regulations presented here are not yet available.

Implications and Recommendations

Due to the small sample size of both the healthy adolescents and those with pre-diabetes and diabetes, I cannot generalise that all healthy adolescents in contemporary Thailand have unhealthy behavioural patterns and are at risk of developing pre-diabetes and diabetes. Instead, my findings suggest that the families, particularly parents, and healthcare providers, need to be seriously concerned about the types and quantities of food that their children eat, and their activities both at home and outside home (e.g. when out with their friends). For healthcare providers, proactive screening of at-risk young people is recommended: healthy adolescents who are overweight and obese should have blood check-ups for glucose and lipid profile to distinguish those who are at high risk of developing diabetes.

Environmental and social factors affecting childhood obesity include food availability at school and at home, parental factors and parenting styles, all need to be considered. Young people and other groups, who live in a supportive environment, where they have access to affordable healthy food choices, opportunities for regular physical activity, high quality health personnel, and friendly neighbourhoods, can change their behaviour (Burdette and Whitaker, 2004; Feng et al., 2010). Despite many public messages associated with the encouragement of healthy food consumption, in fact, healthy foods sold at the market are too expensive for poor families. To support people in this group in the whole country, the government needs to consider mechanisms to reduce food costs, such as reducing taxes on healthy foods (both raw food and cooked meals) to help manufacturers and wholesale companies lower the

market price of these products. Likewise, if the government proposed increasing the cost of fast food and snack foods through taxation, it would be able to reduce consumption (Bond et al., 2010).

Additionally, in the family setting, parents' modelling and parenting styles, such as authoritative parenting, could prevent children from developing unhealthy habits and behaviours from childhood to adolescence, and enhance young people's lifestyle modification (Sawyer et al., 2007). My findings indicate that family environment may be the basis of effective self-management behaviours or health promoting behaviours, as dietary and physical activity behaviours during childhood develop within the family. Therefore, the families of young people with chronic illness need social support (Anderson et al., 2005). Healthcare providers can support or help caregivers or families by facilitating parental involvement, setting up dietary plans, and raising countrywide awareness of unhealthy foods. Moreover, intervention programs for primary caregivers, aiming at encouraging them to be highly involved in diabetes self-management and to be "healthy" role models, and enhancing their capacity to take care of children with chronic illness, are useful not only for affected young people but also the whole family. This would reduce both internal and external barriers to diabetes self-management among young people.

Personal and environmental factors can be modified to prevent the development of obesity, diabetes and other lifestyle-related diseases. As eating healthy food and exercising regularly are not widely practiced behaviours among adolescents in my study, it may be necessary to promote the perceived benefits of these health promoting behaviours at both micro and macro levels. In addition, the public media may help to enhance the perceived benefits of eating healthy food and exercise in relation to body fitness and 'safe' weight, weight reduction, and the improvement of blood sugar results.

Parents or primary caregivers are the most important people who can enhance active behaviours and healthy environment at home, while teachers (who are thought of as second parents for children in Thai society) play a key role to promote healthy behaviour programs, including through school-based exercise programs to prevent childhood obesity (Mo-suwan et al., 1998). Furthermore, multi-disciplinary healthcare providers who are experts in paediatric obesity and type 2 diabetes are needed, particularly home visiting nurses or other trained healthcare staff who would potentially work closely with young patients and families without time limitations. I also recommend that hospital booklets providing illness- and/or health- related knowledge should be made available to patients' family members at home; this may change attitudes and/or behaviours toward the illness among both patients and their family.

Another recommendation contributes to the development of a practical and simple diagnostic tool for detecting at risk children and adolescents all over the country. Such a diagnostic tool could support a national health policy for screening for diabetes among Thai people, in particular in risk groups – people who are overweight/obese and/or have pre-diabetes and a family history of diabetes.

Based on my results, further studies should focus on the family (not only the individual) as the unit of analysis, as health and wellbeing always occur in a social context. Additionally, the issue of meal patterns among Thai people (both in rural and urban areas) needs to be explored, as foods are shared by the whole family and there are no individual food sets. This is because it is neither easy nor desirable to divide family food into foods for diabetics and for non-diabetics. Therefore, it is necessary to understand this practice and the difficulties in controlling food intake in a family environment, in order to tackle this barrier to diet control. Further research should investigate the meaning of “healthy eating” from the points of view of both lay persons

and health professionals, which are usually different, and explore how to lessen the gap between these different points of view. Furthermore, a heterogeneous study sample (i.e. different socioeconomic classes, cultural backgrounds and different geographical regions) is also needed in future studies; a selection bias may be addressed by recruiting young patients from the community rather than hospitals only.

BIBLIOGRAPHY

- Aalto, A. (1997). Glycemic control, self-care behaviors, and psychosocial factors among insulin treated diabetics: A test of an extended health belief model. *International Journal of Behavioral Medicine*, 4(3), 191-214.
- Adolescent Health and Development. (2007). Adolescent health: Fact sheet_Thailand [Electronic Version]. Retrieved 25/11/2008, from http://www.searo.who.int/LinkFiles/Fact_Sheets_Thailand-AHD-07.pdf
- Adolescent Health Programs. (2008). Adolescent health [Electronic Version]. Retrieved 03/12/2009, from <http://www.vahealth.org/adolescenthealth/>
- Aekplakorn, W, Abbott-Klafter, J, Premgamone, A, Dhanamun, B, Chaikittiporn, C, Chongsuvivatwong, V, Suwanprapisa, T, Chaipornsupsaisan, W, Tiptaradol, S, and Lim, S. (2007). Prevalence and management of diabetes and associated risk factors by regions of Thailand - Third National Health Examination Survey 2004. *Diabetes Care*, 30(8), 2007-2012.
- Aekplakorn, W, Bunnag, P, Woodward, M, Sritara, P, Cheepudomwit, S, Yamwong, S, Yipintsoi, T, and Rajatanavin, R. (2006). A risk score for predicting incident diabetes in the Thai population. *Diabetes Care*, 29(8), 1872-1877.
- Aekplakorn, W, Stolk, R, Neal, B, Suriyawongpaisal, P, Chongsuvivatwong, V, Cheepudomwit, S, and Woodward, M. (2003). The prevalence and management of diabetes in Thai adults: The international collaborative study of cardiovascular disease in Asia. *Diabetes Care*, 26(10), 2758-2763.
- Ajzen, I. (1991). The Theory of Planned Behavior. *Organizational Behavior and Human Decision Processes*, 50, 179-211.
- Alberti, G, Zimmet, P, Shaw, J, Bloomgarden, Z, Kaufman, F, and Silink, M. (2004). Type 2 diabetes in the young: the evolving epidemic - The International Diabetes Federation Consensus Workshop. *Diabetes Care*, 27(7), 1798-1811.
- Alexander, K, Ventura, E, Spruijt-Metz, D, Weigensberg, M, Goran, M, and Davis, J. (2009). Association of breakfast skipping with visceral fat and insulin indices in overweight Latino youth. *Obesity*, 17(8), 1528-1533.
- Almino, M-A, Queiroz, M-V, and Jorge, M-S. (2009). Diabetes mellitus in adolescence: Experiences of adolescents and their mothers. *Revista da Escola de Enfermagem da USP*, 43(4), 759-766.
- Altobelli, E, Valenti, M, Verrotti, A, Masedu, F, Tiberti, S, Chiarelli, F, and Di Orio, F. (2000). Family and disease management in young type 1 diabetic patients. *Acta Diabetologica*, 37(4), 173-178.
- American Diabetes Association. (2000). Type 2 diabetes in children and adolescents. *Diabetes Care*, 23(23), 381-389.

- American Diabetes Association. (2004). Prevention or delay of type 2 diabetes. *Diabetes Care*, 27(Supplement 1), S47-54.
- American Diabetes Association. (2005). Diagnosis and classification of diabetes mellitus. *Diabetes Care*, 28(1), S37-S42.
- American Diabetes Association. (2008a). Diagnosis and classification of diabetes mellitus. *Diabetes Care*, 31(Supplement 1), S55-S60.
- American Diabetes Association. (2008b). Standards of medical care in diabetes. *Diabetes Care*, 31(Supplement 1), S12-S54.
- American Diabetes Association Task Force. (2002). American Diabetes Association position statement: Evidence-based nutrition principles and recommendations for the treatment and prevention of diabetes and related complications. *Journal of the American Dietetic Association*, 102(1), 109-118.
- Andersen, R, Crespo, C, Bartlett, S, Cheskin, L, and Pratt, M. (1998). Relationship of physical activity and television watching with body weight and level of fatness among children: Results from the third national health and nutrition examination survey. *The Journal of the American Medical Association*, 279(12), 938-942.
- Anderson, B. (2004). Family conflict and diabetes management in youth: Clinical lessons from child development and diabetes research. *Diabetes Spectrum*, 17(1), 22-26.
- Anderson, B, Cullen, K, and McKay, S. (2005). Quality of life, family behavior, and health outcomes in children with type 2 diabetes. *Pediatric Annals*, 34(9), 722-729.
- Anderson, B, Ho, J, Brackett, J, Finkelstein, D, and Laffel, L. (1997). Parental involvement in diabetes management tasks: Relationships to blood glucose monitoring adherence and metabolic control in young adolescents with insulin-dependent diabetes mellitus. *The Journal of Pediatrics*, 130(2), 257-265.
- Anderson, R and Funnell, M. (2000). Compliance and adherence are dysfunctional concepts in diabetes care. *The Diabetes Educator*, 26(4), 597-604.
- Arcury, T, Skelly, A, Gesler, W, and Dougherty, M. (2004). Diabetes meanings among those without diabetes: Explanatory models of immigrant Latinos in rural North Carolina. *Social Science and Medicine*, 59(11), 2183-2193.
- Arnold, J and McGowan, H. (2007). Delay in diagnosis of diabetes mellitus due to inaccurate use of hemoglobin A1C levels. *Journal of the American Board of Family Medicine*, 20(1), 93-96.
- Arslanian, S. (2002). Type 2 diabetes in children: Clinical aspects and risk factors. *Hormone Research*, 57(supplement 1), 19-28.
- Asawarat, N. (1993). *Patterns of drug behaviors of diabetes mellitus patients [abstract]*. MSc thesis [Unpublished]. Mahidol University, Bangkok.

- Asian-Pacific Type 2 Diabetes Policy Group. (2005). Type 2 diabetes: Practical targets and treatments. Fourth edition [Electronic Version]. Retrieved 05/02/2010, from http://www.diabetes.com.au/pdf/Diabetes_TreatmentTargets_FINAL.pdf,
- Athasari, S. (2007). *Mothers' perspective and management with children with type 1 diabetes*. PhD thesis [Unpublished]. Mahidol University, Bangkok.
- Austin, L-T, Ahmad, F, McNally, M-J, and Stewart, D. (2002). Breast and cervical cancer screening in Hispanic women: a literature review using the health belief model. *Women's Health Issues, 12*(3), 122-128.
- Bandura, A. (1977). Self-efficacy: toward a unifying theory of behavior change. *Psychological Review, 84*(2), 191-215.
- Bangkok Metropolitan Administration (BMA). (2003). Bangkok State of Environment Report 2003. Retrieved 15/10/2009, from http://www.rrcap.unep.org/pub/soe/bkk_2004_chpt01.pdf
- Bangkok Public Relations Division. (2009a). Bangkok running the project "dek thai rai pung" (Thai children do not have big bellies) (Publication. Retrieved 02/11/2010: <http://www.ryt9.com/s/prg/755240>
- Bangkok Public Relations Division. (2009b). Continue to reduce the city people's belly, promoting good health and slender shape (Publication. Retrieved 10/03/2011: <http://www.thaipr.net/nc/readnews.aspx?newsid=677FE035066CD77A535134211E458375&query=4qTDp6HSwyCkueS3wuTD6b7YpyAzzQ==>
- Bangkok Public Relations Division. (2010). The Improvement of Sports Fields in Bangkok (in Thai), from <http://www.prbangkok.com/2009-10-14-04-34-29/2598>
- Barlow, J, Wright, C, Sheasby, J, Turner, A, and Hainsworth, J. (2002). Self-management approaches for people with chronic conditions: A review. *Patient Education and Counseling, 48*(2), 177 - 187.
- Barry, A-M and Yuill, C. (2002). The development of modern medicine. In *Understanding health* (pp. 17-25). London: SAGE Publications.
- Bauer, K, Larson, N, Nelson, M, Story, M, and Neumark-Sztainer, D. (2009). Fast food intake among adolescents: Secular and longitudinal trends from 1999 to 2004. *Preventive Medicine, 48*(3), 284-287.
- Baumrind, D. (2007). *Parenting styles and adolescent development [electronic resource]*. Retrieved 07/01/2009, from <http://images.lib.monash.edu.au/edf3003/04142748.pdf>
- Baur, L. (2002). Child and adolescent obesity in the 21st century: An Australian perspective. *Asia Pacific Journal of Clinical Nutrition 11*(Supplement 3), S524-S528.

- Bazzano, L, He, J, Ogden, L, Loria, C, Vupputuri, S, Myers, L, and Whelton, P. (2002). Fruit and vegetable intake and risk of cardiovascular disease in US adults: the first national health and nutrition examination survey epidemiologic follow-up study. *The American Journal of Clinical Nutrition*, 76(1), 93–99.
- Bean, D, Cundy, T, and Petrie, K. (2007). Ethnic differences in illness perceptions, self-efficacy and diabetes self-care. *Psychology and Health*, 22(7), 787-811.
- Becker, M. (1974). Health belief model and sick role behavior. *Health Education Monographs*, 2(4), 409-419.
- Becker, M and Maiman, L. (1975). Sociobehavioral determinants of compliance with health and medical care recommendations. *Medical Care*, 13(1), 10-24.
- Becker, M, Maiman, L, Kirscht, J, Haefner, D, and Drachman, R. (1977). Health belief model and prediction of dietary compliance - Field experiment. *Journal of Health and Social Behavior*, 18(4), 348-366.
- Becker, M, Radius, S, Rosenstock, I, Drachman, R, Schuberth, K, and Teets, K. (1978). Compliance with a medical regimen for asthma: Test of health belief model. *Public Health Reports*, 93(3), 268 - 277.
- Berkey, C, Rockett, H, Gillman, M, Field, A, and Colditz, G. (2003). Longitudinal study of skipping breakfast and weight change in adolescents. *International Journal of Obesity*, 27(10), 1258-1266.
- Berkman, L. (1980). Physical health and the social environment: A social epidemiological perspective. In L. Eisenberg. & A. Kleinman. (Eds.), *The Relevance of Social Science for Medicine* (pp. 51 - 75). London: D. Reidel Publishing Company.
- Bernal, H, Woolley, S, Schensul, J, and Dickinson, J. (2000). Correlates of self-efficacy in diabetes self-care among Hispanic adults with diabetes. *The Diabetes Educator*, 26(4), 673-680.
- Besuwan, W. (2000). *Evaluation of the efficiency of modified method for self-control of diet and body weight in diabetic patients [abstract]*. MSc thesis [Unpublished]. Mahidol University, Bangkok.
- Beveridge, R, Cynthia, A, Deborah, J, and Debra, L. (2006). Mother and adolescent representations of illness ownership and stressful events surrounding diabetes. *Journal of Pediatric Psychology*, 31(8), 818-827.
- Birch, L and Fisher, J. (1998). Development of eating behaviors among children and adolescents (The causes and health consequences of obesity in children and adolescents). *Pediatrics*, 101(3), 539-550.
- Blair, K and Robert, D. (2003). An examination of perceived behavioral control: Internal and external influences on intention. *Psychology and Marketing*, 20(7), 625-642.

- Bloomgarden, Z. (2004). Type 2 diabetes in the young: The evolving epidemic. *Diabetes Care*, 27(4), 998 -1010.
- Blue, C, Marrero, D, and Black, D. (2008). Physical activity belief scales for diabetes risk: Development and psychometric testing. *Health Education and Behavior*, 35(3), 316-331.
- Bond, G, Aiken, L, and Somerville, S. (1992). The health belief model and adolescents with insulin-dependent diabetes mellitus. *Health Psychology*, 11(3), 190-198.
- Bond, M, Williams, M, Crammond, B, and Loff, B. (2010). Taxing junk food: applying the logic of the Henry tax review to food *Medical Journal of Australia*, 193(8), 472-473.
- Boocha, W. (2007). "Dek-uan" pai-ngiab nai rongrian ["Childhood obesity" a silent risk in school]. Retrieved 02/11/2009, from <http://www.thainhf.org/index.php?module=article&page=detail&id=106>
- Boonchalaksi, W. (1993). The reliability and validity of qualitative research methods. In B. Yoddumnern-Attig, G. Attig, W. Boonchalaksi, K. Richter & A. Soonthorndhada (Eds.), *Qualitative Methods for Population and Health Research* (pp. 49-57). Nakhon Prathom: Institute for Population and Social Research, Mahidol University.
- Boonkerd, U. (2003). *The effectiveness of the health promotion program applying self-efficacy theory and group process on diabetes mellitus prevention among population at risk [abstract]*. MSc thesis [Unpublished]. Mahidol University, Bangkok.
- Bouma, G. (2000). *The research process* (4th ed.). Melbourne: Oxford University Press.
- Bowman, S, Gortmaker, S, Ebbeling, C, Pereira, M, and Ludwig, D. (2004). Effects of fast-food consumption on energy intake and diet quality among children in a national household survey. *Pediatrics*, 113(1), 112-118.
- Braet, C. (2005). Psychological profile to become and to stay obese. *International Journal of Obesity*, 29(S2), S19-S23.
- Braitman, A, Derlega, V, Henson, J, Robinett, I, Saadeh, G, Janda, L, Hixon, M, and Miranda, J. (2008). Social constraints in talking about diabetes to significant others and diabetes self-care: A social-cognitive processing perspective. *Journal of Social and Clinical Psychology*, 27(9), 949-969.
- Braun, V and Clarke, V. (2006). Using hematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77 -101.
- Brawley, L and Culos-Reed, S. (2000). Studying adherence to therapeutic regimens: Overview, theories, recommendations. *Controlled Clinical Trials*, 21(5), 156S-163S.

- Broom, D and Whittaker, A. (2004). Controlling diabetes, controlling diabetics: Moral language in the management of diabetes type 2. *Social Science and Medicine*, 58(11), 2371-2382.
- Brown, K. (1999). Health belief model overview. Retrieved 11/01/1999, from http://hsc.usf.edu/~kmbrown/Health_Belief_Model_Overview.htm
- Bunjaroonsilp, N. (2004). A systematic review of knowledge on health behaviors in preventing childhood obesity. *Thai Journal of Parenteral Nutrition*, 2, 151-162.
- Burdette, H and Whitaker, R. (2004). Neighborhood playgrounds, fast food restaurants, and crime: relationships to overweight in low-income preschool children. *Preventive Medicine*, 38(1), 57-63.
- Bury, M. (1991). The sociology of chronic illness: A review of research and prospects. *Sociology of Health and Illness*, 13(4), 451-468.
- California Center for Public Health Advocacy. (2002). National Consensus Panel on School Nutrition: Recommendations for competitive food standards in California schools. California: The California Center for Public Health Advocacy.
- Calnan, M. (1984). The health belief model and participation in programs for the early detection of breast cancer: A comparative analysis. *Social Science and Medicine*, 19(8), 823-830.
- Carter-Edwards, L, Skelly, A, Cagle, C, and Appel, S. (2004). "They care but don't understand." Family support of African American women with type 2 diabetes. *Diabetes Educator*, 30(3), 493-501.
- Caspersen, C, Powell, K, and Christenson, G. (1985). Physical activity, exercise, and physical fitness: Definitions and distinctions for health-related research. *Public Health Reports*, 100(2), 126-131.
- Cennoy, N. (1998). *The effectiveness of a health education program on dietary control and exercise behavior modification among diabetic patients, Hankha Hospital Chainat Province [abstract]*. MSc thesis [Unpublished]. Mahidol University, Bangkok.
- Center Study on Leisure. (2006). Parents solving adolescents' problems. Retrieved 13/10/2009, from <http://dnfe5.nfe.go.th/ilp/41007/Index.html>
- Cerkoney, K. (1980). The relationship between the health belief model and compliance of persons with diabetes-mellitus. *Diabetes Care*, 3(5), 594-598.
- Chaimun, B. (2009). *Factors associated with medication adherence of patients with type 2 diabetes mellitus in Khumaung district, Burirum Province, Thailand [Abstract]*. MSc thesis [Unpublished]. Mahidol University, Bangkok.
- Chairat, C. (2002). *Patient participatory exercise program for type 2 diabetic patients attending Watsaitai sub-district medical center, Muang district, Nakornsawan Province [abstract]*. MSc thesis [Unpublished]. Mahidol University, Bangkok.

- Chan, J, Deerochanawong, C, Shera, A, Yoon, K-H, Adam, J, Van Binh, T, Chan, S-P, Fernando, R, Horn, L, Khue, N, Litonjua, A, Soegondo, S, and Zimmet, P. (2007). Role of metformin in the initiation of pharmacotherapy for type 2 diabetes: An Asian-Pacific perspective. *Diabetes Research and Clinical Practice*, 75(3), 255-266.
- Chang, H-Y, Chiou, C-J, Lin, M-C, Lin, S-H, and Tai, T-Y. (2005). A population study of the self-care behaviors and their associated factors of diabetes in Taiwan: Results from the 2001 national health interview survey in Taiwan. *Preventive Medicine*, 40(3), 344-348.
- Chantaradee, P. (2003). *Understanding and usage of nutrition labeling among type 2 diabetes patients*. MSc thesis [Unpublished]. Mahidol University, Bangkok.
- Chantavanich, S. (1989). *Qualitative Data Analysis*. Bangkok, Thailand: Chulalongkorn University Press.
- Chanyachailert, T. (2008). *Nai nueng won kin namtaan.... chorncha?* [How much do (you) consume sugar a day?] [Electronic Version]. *Moh Chao Ban Magazine Online*, 29, 18-22. Retrieved 05/05/2009, from http://archive.doctor.or.th/magazine/html/column.php?sel_ID=17
- Charmaz, K. (1990). Discovering chronic illness: Using grounded theory. *Social Science and Medicine*, 30(11), 1161-1172.
- Chavez, L, McMulline, J, Mishra, S, and Hubbell, F. (2001). Beliefs matter: Cultural beliefs and the use of cervical cancer - screening tests. *American Anthropologist*, 103(4), 1114-1129.
- Chesla, C and Chun, K. (2005). Accommodating type 2 diabetes in the Chinese American family. *Qualitative Health Research*, 15(2), 240-255.
- Chucharoen, P. (2007). *Taleung Thai hoam cosana dek maak tee sud nai loke* [Freeze! Thailand has the most snack advertisements for children in the world]. *Kom-Chad-Luek*. Retrieved 24/11/2008, from http://www.komchadluek.net/2007/08/03/e001_129550.php?news_id=129550
- Clark, M. (2004). Adherence to treatment in patients with type 2 diabetes.(Psychology series). *Journal of Diabetes Nursing*, 8(10), 386-392.
- Clark, M and Hampson, S. (2003). Comparison of patients' and healthcare professionals' beliefs about and attitudes towards type 2 diabetes. *Diabetic Medicine*, 20(2), 152-154.
- Clarke, D and Currie, K. (2009). Depression, anxiety and their relationship with chronic diseases: A review of the epidemiology, risk and treatment evidence. *Medical Journal of Australia* 190(7), S54-S60.
- Cleland, V, Crawford, D, Baur, LA, Hume, C, Timperio, A, and Salmon, J. (2008). A prospective examination of children's time spent outdoors, objectively measured

- physical activity and overweight. *International Journal of Obesity*, 32(11), 1685-1693.
- Coates, VE and Boore, JRP. (1998). The influence of psychological factors on the self-management of insulin-dependent diabetes mellitus. *Journal of Advanced Nursing*, 27(3), 528-537.
- Coffey, A and Atkinson, P. (1996). *Making sense of qualitative data: Complementary research strategies*. Thousand Oaks, CA: Sage.
- Cohen, M, Tripp-Reimer, T, Smith, C, Sorofman, B, and Lively, S. (1994). Explanatory models of diabetes: Patient practitioner variation. *Social Science and Medicine*, 38(1), 59-66.
- Colantuoni, C, Schwenker, J, McCarthy, J, Rada, P, Ladenheim, B, Cadet, J, Schwartz, G, Moran, T, and Hoebel, B. (2001). Excessive sugar intake alters binding to dopamine and mu-opioid receptors in the brain. *Neuroreport*, 12(16), 3549-3552.
- Conrad, P. (1990). Qualitative research on chronic illness: A commentary on method and conceptual development. *Social Science and Medicine*, 30(11), 1257-1263.
- Contento, IR, Basch, C, and Zybert, P. (2003). Body Image, Weight, and Food Choices of Latina Women and Their Young Children. *Journal of Nutrition Education and Behavior*, 35(5), 236-248.
- Copeland, K, Becker, D, Gottschalk, M, and Hale, D. (2005). Type 2 diabetes in children and adolescents: Risk factors, diagnosis, and treatment. *Clinical Diabetes*, 23(4), 181-185.
- Corbin, J and Strauss, A. (2008). *Basics of Qualitative Research: Techniques and procedures for developing grounded theory* (3 ed.). Los Angeles: Sage Publications, Inc.
- Council of Europe. (2007). *Abolishing corporal punishment of children: Questions and answers*. Retrieved 16/12/2009, from www.coe.int/children
- Creswell, J. (1994). *Research design: qualitative and quantitative approaches*. London: SAGE Publications.
- Creswell, J. (2009). Editorial: Mapping the field of mixed methods research. *Journal of Mixed Method Research*, 3(2), 95-108.
- Creswell, J and Plano Clark, V. (2007). *Designing and Conducting Mixed Methods research*. Thousand Oaks, London, New Delhi: SAGE Publications.
- Daaboul, J and Siverstein, J. (2004). The management of type 2 diabetes in children and adolescents. *Minerva Pediatrica*, 56(3), 255-264.
- Dabelea, D, Hanson, R, Bennett, P, Roumain, J, Knowler, W, and Pettitt, D. (1998). Increasing prevalence of Type II diabetes in American Indian children. *Diabetologia*, 41(8), 904-910.

- Danne, T, Mortensen, H, Hougaard, P, Lynggaard, H, Aanstoot, H-J, Chiarelli, F, Daneman, D, Dorchy, H, Garandeau, P, Greene, S, Hoey, H, Holl, R, Kaprio, E, Kocova, M, Martul, P, Matsuura, N, Robertson, K, Schoenle, E, Sovik, O, Swift, P, Tsou, R, Vanelli, M, and Aman, J. (2001). Persistent differences among centers over 3 years in glycemic control and hypoglycemia in a study of 3,805 children and adolescents with type 1 diabetes from the Hvidore study group. *Diabetes Care*, 24(8), 1342-1347.
- Dashiff, C. (2003). Self- and dependent-care responsibility of adolescents with IDDM and their parents. *Journal of Family Nursing*, 9(2), 166 -183.
- Dashiff, C, Morrison, S, and Rowe, J. (2008). Fathers of children and adolescents with diabetes: What do we know? *Journal of Pediatric Nursing*, 23(2), 101-119.
- Davison, C, Smith, G, and Frankel, S. (1991). Lay epidemiology and the prevention paradox: The implications of coronary candidacy for health education. *Sociology of Health and Illness*, 13(1), 1-19.
- de Munck, V. (1998). Participant observation: A thick explanation of conflict in a Sri lankan village. In V. de Munck & E. Sobo (Eds.), *Using Methods in the Field: A practical introduction and casebook* (pp. 39-54). CA: AltaMira Press.
- Dean, H and Sellers, E. (2007). Comorbidities and microvascular complications of type 2 diabetes in children and adolescents. *Pediatric Diabetes*, 8(S9), 35-41.
- Deatrick, J, Knafl, K, and Murphy-Moore, C. (1999). Clarifying the concept of normalization. *Journal of Nursing Scholarship*, 31(3), 209-214.
- Demissie, M, Lindtjorn, B, and Berhane, Y. (2002). Patient and health service delay in the diagnosis of pulmonary tuberculosis in Ethiopia [Electronic Version], 2:23, 1-7. Retrieved 10/02/2010, from <http://www.biomedcentral.com/1471-2458/2/23>
- Diabetes Association of Thailand and Endocrine Society of Thailand. (2008). *The practice guideline for diabetes 2008*. Retrieved 14/06/2009, from http://www.diabassocthai.org/file_attach/31Oct200817-AttachFile1225433537.pdf
- Dietz, W. (1998). Health consequences of obesity in youth: childhood predictors of adult disease. *Pediatrics*, 101(3), 518-525.
- Drewnowski, A. (1992). Food preferences and the opioid peptide system. *Trends in Food Science and Technology*, 3, 97-99.
- Ebbeling, C, Pawlak, D, and Ludwig, D. (2002). Childhood obesity: Public-health crisis, common sense cure. *The Lancet*, 360(9331), 473-482.
- Egger, G, Binns, A, and Rossner, S. (2009). The emergence of "lifestyle medicine" as a structured approach for management of chronic disease. *Medical Journal of Australia*, 190(3), 143 - 145.

- Eisenberg, L. (1977). Disease and illness: Distinctions between professional and popular ideas of sickness. *Culture, Medicine and Psychiatry*, 1, 9 -23.
- Engelgau, M. (2004). Diabetes diagnostic criteria and impaired glyceic states: Evolving evidence base. *Clinical Diabetes*, 22(2), 69-70.
- Epstein, L, Myers, M, Raynor, H, and Saelens, B. (1998). Treatment of pediatric obesity (The causes and health consequences of obesity in children and adolescents). *Pediatrics*, 101(n3), 554-571.
- Epstein, L, Paluch, R, Gordy, C, and Dorn, J. (2000). Decreasing Sedentary Behaviors in Treating Pediatric Obesity. *Archives of Pediatrics and Adolescent Medicine*, 154(3), 220-226.
- Erikson, J, Forsen, T, Osmond, C, and Barker, D. (2003). Pathways of infant and childhood growth that lead to type 2 diabetes. *Diabetes Care*, 26(11), 3006-3010.
- Evans, D, Charney, D, Lewis, L, Golden, R, Gorman, J, Krishnan, K, Nemeroff, C, Bremner, J, Carney, R, Coyne, J, Delong, M, Frasure-Smith, N, Glassman, A, Gold, P, Grant, I, Gwyther, L, Ironson, G, Johnson, R, Kanner, A, Katon, W, Kaufmann, P, Keefe, F, Ketter, T, Laughren, T, Leserman, J, Lyketsos, C, McDonald, W, McEwen, B, Miller, A, Musselman, D, O'Connor, C, Petitto, J, Pollock, B, Robinson, R, Roose, S, Rowland, J, Sheline, Y, Sheps, D, Simon, G, Spiegel, D, Stunkard, A, Sunderland, T, Tibbits, P, and Valvo, W. (2005). Mood disorders in the medically ill: Scientific review and recommendations. *Biological Psychiatry*, 58(3), 175-189.
- Fagerli, R, Lien, M, Botten, G, and Wandel, M. (2005). Role dilemmas among health-workers in cross-cultural patient encounters around dietary advice. *Scandinavian Journal of Public Health*, 33(5), 360-369.
- Fagot-Campagna, A, Burrows, N, and Williamson, D. (1999). The public health epidemiology of type 2 diabetes in children and adolescents: A case study of American Indian adolescents in the Southwestern United States. *Clinica Chimica Acta*, 286(12), 81-95.
- Fagot-Campagna, A, Narayan, K, and Imperatore, G. (2001). Type 2 diabetes in children. *British Medical Journal*, 322(7283), 377-378.
- Fagot-Campagna, A, Pettitt, D, Engelgau, M, Burrows, N, Geiss, L, Valdez, R, Beckles, G, Saaddine, J, Gregg, E, Williamson, D, and Narayan, K. (2000). Type 2 diabetes among North American children and adolescents: An epidemiologic review and a public health perspective. *Journal of Pediatrics*, 136(5), 664 - 672.
- Fall, C, Stein, C, Kumaran, K, Cox, V, Osmond, C, Barker, D, and Hales, C. (1998). Size at birth, maternal weight, and type 2 diabetes in south India. *Diabetic Medicine*, 15(3), 220-227.

- Feng, J, Glass, T, Curriero, F, Stewart, W, and Schwartz, B. (2010). The built environment and obesity: A systematic review of the epidemiologic evidence. *Health and Place*, 16(2), 175-190.
- Fila, S and Smith, C. (2006). Applying the Theory of Planned Behavior to healthy eating behaviors in urban Native American youth [Electronic Version]. *International Journal of Behavioral Nutrition and Physical Activity*, 3 (11). Retrieved 15/11/2009, from <http://www.ijbnpa.org/content/pdf/1479-5868-3-11.pdf>
- FirstDatabank Inc. (2009). Cyproheptadine-oral related articles. Retrieved 13/07/2009, from <http://www.medicinenet.com/cyproheptadine-oral/article.htm>
- Fishbein, M and Ajzen, I. (1975). *Attitude, Intention, and Behavior: An introduction to theory and research*. Reading, MA: Addison -Wesley Publishing Company, Inc.
- Forsen, T, Driksson, J, Tuomilehto, J, Reunanen, A, Osmond, C, and Barker, D. (2000). The fetal and childhood growth of persons who develop type 2 diabetes. *Annals of Internal Medicine*, 133(3), 176-182.
- Furler, J, Walker, C, Blackberry, I, Dunning, T, Sulaiman, N, Dunbar, J, Best, J, and Young, D. (2008). The emotional context of self-management in chronic illness: A qualitative study of the role of health professional support in the self-management of type 2 diabetes. *BMC Health Services Research*, 8(1), 214.
- Ganjanasuntorn, N. (2002). *The cultural and health perspectives of Thai diet and current situation of eating pattern of urban adult Thai population*. MSc thesis [Unpublished]. Mahidol University, Bangkok.
- Garcia de Alba, J, Rocha, A, Lopez, I, Baer, R, Dressler, W, and Weller, S. (2007). "Diabetes is my companion": Lifestyle and self-management among good and poor control Mexican diabetic patients. *Social Science and Medicine*, 64(11), 2223-2235.
- Garcia, K and Mann, T. (2003). From 'I Wish' to 'I Will': Social-cognitive predictors of behavioral intentions. *Journal of Health Psychology*, 8(3), 347-360.
- Gellar, L, Schrader, K, and Nansel, T. (2007). Healthy eating practices: Perceptions, facilitators, and barriers among youth with diabetes. *The Diabetes Educator*, 33(4), 671-679.
- Gerhardt, U. (1990). Qualitative research on chronic illness: The issue and the story. *Social Science and Medicine*, 30(11), 1149-1159.
- Gill-Carey, O and Hattersley, A. (2007). Genetics and type 2 diabetes in youth. *Pediatric Diabetes*, 8(s9), 42-47.
- Gillibrand, W and Flynn, M. (2001). Forced externalization of control in people with diabetes: A qualitative exploratory study. *Journal of Advanced Nursing*, 34(4), 501-510.

- Glasgow, R, Toobert, D, Barrera, M, and Strycker, L. (2004). Assessment of problem-solving: A key to successful diabetes self-management. *Journal of Behavioral Medicine*, 27(5), 477-490.
- Glasgow, R, Toobert, D, and Gillette, C. (2001). Psychosocial barriers to diabetes self-management and quality of life. *Diabetes Spectrum*, 14(1), 33-41.
- Godin, G and Kok, G. (1996). The theory of planned behavior: A review of its applications to health-related behaviors. *American Journal of Health Promotion*, 11(2), 87-98.
- Gomel, J and Zamora, A. (2007). English- and Spanish-speaking Latina mothers' beliefs about food, health, and mothering. *Journal of Immigrant and Minority Health*, 9(4), 359-367.
- Gong, L, Kao, W, Brancati, F, Batts-Turner, M, and Gary, T. (2008). Association between parental history of type 2 diabetes and glycemic control in urban African Americans. *Diabetes Care*, 31(9), 1773-1776.
- Goran, M, Ball, G, and Cruz, M. (2003a). Obesity and risk of type 2 diabetes and cardiovascular disease in children and adolescents. *Journal of Clinical Endocrinology and Metabolism*, 88(4), 1417-1427.
- Goran, M, Coronges, K, Bergman, R, Cruz, M, and Gower, B. (2003b). Influence of family history of type 2 diabetes on insulin sensitivity in prepubertal children. *The Journal of Clinical Endocrinology and Metabolism*, 88(1), 192-195.
- Gortmaker, S. (2008). Innovations to reduce television and computer time and obesity in childhood. *Archives of Pediatrics and Adolescent Medicine*, 162(3), 283-284.
- Gratton, L, Povey, R, and Clark-Carter, D. (2007). Promoting children's fruit and vegetable consumption: Interventions using the Theory of Planned Behaviour as a framework. *British journal of Health Psychology*, 12(4), 639-650.
- Grey, M, Whittemore, R, and Tamborlane, W. (2002). Depression in type 1 diabetes in children: Natural history and correlates. *Journal of Psychosomatic Research*, 53(4), 907-911.
- Griva, K, Myers, L, and Newman, S. (2000). Illness perceptions and self efficacy beliefs in adolescents and young adults with insulin dependent diabetes mellitus. *Psychology and Health*, 15(6), 733-750.
- Guest, G, Bunce, A, and Johnson, L. (2006). How many interviews are enough? An experiment with data saturation and variability. *Family Health International*, 18(1), 59-82.
- Gupta, J and O'Gorman Hughes, D (Eds.). (1996). *A practical approach to clinical pediatrics*. London: World Scientific Publishing Co. Pte. Ltd.
- Guthrie, D, Bartsocas, C, Jarosz-Chabot, P, and Konstantinova, M. (2003). Psychosocial issues for children and adolescents with diabetes: Overview and recommendations. (Lifestyle and Behaviour). *Diabetes Spectrum*, 16(1), 7-12.

- Gutierrez, D. (2008). Overfeeding your child may be considered a crime. Retrieved 05/12/2009, from http://www.naturalnews.com/023717_overweight_health_obesity.html
- Hagger, M and Orbell, S. (2003). A Meta-analytic review of the common-sense model of illness representations. *Psychology and Health, 18*(2), 141-184.
- Hale, D. (2004). Type 2 diabetes and diabetes risk factors in children and adolescents. *Clinical Cornerstone, 6*(2), 17-30.
- Hales, C and Barker, D. (2001). The thrifty phenotype hypothesis: Type 2 diabetes. *British Medical Bulletin, 60*(1), 5-20.
- Hampson, S, Glasgow, R, and Toobert, D. (1990). Personal models of diabetes and their relations to self-care activities. *Health Psychology 9*(5), 632-646.
- Hanna, K and Guthrie, D. (2001). Parents' and adolescents' perceptions of helpful and nonhelpful support for adolescents' assumption of diabetes management responsibility. *Issues in Comprehensive Pediatric Nursing, 24*(4), 209-223.
- Hannon, T, Rao, G, and Arslanian, S. (2005). Childhood obesity and type 2 diabetes mellitus. *Pediatrics, 116*(2), 473-480.
- HarperCollins Publishers (Ed.) (2002) *Collins English Dictionary*. Adelaide, SA: Griffin Press.
- Heaven, P. (1996). *Adolescent Health: The role of individual differences*. London: Routledge.
- Henkin, L, Bergman, R, Bowden, D, Ellsworth, D, Haffner, S, Langefeld, C, Mitchell, B, Norris, J, Rewers, M, Saad, M, Stamm, E, Wagenknecht, L, and Rich, S. (2003). Genetic epidemiology of insulin resistance and visceral adiposity. The IRAS Family Study design and methods. *Annals of Epidemiology, 13*(4), 211-217.
- Hill-Briggs, F and Gemmell, L. (2007). Problem solving in diabetes self-management and control: A systematic review of the literature. *The Diabetes Educator, 33*(6), 1032-1050.
- Hillier, T and Pedula, K. (2003). Complications in young adults with early-onset type 2 diabetes: Losing the relative protection of youth. *Diabetes Care, 26*(11), 2999-3005.
- Hindberg, B. (2001). *Ending Corporal Punishment*. Stockholm: Ministry of Health and Social Affairs.
- Holcomb, J, Lira, J, Kingery, P, and Smith, D. (1998). Evaluation of jump into action: A program to reduce the risk of non-insulin dependent diabetes mellitus in school children on the Texas-Mexico border. *The Journal of School Health, 68*(7), 282-288.

- Hongsanguansri, S and Katumarn, P. (2006). Game addiction: The crisis and solution (in Thai). Retrieved 03/02/2010, from <http://www.ramamental.com/gameaddiction.pdf>
- Hu, F, Manson, J, Stampfer, M, Colditz, G, Liu, S, Solomon, C, and Willett, W. (2001). Diet, lifestyle, and the risk of type 2 diabetes mellitus in women. *The New England Journal of Medicine*, 345(11), 790-797.
- Huang, T and Goran, M. (2003). Prevention of type 2 diabetes in young people: a theoretical perspective. *Pediatric Diabetes*, 4(1), 38-56.
- Hunt, L and Arar, H. (2001). An analytical framework for contrasting patient and provider views of the process of chronic disease management. *Medical Anthropology Quarterly*, 15(3), 347-367.
- Hunt, L, Pugh, J, and Valenzuela, M. (1998). How patients adapt diabetes self-care recommendations in everyday life. *The Journal of Family Practice*, 46(3), 207-215.
- Iedsee, K. (2005). *Effectiveness of the food experience program on promoting vegetable and fruit consumption among kindergarten children*. MSc thesis [Unpublished]. Mahidol University, Bangkok.
- In-iv, S, Manaboriboon, B, and Chomchai, C. (2010). Comparison of body image perception, health outlook and eating behavior in mildly obese versus moderately-to-severely obese adolescents. *Journal of Medical Association of Thailand*, 93(4), 429-473.
- International Diabetes Institute. (2005). T for Teddy: A fun new health promotion for Australian children (media release). Retrieved 07/11/2009, from www.diabetes.com.au
- Iriyama, S, Nakahara, S, Jimba, M, Ichikawa, M, and Wakai, S. (2007). AIDS health beliefs and intention for sexual abstinence among male adolescent students in Kathmandu, Nepal: A test of perceived severity and susceptibility. *Public Health*, 121(1), 64-72.
- Isaranurug, S and Suthisukon, P. (2007). Child rearing (in Thai). *Journal of Public Health and Development*, 5(1), 105 - 118.
- Ize-Ludlow, D and Sperling, M. (2005). The Classification of diabetes mellitus: A conceptual framework. *Pediatric Clinics of North America*, 52(6), 1533 - 1552.
- James, J and Keer, D. (2005). Prevention of childhood obesity by reducing soft drinks. *International Journal of Obesity*, 29(Supplement 2), S54-S57.
- Janse, A, Sinnema, G, Uiterwaal, C, Kimpen, J, and Gemke, R. (2005). Quality of life in chronic illness: Perceptions of parents and paediatricians. *Archives of Disease in Childhood*, 90(5), 486-491.
- Jessor, R, Donovan, J, and Costa, F. (1991). *Beyond Adolescence : Problem behavior and young adult development*. Cambridge: Cambridge University Press.

- Jezewski, M and Poss, J. (2002). Mexican Americans' explanatory model of type 2 diabetes. *Western Journal of Nursing Research*, 24(8), 841-867.
- Jintananeerat, R. (2002). *An application of protection motivation theory to blood sugar control among type 2 diabetic patients attending diabetic clinic, Nonthavej Hospital*. MSc thesis [Unpublished]. Mahidol University, Bangkok.
- Jirapinyo, P, Densupsoontorn, N, Kongtragoolpitak, S, Wong-arn, R, and Thamonsiri, N. (2005). Increasing risks of becoming obese after 6 Years in primary school: Comparing the relative risks among some schools in Bangkok, Saraburi and Sakolnakorn. *Journal of The Medical Association of Thailand*, 88(6), 829-832.
- Jirapinyo, P, Limsathayourat, N, Wongarn, R, Bunnag, A, and Chockvivatvanit, S. (1995). A summer camp for childhood obesity in Thailand [abstract]. *Journal of Medical Association of Thailand*, 78(5), 238-246.
- Jirojwong, S and MacLennan, R. (2003). Health beliefs, perceived self-efficacy, and breast self-examination among Thai migrants in Brisbane. *Journal of Advanced Nursing*, 41(3), 241-249.
- Johnson, R, Appel, L, Brands, M, Howard, B, Lefevre, M, Lustig, R, Sacks, F, Steffen, L, and Wylie-Rosett, J. (2009). Dietary sugars intake and cardiovascular health: A scientific statement from the American Heart Association. *Circulation*, 120(11), 1011-1020.
- Johnston-Brooks, C, Lewis, M, and Garg, S. (2002). Self-efficacy impacts self-care and HbA1c in young adults with type 1 diabetes. *Psychosomatic Medicine*, 64(1), 43-51.
- Jolliffe, C and Janssen, I. (2006). Vascular risks and management of obesity in children and adolescents. *Vascular Health and Risk Management* 2(2), 171-187.
- Jones, K. (1998). Non-insulin dependent diabetes in children and adolescents: The therapeutic challenge. *Clinical Pediatrics*, 37(2), 103-110.
- Kabagambe, E, Baylin, A, Ascherio, A, and Campos, H. (2005). The type of oil used for cooking is associated with the risk of nonfatal acute myocardial infarction in Costa Rica. *The Journal of Nutrition*, 135(11), 2674-2679.
- Kaewpralome, S. (1995). *Relationship among self-esteem, social and self care behavior of diabetic elderly Uttaradit Hospital [abstract]*. MSc thesis [Unpublished]. Chiang Mai University, Chiang Mai.
- Kanjanopas, N. (2007). Game addiction [Electronic Version]. Retrieved 20/12/2009, from <http://mulinet9.li.mahidol.ac.th/e-thesis/4836737.pdf>
- Karasz, A, McKee, M, and Roybal, K. (2003). Women's experiences of abnormal cervical cytology: Illness representations, care processes, and outcomes. *Annals of Family Medicine*, 1(4), 196-202.
- Kaufman, F. (1998). Diabetes in children and adolescents: Areas of controversy. *Medical Clinics of North America*, 82(4), 721-738.

- Kaufman, F. (2003). Type 2 diabetes mellitus in children and youth. *Endocrine and Metabolic Disorders*, 4(1), 33-42.
- Kaufman, F. (2005). Type 2 diabetes in children and youth. *Endocrinology and Metabolism Clinics of North America*, 34(3), 659-676.
- Kaufman, F and Shaw, J. (2007). Type 2 diabetes in youth: rates, antecedents, treatment, problems and prevention. *Pediatric Diabetes*, 8(s9), 4-6.
- Kaufman, L and Karpati, A. (2007). Understanding the sociocultural roots of childhood obesity: Food practices among Latino families of Bushwick, Brooklyn. *Social Science and Medicine*, 64(11), 2177-2188.
- Kawulich, B. (2005). Participant observation as a data collection method [Electronic Version]. *Forum: Qualitative Social Research*, 6, Art. 43. Retrieved 13/01/2010, from <http://nbnresolving.de/urn:nbn:de:0114-fqs0502430>
- Keeratiyutawong, P. (1994). *Self-care promotion program for diabetes at the level of a provincial hospital [abstract]*. MSc thesis [Unpublished]. Mahidol University, Bangkok.
- Keim, K, Taylor, C, Sparrer, A, and Parker, S. (2004). Social and cultural barriers to diabetes prevention in Oklahoma American Indian women [Electronic Version]. Retrieved 05/03/2010, from <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1183498/pdf/PCD12A06.pdf>
- Kelishadi, R. (2007). Childhood overweight, obesity, and the metabolic syndrome in developing countries. *Epidemiologic Reviews*, 29(1), 62-76.
- Kespichayawattana, J and Jitapunkul, S. (2009). Health and health care system for older persons. *Ageing International*, 33, 28-49.
- Kessler, H and Wunderlich, SM. (1999). Relationship between use of food labels and nutrition knowledge of people with diabetes. *The Diabetes Educator*, 25(4), 549-559.
- Khemmani, T. (1994). Thai culturally-appropriate models for child development: A new dimension in Thai education. *Education Journal*, 22(1), 197-204.
- Khun, S and Manderson, L. (2007). Health seeking and access to care for children with suspected dengue in Cambodia: An ethnographic study. *BioMed Central Public Health*, 7(1), 262.
- Kim, H, Park, J, Kim, H-S, Kim, D, and Park, S. (2006). Obesity and cardiovascular risk factors in Korean children and adolescents aged 10-18 years from the Korean national health and nutrition examination survey, 1998 and 2001. *American Journal of Epidemiology*, 164(8), 787-793.
- Kitagawa, T, Owada, M, Urakami, T, and Tajima, N. (1994). Epidemiology of type 1 (insulin-dependent) and type 2 (non-insulin-dependent) diabetes mellitus in

- Japanese children. *Diabetes Research and Clinical Practice*, 24(Supplement 1), S7-S13.
- Kitagawa, T, Owada, M, Urakami, T, and Yamauchi, K. (1998). Increased incidence of non-insulin dependent diabetes mellitus among Japanese schoolchildren correlates with an increased intake of animal protein and fat. *Clinical Pediatrics*, 37(2), 111-115.
- Kleiner, S. (2008, August 20, 2008). Sugar addition. Retrieved 02/06/2009, from http://www.fitnessrxmag.com/health/articles_view.php?id=68
- Kleinert, S. (2007). Adolescent health: An opportunity not to be missed. *The Lancet*, 369(9567), 1057-1058.
- Kleinman, A. (1980). *Patients and healers in the context of culture*. Berkeley: University of California Press.
- Kleinman, A. (1986). Concepts and a model for the comparison of medical systems as cultural systems. In C. Curren & M. Stacey (Eds.), *Concepts of Health, Illness and Disease: A comparative perspective* (pp. 29-47). New York: Berg Publishers Ltd.
- Kleinman, A. (1988). *The Illness Narratives: Suffering, healing, and the human condition*. New York: Basic Books, Inc.
- Kleinman, A, Eisenberg, L, and Good, B. (1978). Culture, illness, and care: Clinical lessons from anthropologic and cross-cultural research. *The Annals of Internal Medicine*, 88(2), 251 - 258.
- Knafl, K, Ayres, L, Gallo, A, Zoeller, L, and Breitmayer, B. (1995). Learning from stories: Parents' accounts of the pathway to diagnosis. *Paediatric Nursing*, 21(5), 411-415.
- Knafl, K, Breitmayer, B, Gallo, A, and Zoeller, L. (1996). Family response to childhood chronic illness: Description of management styles. *Journal of Pediatric Nursing*, 11(5), 315-326.
- Knafl, K and Deatrck, J. (2002). The challenge of normalization for families of children with chronic conditions. *Pediatric Nursing*, 28(1), 49-56.
- Knafl, K and Deatrck, J. (2003). Further refinement of the family management style framework. *Journal of Family Nursing*, 9(3), 232-256.
- Knafl, K and Zoeller, L. (2000). Childhood chronic illness: A comparison of mothers' and fathers' experiences. *Journal of Family Nursing*, 6(3), 287-302.
- Knowler, W, Barrett-Connor, E, and Fowler, S. (2002). Reduction in the incidence of type 2 diabetes with lifestyle intervention or metformin. *New England Journal of Medicine*, 346(6), 393-403.

- Kohl, H and Hobbs, K. (1998). Development of physical activity behaviors among children and adolescents (The causes and health consequences of obesity in children and adolescents). *Pediatrics*, 101(3), 549-555.
- Kokanovic, R and Manderson, L. (2006). Social support and self-management of type 2 diabetes among immigrant Australian women. *Chronic Illness*, 2(4), 291-301.
- Komin, S. (1985). The world view through Thai value systems. In *Traditional and changing Thai world view*. Institute, S.R. Bangkok: Chulalongkorn University: 170-192.
- Komin, S. (1995). Changes in social values in the Thai society and economy: A post-industrialisation scenario. In *Thailand's industrialisation and its consequences*. Krongkaew, M. London: MacMillan Press Ltd: 251-266.
- Kong, A, Williams, R, Smith, M, Sussman, A, Skipper, B, Hsi, A, and Rhyne, R. (2007). Acanthosis nigricans and diabetes risk factors: Prevalence in young persons seen in southwestern US primary care practices. *Annals of Family Medicine*, 5(3), 202-208.
- Kongumnerd, R. (1993). *Patterns of social support in self-care of diabetes patients [abstract]*. MSc thesis [Unpublished]. Mahidol University, Bangkok.
- Korkiakangas, E, Alahuhta, M, and Laitinen, J. (2009). Barriers to regular exercise among adults at high risk or diagnosed with type 2 diabetes: A systematic review. *Health Promotion International*, 24(4), 416-427.
- Kosachunhanun, N and Chimplee, K. (2007). Alternative medicine and diabetes (in Thai). In W. Nitiyanant, S. Vannasaeng & C. Deerochanawong (Eds.), *Diabetes Situation in Thailand 2007* (pp. 105-111). Bangkok: Vivatprinting.
- Kosulwat, V. (2002). The nutrition and health transition in Thailand. *Public Health Nutrition*, 5(1A), 183 - 189.
- Kuczmarski, R, Ogden, C, Grummer-Strawn, L, Flegal, K, Guo, S, Wei, R, Mei, Z, Curtin, L, Roche, A, and Johnson, C. (2002). 2000 CDC growth charts for the United States: Methods and development. *National Center for Health Statistics. Vital Health Stat 11(246)*, 1-201.
- Kumanyika, S, Jeffery, R, Morabia, A, Ritenbaugh, C, and Antipatis, V. (2002). Obesity prevention: The case for action. *International Journal of Obesity*, 26(3), 425-436.
- Kyngas, H, Hentinen, M, and Barlow, J. (1998). Adolescents' perceptions of physicians, nurses, parents and friends: Help or hindrance in compliance with diabetes self-care? *Journal of Advanced Nursing*, 27(4), 760-769.
- Kyngas, H, Kroll, T, and Duffy, M. (2000). Compliance in adolescents with chronic diseases: A review. *Journal of Adolescent Health*, 26(6), 379-388.

- Langendijk, G, Wellings, S, van Wyk, M, Thompson, S, and Chusilp, K. (2003). The prevalence of childhood obesity in primary school children in urban Khon Kaen, Northeast Thailand. *Asia Pacific Journal of Clinical Nutrition* 12(1), 66-72.
- Larzelere, R. (1994). Corporal punishment by parents. In M. Mason & E. Gambrill (Eds.), *Debating Children's Lives: Current controversies on children and adolescents* (pp. 204-207). Thousand Oaks, CA: Sage Publications.
- Lawton, J, Ahmad, N, Hanna, L, Douglas, M, and Hallowell, N. (2006). 'I can't do any serious exercise: Barriers to physical activity amongst people of Pakistani and Indian origin with type 2 diabetes. *Health Education Research*, 21(1), 43-54.
- Lawton, J, Ahmad, N, Peel, E, and Hallowell, N. (2007). Contextualising accounts of illness: Notions of responsibility and blame in white and South Asian respondents' accounts of diabetes causation. *Sociology of Health and Illness*, 29(6), 891-906.
- Lee, S, Ko, G, Li, J, Chow, C, Yeung, V, Critchley, J, Cockram, C, and Chan, J. (2001). Factors predicting the age when type 2 diabetes is diagnosed in Hong Kong Chinese subjects. *Diabetes Care*, 24(4), 646-649.
- Lee, W. (2000). The changing demography of diabetes mellitus in Singapore. *Diabetes Research and Clinical Practice*, 50(Supplement 2), S35-S39.
- Lee, W. (2007). An overview of pediatric obesity. *Pediatric Diabetes*, 8(s9), 76-87.
- Lefcourt, H. (1982). *Locus of Control: Current trends in theory and research* (2 ed.). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Lehmkuhl, H, Merlo, L, Devine, K, Gaines, J, Storch, E, Silverstein, J, and Geffken, G. (2009). Perceptions of type 1 diabetes among affected youth and their peers. *Journal of Clinical Psychological Medical Settings*, 16, 209-215.
- Leonard, B, Garwick, A, and Adwan, J. (2005). Adolescents' perceptions of parental roles and involvement in diabetes management. *Journal of Paediatric Nursing*, 20(6), 405-414.
- Lerksirisuk, C (Ed.). (2005). *'Rongrian' gab 'dek-uan' ['School' and 'Obese Child']*. Bangkok: National Health Foundation.
- Levy, L, Patterson, R, Kristal, A, and Li, S. (2000). How well do consumers understand percentage daily value on food labels? *American Journal Health Promotion* 14(3), 157-160.
- Li, G, Zhang, P, Wang, J, Gregg, E, Yang, W, Gong, Q, Li, H, Li, H-l, Jiang, Y, An, Y, Shuai, Y, Zhang, B, Zhang, J-L, Thompson, T, Gerzoff, R, Roglic, G, Hu, Y, and Bennett, P. (2008). The long-term effect of lifestyle interventions to prevent diabetes in the China Da Qing Diabetes Prevention Study: A 20-year follow-up study. *The Lancet*, 371(9626), 1783-1789.
- Liamputtong, P and Ezzy, D. (2005). *Qualitative Research Methods (second edition)*. South Melbourne: Oxford University Press.

- Likitmaskul, S, Kiattisathavee, P, Chaichanwatanakul, K, Punnakanta, L, Angsusingha, K, and Tuchinda, C. (2003). Increasing prevalence of type 2 diabetes mellitus in Thai children and adolescents associated with increasing prevalence of obesity. *Journal of Pediatric Endocrinology and Metabolism*, 16(1), 71-77.
- Likitmaskul, S, Santiprabhob, J, Sawathiparnich, P, Numbenjapon, N, and Chaichanwatanakul, K. (2005). Clinical pictures of type 2 diabetes in Thai children and adolescents is highly related to features of metabolic syndrome. *Journal of the Medical Association of Thailand*, 88(Supplement 8), S169-S175.
- Likitmaskul, S, Wacharasindhu, S, Rawdaree, P, Ngarmukos, C, Deerochanawong, C, Suwanwalaikorn, S, Chetthakul, T, Bunnag, P, Kosachunhanun, N, Plengvidhaya, N, Leelawatana, R, Krittiyawong, S, Benjasuratwong, Y, and Pratipanawatr, T. (2006). Thailand Diabetes Registry Project: Type of diabetes, glycemic control and prevalence of microvascular complications in children and adolescents with diabetes. *Journal of the Medical Association of Thailand*, 89(Supplement 1), S10-S16.
- Limchareon, W. (1998). *The effect of participatory guidance on health belief and self care behavior for prevention in diabetes mellitus risk people in Thombon Sanoloy, Bangbuathong district Nonthaburi Province [abstract]*. MSc thesis [Unpublished]. Mahidol University, Bangkok.
- Lipton, R, Drum, M, Burnet, D, Mencarini, M, Cooper, A, and Rich, B. (2003). Self-reported social class, self-management behaviors, and the effect of diabetes mellitus in urban, minority young people and their families. *Archives of Pediatrics ND Adolescent Medicine*, 157(9), 919-925.
- Lorig, K and Holman, H. (2003). Self-management education: History, definition, outcomes, and mechanisms *Annals of Behavioral Medicine*, 26 (1), 1-7.
- Luangkaew, P. (2008). *Dietary pattern, nutrition status and lifestyles related to health of primary school students in Khon Kaen Demonstration School (Modindae), Khon Kaen*. MSc thesis [Unpublished]. Khon Kaen University, Khon Kaen.
- Ludwig, D, Peterson, K, and Gortmaker, S. (2001). Relation between consumption of sugar-sweetened drinks and childhood obesity: A prospective, observational analysis. *The Lancet*, 357(9255), 505-508.
- Lustman, P and Clouse, R. (2005). Depression in diabetic patients: The relationship between mood and glycemic control. *Journal of Diabetes and its Complications*, 19(2), 113-122.
- Macaluso, C, Bauer, U, Deeb, L, Malone, J, Chaudhari, M, Silverstein, J, Eidson, M, Goldberg, R, Gaughan-Bailey, B, Brooks, R, and Rosenbloom, A. (2002). Type 2 diabetes mellitus among Florida children and adolescents, 1994 through 1998. *Public Health Reports*, 117(4), 373 - 379.
- Mahachoklertwattana, P. (2006). Obesity and type 2 diabetes in children and adolescents: Current situation and future trends in Thailand. *Siriraj Medical Journal*, 58(4), 771-773.

- Mahendradhata, Y, Syahrizal, B, and Utarini, A. (2008). Delayed treatment of tuberculosis patients in rural areas of Yogyakarta province, Indonesia [Electronic Version]. *BioMed Central Public Health* 8 (393). Retrieved 10/02/2010, from <http://www.biomedcentral.com/1471-2458/8/393>
- Maike, C, Craig, M, Cusumano, J, Hing, S, Chan, A, Howard, N, Silink, M, and Donaghue, K. (2006). Prevalence of diabetes complications in adolescents with type 2 compared with type 1 diabetes. *Diabetes Care*, 29(6), 1300-1306.
- Manderson, L. (1986). Introduction: the anthropology of food in Oceania and Southeast Asia. In L. Manderson (Ed.), *Shared Wealth and Symbol: Food culture, and society in Oceania and Southeast Asia* (pp. 1-25). Cambridge, UK: Cambridge University Press.
- Manderson, L, Warren, N, and Markovic, M. (2008). Circuit breaking: Pathways of treatment seeking for women with endometriosis in Australia. *Qualitative Health Research*, 18(4), 522-534.
- Manokulanun, P. (1992). *Self-care behaviour of the diabetes mellitus patients : An anthropological study in one community of Lampang Province [abstract]*. MSc thesis [Unpublished]. Mahidol University, Bangkok.
- Markovic, M. (2006). Analyzing qualitative data: Health care experiences of women with gynecological cancer. *Field Methods*, 18(4), 413-429.
- Markovic, M, Manderson, L, Wray, N, and Quinn, M. (2006). Complementary medicine use by Australian women with gynaecological cancer. *Psycho-Oncology*, 15(3), 209-220.
- Marshall, C and Rossman, C. (2006). *Designing Qualitative Research*. Thousand Oaks London New Delhi: SAGE Publication.
- Masakazu, N, Eiko, S, Ryota, O, Taiga, S, and Keiko, K. (2010). Impact of a booklet about diabetes genetic susceptibility and its prevention on attitudes towards prevention and perceived behavioral change in patients with type 2 diabetes and their offspring *Advances in Preventive Medicine*, 2011, 1-7.
- Masawang, S. (2001). *The effectiveness of a health promotion and education program in improving behavior and glycemic control of menopausal type 2 diabetes patients attending Jaturapakpiman hospital, Roi-Ed province [abstract]*. MSc thesis [Unpublished]. Mahidol University, Bangkok.
- Mason, M and Gambrill, E (Eds.). (1994). *Debating children's lives: Current controversies on children and adolescents*: Thousand Oaks, CA:Sage Publications.
- Masson, E, MacFarlane, I, Priestley, C, Wallymahmed, M, and Flavell, H. (1992). Failure to prevent nicotine addition in young people with diabetes. *Archives of Disease in Childhood*, 67(1), 100-102.

- Matichon online. (2008). Announcement of the Public Relations Department: TV advertisement of children candy control, effective February 19, 2008. *Matichon online*, from <http://www.boybdream.com/manager-news-content.php?newid=10322>
- Matsui, J, Tamasawa, N, Tanabe, J, Kasai, N, Murakami, H, Matsuki, K, and Suda, T. (2005). Clinical characteristics of Japanese youth-onset type 2 diabetes with ketonuria. *Diabetes Research and Clinical Practice*, 70(3), 235-238.
- Maxwell, J. (1996). *Qualitative research design: An interactive approach*. Thousand Oaks, CA: Sage.
- McCarroll, E, Lindsey, E, MacKinnon-Lewis, C, Chambers, J, and Frabutt, J. (2009). Health status and peer relationships in early adolescence: The role of peer contact, self-esteem, and social anxiety. *Journal of Child and Family Studies*, 18(4), 473-485
- McFarlane, S, Shin, J, Rundek, T, and Bigger, J. (2003). Prevention of type 2 diabetes. *Current Diabetes Reports*, 3(3), 235-241.
- Mendis, S, Samarajeewa, U, and Thattil, R. (2001). Coconut fat and serum lipoproteins: Effects of partial replacement with unsaturated fats. *British Journal of Nutrition*, 85(5), 583-589.
- Mo-suwan, L. (2005a). Khun roojak roak-uan dee khae nai [How far do you know about obesity?]. In C. Lerksirisuk (Ed.), *'Rongrian' gab 'dek-uan' ['School' and 'Obese Child']* (pp. 11-34). Bangkok: National Health Foundation.
- Mo-suwan, L. (2005b). Sathanakarn padjaban naewnong paawapochanakarn khong dek nai anaakhod lae maatakarn peua kampongan paawapochanakarnkoen khong dek nai rongrian [Current situation: A trend of children's nutrition condition in the future and preventive strategies of children's overweight in schools]. In C. Lerksirisuk (Ed.), *'Rongrian' gab 'dek-uan' ['School' and 'Obese Child']* (pp. 35-48). Bangkok: National Health Foundation.
- Mo-suwan, L. (2008). Nutrition in Thai children (in Thai) [Electronic Version]. *National Institute for child and family development, Mahidol University*, pp. 49 - 52. Retrieved 24/11/2008, from <http://www.cf.mahidol.ac.th/autopage/file/MonAugust2008-12-30-1-Copy%20of%202.pdf>
- Mo-suwan, L and Geater, A. (1996). Risk factors for childhood obesity in a transitional society in Thailand [Abstract]. *International Journal of Obesity*, 20(8), 697-703.
- Mo-suwan, L, Isaranurug, S, Ruengdaraganon, N, Nunthamongkolchai, S, Sa-nga, P, Nitruengcharas, K, and Chompikul, J. (2004). Thai children's social and health conditions (in Thai). In *Holistic Development of Thai Children: Its association with family factors and child rearing* (pp. 1-36). Bangkok: The Thailand Research Fund.

- Mo-suwan, L, Pongprapai, S, Junjana, C, and Puetpaiboon, A. (1998). Effects of a controlled trial of a school-based exercise program on the obesity indexes of preschool children. *The American Journal of Clinical Nutrition*, 68(5), 1006-1011.
- Mo-suwan, L, Tongkumchum, P, and Puetpaiboon, A. (2000). Determinants of overweight tracking from childhood to adolescence: a 5 y follow-up study of Hat Yai schoolchildren. *International Journal of Obesity*, 24, 1642-1647.
- Mohan, V, Jaydip, R, and Deepa, R. (2007). Type 2 diabetes in Asian Indian youth. *Pediatric Diabetes*, 8(s9), 28-34.
- Moor, K. (2010, January 25). Lack of respect feeds trouble. *Herald Sun*, p. 18,
- Moss, M and McDowell, J. (2005). Rural Vincentians' (Caribbeans) about the usage of non-prescribable medicines for treating type 2 diabetes. *Diabetes Medicine*, 22, 1492-1496.
- Muangkae, W. (2001). *The effectiveness of an educative-supportive program on improving perceived self-care efficacy and diabetic control in uncontrolled type 2 diabetic patients: a case study of a rural hospital in the north [abstract]*. MSc thesis [Unpublished]. Mahidol University, Bangkok.
- Mulvaney, S, Mudasiru, E, Schlundt, D, Baughman, C, Fleming, M, VanderWoude, A, Russell, W, Elasy, T, and Rothman, R. (2008). Self-management in type 2 diabetes: The adolescent perspective. *The Diabetes Educator*, 34(4), 674-682.
- Mulvaney, S, Schlundt, D, Mudasiru, E, Fleming, M, Vander Woude, A, Russell, W, Elasy, T, and Rothman, R. (2006). Parent perceptions of caring for adolescents with type 2 diabetes. *Diabetes Care*, 29(5), 993-997.
- Naemiratch, B. (2004). *Who is in control: The diabetic or diabetes? Lived experience of adults living with diabetes in Bangkok*. PhD thesis [Unpublished]. The University of Queensland, Brisbane.
- Naemiratch, B and Manderson, L. (2006). Control and adherence: Living with diabetes in Bangkok, Thailand. *Social Science and Medicine*, 63, 1147-1157.
- Naemiratch, B and Manderson, L. (2007). Lay explanations of type 2 diabetes in Bangkok, Thailand. *Anthropology and Medicine*, 14(1), 83 - 94.
- Naemiratch, B and Manderson, L. (2008). 'Normal, but...': living with type 2 diabetes in Bangkok, Thailand. *Chronic Illness*, 4(3), 188-198.
- Nanthamongkolchai, S, Ngaosuit, C, and Munsawasengsub, C. (2007). Influence of parenting styles on development of children aged three to six years old. *Journal of The Medical Association of Thailand*, 90(5), 971 - 976.
- Natamongkonchai, S. (2004). Chapter 5: Discussion and Implications. In S. Natamongkonchai (Ed.), *Child-Rearing Practices of Thai Families: A quantitative and qualitative study (in Thai)* (pp. 153-162). Bangkok: The Thailand Research Fund (TRF).

- Natamongkonchai, S, Prateepchaikul, L, Chaumpluk, R, Isaranurug, S, Nieamsup, T, and Mo-suwan, L. (2004). *Child-Rearing Practices of Thai Families: A quantitative and qualitative study (in Thai)*. Bangkok: The Thailand Research Fund (TRF).
- Nathan, B and Moran, A. (2008). Metabolic complications of obesity in childhood and adolescence: More than just diabetes. *Current Opinion in Endocrinology, Diabetes and Obesity*, 15(1), 21-29.
- National Centre for Monitoring Diabetes. (2002). Diabetes: Australian facts [Electronic Version]. *Australian Institute of Health and Welfare*, 1-135. Retrieved 10/11/2009, from <http://www.aihw.gov.au/publications/cvd/daf02/daf02.pdf>
- National Health Foundation. (2009, 08/10/2009). Integrated nutrition program in pilot school under municipalities. Retrieved 02/11/2009, from http://www.pnic.go.th/project_view.php?group=2&id=9
- National Institute of Diabetes and Digestive and Kidney Diseases. (2008). National Diabetes Statistics, 2007: Fact sheet. Retrieved 20/01/2010, from <http://diabetes.niddk.nih.gov/DM/PUBS/statistics/#acknowledgments>
- Nayga, R, Lipinski, D, and Savur, N. (1998). Consumers' use of nutritional labels while food shopping and at home. *Journal of Consumer Affairs*, 32(1), 106-120.
- Nejad, L, Wertheim, E, and Greenwood, K. (2005). Comparison of the health belief model and the theory of planned behaviour in the predicting of dieting and fasting behaviour [Electronic Version]. *Applied Psychology: Social section*, 1, 63-74. Retrieved 25/02/2010, from <http://ojs.lib.swin.edu.au/index.php/ejap/article/viewFile/7/16>
- Nishida, C, Uauy, R, Kumanyika, S, and Shetty, P. (2004). The Joint WHO/FAO Expert Consultation on diet, nutrition and the prevention of chronic diseases: Process, product and policy implications. *Public Health Nutrition*, 7(1a), 245 - 250.
- Nitayarumphong, S and Pannarunothai, S. (1997). Thailand at the crossroads: Challenges for health care reform. In S. Nitayarumphong (Ed.), *Health Care Reform at the Frontier of Research* (pp. 142-163). Nonthaburi: The Ministry of Public Health, Thailand.
- Nitiyanant, W, Vannasaeng, S, and Deerochanawong, C (Eds.). (2007). *Diabetes Situation in Thailand 2007*. Bangkok: Vivatprinting.
- Noble, G, Stead, M, Jones, S, McDermott, L, and McVie, D. (2007). The paradoxical food buying behaviour of parents: Insights from the UK and Australia. *British Food Journal*, 109(5), 387 - 398.
- Norman, P and Bennett, P. (1996). Health locus of control. In M. Conner & P. Norman (Eds.), *Predicting Health Behaviour: Research and practice with social cognition models* (pp. 62-94). Buckingham, PA: Open University Press.
- Nukulkij, P. (1993). *How Thai families define and manage children's heart disease [Dissertation Abstracts International]*. University of Illinois, Chicago.

- Numpetch, S. (1999). *Self-care behavior of the Diabetes Mellitus patients: A case study of Petchaburi province [abstract]*. Management Development Institute, Bangkok.
- Nutrition Division. (2006). *Karnsamruad pluttikam karnboripoke aaharn khong wairun (A survey of Adolescents' nutritional behaviour) [Abstract]* Retrieved 02/11/2009.
from <http://nutrition.anamai.moph.go.th/temp/main/view.php?group=3&id=93>.
- O'Connell, J. (1985). Utilising the health belief model to predict dieting and exercising behavior of obese and nonobese adolescents. *Health Education Quarterly*, 12(4), 343-351.
- Office of the Civil Service Commission. (2009). The meeting report of Office of the Civil Service Commission 7/2009. Retrieved 08/02/2010,
from <http://www.ocsc.go.th/ocsccms/frontweb/view.jsp?module=news&newsID=nws0001633>
- Ong, S, Fong, C, Ma, S, Lee, J, Heng, D, Deurenberg-Yap, M, Low, Y-L, Tan, M, Lim, W-Y, and Tai, E. (2009). Longitudinal study of the socio-demographic determinants of changes in body weight and waist circumference in a multi-ethnic Asian population. *International Journal of Obesity*, 33(11), 1299-1308.
- Ozmen, D, Ozmen, E, Ergin, D, Cetinkaya, A, Sen, N, Dundar, P, and Oryal Taskin, E. (2007). The association of self-esteem, depression and body satisfaction with obesity among Turkish adolescents. *BMC Public Health* 7(80), 1-7.
- Paisley, C, Lloyd, H, Sparks, P, and Mela, DJ. (1995). Consumer perceptions of dietary changes for reducing fat intake. *Nutrition Research*, 15(12), 1755-1766.
- Palmer, DL, Berg, CA, Butler, J, Fortenberry, K, Murray, M, Lindsay, R, Donaldson, D, Swinyard, M, Foster, C, and Wiebe, DJ. (2008). Mothers', fathers', and children's perceptions of parental diabetes responsibility in adolescence: Examining the roles of age, pubertal status, and efficacy [Electronic Version]. *Journal of Pediatric Psychology*, 1-10. Retrieved 10/11/2009,
from <http://jpepsy.oxfordjournals.org/cgi/content/abstract/jsn073v1>
- Parker, G, Parker, I, and Brotchie, H. (2006). Mood state effects of chocolate. *Journal of Affective Disorders*, 92(2-3), 149-159.
- Patcharawadee, P. (2008). *Life, belief, and ritual relating to herbal utilization: A medical ethnobotanic study in Phu Thai ethnic group at Don Mai Khum village, Kalasin Province, Thailand*. Mahidol University, Bangkok.
- Patton, G and Viner, R. (2007). Pubertal transitions in health. *The Lancet*, 369(9567), 1130-1139.
- Peel, E, Parry, O, Douglas, M, and Lawton, J. (2004). Diagnosis of type 2 diabetes: A qualitative analysis of patients' emotional reactions and views about information provision. *Patient Education and Counseling*, 53(3), 269-275.

- Pelletier, L, Gordin, G, Lepage, L, and Dussault, G. (1994). Social support received by mothers of chronically ill children. *Child: Care, Health and Development*, 20, 115-131.
- Peterson, J, Sterling, Y, and Stout, J. (2002). Explanatory Models of Asthma from African American Caregivers of Children with Asthma. *Journal of Asthma*, 39(7), 577 - 590.
- Peungposop, N. (2008). *Study of risk factors affecting overnutrition among school children in Bangkok [abstract]*. PhD thesis [Unpublished]. Chulalongkorn University, Bangkok.
- Phungprasard, C. (2006). *Life style of non-insulin diabetes mellitus patients at slum community in Khon Kaen Province*. MSc thesis [Unpublished]. Khon Kaen University, Khon Kaen.
- Phunyathera, P. (1998). *Health behavior and blood glucose control in non-insulin dependent Diabetes mellitus at Ratchaburi hospital [abstract]*. MSc thesis [Unpublished]. Srinakharinwirot University, Prasarnmit, Bangkok.
- Pinhas-Hameil, O and Zeitler, P. (2005). The global spread of type 2 diabetes mellitus in children and adolescents. *The Journal of Pediatrics*, 146(5), 693-700.
- Pinhas-Hamiel, O, Dolan, L, Daniels, S, Standiford, D, Khoury, P, and Zeitler, P. (1996). Increased incidence of non-insulin-dependent diabetes mellitus among adolescents. *Journal of Pediatric Endocrinology and Metabolism*, 128(5), 608-615.
- Pinhas-Hamiel, O, Standiford, D, Hamiel, D, Dolan, L, Cohen, R, and Zeitler, P. (1999). The type 2 family: a setting for development and treatment of adolescent type 2 diabetes mellitus. *Archives of Pediatrics and Adolescent Medicine*, 153(10), 1063-1067.
- Pinhas-Hamiel, O and Zeitler, P. (2003). Barriers to the treatment of adolescent type 2 diabetes: A survey of provider perceptions. *Pediatric Diabetes*, 4(1), 24-28.
- Pinhas-Hamiel, O and Zeitler, P. (2004). The changing nature of diabetes in children and adolescents. Retrieved 21/02/2006, from <http://www.thechildrenshospital.org/share/clinicalservices/handout/621.pdf>
- Pinhas-Hamiel, O and Zeitler, P. (2007). Clinical presentation and treatment of type 2 diabetes in children. *Pediatric Diabetes*, 8(s9), 16-27.
- Pittet, I, Berchtold, A, Akre, C, Michaud, P-A, and Suris, J-C. (2009). Sports practice among adolescents with chronic health conditions. *Archives of Pediatrics and Adolescent Medicine*, 163(6), 565-571.
- Podhisita, C. (1991). Theoretical, terminological and philosophical issues in qualitative research. In B. Yoddumnern-Attig, G. Attic & W. Boonchalaksi (Eds.), *A Field Manual on Selected Qualitative Research Methods (second edition)* (2 ed., pp. 7-13). Nakhon Pathom: Institute for Population and Social Research, Mahidol University.

- Polit, D and Beck, C. (2006). *Essential of Nursing Research: Methods, appraisal, and utilization* (6 ed.). Philadelphia, PA: Lippincott Williams & Wilkins
- Pope, C and Mays, N. (1995). Qualitative research: Reaching the parts other methods cannot reach: An introduction to qualitative methods in health and health service research. *British Medical Journal*, 311(6996), 42-45.
- Poramutthapon, K and Waiyapoka, P. (2001). *Basic Health Education Module for Grade 9 (in Thai)* Nonthaburi: Aimphan Press Co., Ltd.
- Poss, J and Jezewski, M. (2002). The role and meaning of susto in Mexican Americans' explanatory model of type 2 diabetes. *Medical Anthropology Quarterly*, 16(3), 360-377.
- Poss, J, Jezewski, M, and Stuart, A. (2003). Home remedies for type 2 diabetes used by Mexican Americans in El Paso, Texas. *Clinical Nursing Research*, 12(4), 304-323.
- Price, M. (1993). An experiential model of learning diabetes self-management. *Qualitative Health Research*, 3(1), 29-54.
- Prueksaritanond, S, Tubtimtes, S, Asavanich, K, and Tiewtranon, V. (2004). Type 2 diabetic patient-centered care. *Journal of The Medical Association of Thailand*, 87(4), 345-352.
- Public Relation. (2007). Ruamhuakwam kum kosanakhanomdek - Nakthurakit aang raikarnjengyoumaidai (A veto of regulations for limiting children snack advertisements - Bussiness sector claims that TV programmes cannot survive) (Publication. Retrieved 21/10/2010, from The National Telecommunications Commission: http://www.ntc.or.th/index.php?option=com_content&task=view&id=4056&Itemid=73)
- Pumsang, P. (2000). *Modification of health related life-style and glucoregulation of type 2 diabetes clients [abstract]*. MSc thesis [Unpublished]. Mahidol University, Bangkok.
- Punyaratabandhu, P, Boothum, A, Pratipasen, M, Chareonkul, C, Narksawat, K, and Direkwattanachai, C. (2005). The study of healthy Thai indicators. Bangkok: Mahidol University.
- Putsuk, P. (1999). *Financial expenditure of patients with Diabetes Mellitus (abstract)*. MSc thesis [Unpublished]. Mahidol University, Bangkok.
- Pyke, G. (1986). Human diets: a biological perspective. In L. Manderson (Ed.), *Shared Wealth and Symbol: Food, culture, and society in Oceania and Southeast Asia* (pp. 273-281). Cambridge, UK: Cambridge University Press.
- Rao, N, McHale, J, and Pearson, E. (2003). Links between socialization goals and child-rearing practices in Chinese and Indian mothers. *Infant and Child Development*, 12(5), 475-492.

- Ratanasuwan, T, Indharapakdi, S, Promrerker, R, Komolviphat, T, and Thanamai, Y. (2005). Health belief model about diabeted mellitus in Thailand: The culture consensus analysis. *Journal of The Medical Association of Thailand*, 88(5), 623 - 631.
- Redding, C, Rossi, J, Velicer, W, and Prochaska, J. (2000). Health behavior models [Electronic Version]. *The International Electronic Journal of Health Education*, 3, 180-193. Retrieved 13/01/2010, from <http://www.kittle.siu.edu/iejhe/3special/pdf/redding.pdf>
- Resnicow, K. (1991). The relationship between breakfast habits and plasma cholesterol levels in schoolchildren. *Journal of School Health*, 61(2), 81-86.
- Rhee, K, Lumeng, J, Appugliese, D, Kaciroti, N, and Bradley, R. (2006). Parenting styles and overweight status in first grade (Clinical report). *Pediatrics*, 117(6), 2047-2054.
- Ritchie, L, Ganapathy, S, Woodward-Lopez, G, Gerstein, D, and Fleming, S. (2003). Prevention of type 2 diabetes in youth: Etiology, promising interventions and recommendations. *Pediatric Diabetes*, 4(4), 174-209.
- Roberto, C, Baik, J, Harris, J, and Brownell, K. (2010). Influence of licensed characters on children's taste and snack preferences. *Pediatrics*, 126(1), 88 - 93.
- Rosenbloom, A, Joe, J, Young, R, and Winter, W. (1999). Emerging epidemic of type 2 diabetes in youth. *Diabetes Care*, 22(2), 345-354.
- Rosenstock, I. (1974). Historical origins of the health belief model. *Health Education Monographs*, 2, 328-335.
- Rosenstock, I, Strecher, V, and Becker, M. (1988). Social learning theory and the health belief model. *Health Education and Behavior*, 15(2), 175-183.
- Rotaree, P. (2004). *Diabetic Registry Project 2003*. Nonthaburi: Endocrine Society of Thailand and Clinical Research.
- Rothman, R, Mulvaney, S, Elasy, T, VanderWoude, A, Gebretsadik, T, Shintani, A, Potter, A, Russell, W, and Schlundt, D. (2008). Self-management behaviors, racial disparities, and glycemic control among adolescents with type 2 diabetes. *Pediatrics*, 121(4), 912-919.
- Rotter, J. (1966). Generalized expectancies for internal versus external control of reinforcements. *Psychological Monographs*, 80(1), 1-28.
- Rubin, H and Rubin, I. (1995). *Qualitative interviewing: The art of hearing data*. Thousand Oaks, CA: Sage.
- Rutherford, M. (2009). Children's autonomy and responsibility: An analysis of childrearing advice. Retrieved 27/10/2009, from <http://www.springerlink.com.ezproxy.lib.monash.edu.au/content/22k36873n564581/fulltext.pdf>

- RxList. (2009). Cyproheptadine. Retrieved 13/07/2009, from <http://www.rxlist.com/cyproheptadine-drug.htm>
- Ryan, G and Bernard, H. (2003). Techniques to identifying themes. *Field Methods*, 15(1), 85-109.
- Saiwong, S. (2004). *The effectiveness of a health promotion program on behavioral modification for dietary control and exercise among type 2 diabetic patients at Pathumthani hospital, Pathumthani Province [abstract]*. MSc thesis [Unpublished]. Mahidol University, Bangkok.
- Sakamoto, N, Wansorn, S, Tontisirin, K, and Marui, E. (2001). A social epidemiologic study of obesity among preschool children in Thailand. *International Journal of Obesity* 25, 389 - 394.
- Sallis, J and Patrick, K. (1994). Physical activity guidelines for adolescents: Consensus statement. *Pediatric Exercise Science*, 6(4), 302-314.
- Sanaun, U. (2000). *The effects of the supportive educative nursing system of self care on noninsulin dependent diabetes mellitus patients, Phiboonmungsaharn Hospital Ubon ratchathanee Province [abstract]* MSc thesis [Unpublished]. Mahidol University, Bangkok.
- Sandelowski, M. (2000). Combining qualitative and quantitative sampling, data collection and analysis techniques in mixed-method studies. *Research in Nursing and Health*, 23, 246-255.
- Sandelowski, M, Voils, C, and Knafl, G. (2009). On quantizing. *Journal of Mixed Method Research*, 3(3), 208-222.
- Sander, J and McCarty, C. (2005). Youth depression in the family context: Familial risk factors and models of treatment. *Clinical Child and Family Psychology Review*, 8(3), 203-219.
- Sanjaithum, K. (2006). *Factors influencing nutritional self-management among older adults with diabetes mellitus*. MSc thesis [Unpublished]. Mahidol University, Bangkok.
- Sanpaung, S. (2000). *Perceived benefits, perceived barriers, and nutritional behaviors of the elderly with diabetes mellitus [Abstract]*. MSc thesis [Unpublished]. Mahidol University, Bangkok.
- Santiprabhob, J, Likitmasku, S, Peerapatdit, T, Nitiyanant, W, Tuchinda, C, Sriwijitkamol, A, Sawathiparnich, P, Angsusingha, K, and Tandhanand, S. (2005). Improved glycemic control among Thai children and young adults with Type 1 diabetes participating in the diabetes camp. *Journal of the Medical Association of Thailand*, 88(supplement 8), S38-43.

- Santiprabhob, J, Weerakulwattana, P, Nunloi, S, Kiattisakthavee, P, Wongarn, R, Wekawanich, J, Nakavachara, P, Chaichanwattanakul, K, and Likitmaskul, S. (2007). Etiology and glycemic control among Thai children and adolescents with diabetes mellitus. *Journal of the Medical Association of Thailand*, 90(8), 1608-1615.
- Sawatsri, P. (2007). *Predictive influence of perceived disease severity in combination with perceived benefits and barriers to the dietary control behavior of type 2 diabetic patients [abstract]*. MSc thesis [Unpublished]. Mahidol University, Bangkok.
- Sawyer, S, Drew, S, Yeo, M, and Britto, M. (2007). Adolescents with a chronic condition: Challenges living, challenges treating. *The Lancet*, 369(9571), 1481-1489.
- Schilling, L, Grey, M, and Knafl, K. (2002). The concept of self-management of type 1 diabetes in children and adolescents: An evolutionary concept analysis. *Journal of Advanced Nursing*, 37(1), 87-99.
- Schneider, S, Iannotti, R, Nansel, T, Haynie, D, Simons-Morton, B, Sobel, D, Zeitsoff, L, Clark, L, and Plotnick, L. (2007). Identification of distinct self-management styles of adolescents with type 1 diabetes *Diabetes Care*, 30(5), 1107-1112.
- Schreiner, B. (2005). Promoting lifestyle and behavior change in overweight children and adolescents with type 2 diabetes. *Diabetes Spectrum*, 18(1), 9-12.
- Schwartz, M and Chadha, A. (2008). Type 2 diabetes mellitus in childhood: Obesity and insulin resistance. *The Journal of the American Osteopathic Association*, 108(9), 518-524.
- Seiffge-Krenke, I. (2002). "Come on, say something, dad!": Communication and coping in fathers of diabetic adolescents. *Journal of Pediatric Psychology*, 27(5), 439-450.
- Shaw, J. (2007). Epidemiology of childhood type 2 diabetes and obesity. *Pediatric Diabetes*, 8(Supplement 9), 7-15.
- Shaw, J, Zimmet, P, de.Courten, M, Dowse, G, Chitson, P, Gareeboo, H, Hemraj, F, Fareed, D, Tcomilehto, J, and Alberti, K. (1999). Impaired fasting glucose or impaired glucose tolerance. *Diabetes Care*, 22(3), 399 - 402.
- Sherifali, D, Ciliska, D, and O'Mara, L. (2009). Parenting children with diabetes: Exploring parenting styles on children living with type 1 Diabetes mellitus. *The Diabetes Educator*, 35(3), 476-483.
- Sidebotham, P and the ALSPAC Study Team. (2001). Culture, stress and the parent-child relationship: A qualitative study of parents' perceptions of parenting. *Child: Care, Health and Development*, 27(6), 469-485.
- Sigurdardottir, A. (2005). Self-care in diabetes: Model of factors affecting self-care. *Journal of Clinical Nursing*, 14(3), 301-314.

- Singh, R, Shaw, J, and Zimmet, P. (2004). Epidemiology of childhood type 2 diabetes in the developing world. *Pediatric Diabetes*, 5(3), 154-168.
- Singha, K. (1991). Participant-observation and indepth interview. In B. Yoddumnern-Attig, G. Attig & W. Boonchalaksi (Eds.), *A Field Manual on Selected Qualitative Research Methods (second edition)* (pp. 70-78). Nakhon Pathom, Thailand: Institute for Population and Social Research, Mahidol University.
- Sinha, R, Fisch, G, Teague, B, Tamborlane, W, Banyas, B, Allen, K, Savoye, M, Rieger, V, Taksali, S, Barbetta, G, Sherwin, R, and Caprio, S. (2002). Prevalence of impaired glucose tolerance among children and adolescents with marked obesity. *New England Journal of Medicine*, 346(11), 802-810.
- Siripitayakunkit, U, Namwat, C, Rujivipat, W, and Kanlayanaphotporn, J (Eds.). (2006). *Guideline for the Surveillance of Diabetes, Hypertension, and Coronary Heart Disease (in Thai)* (2 ed.). Nonthaburi: Department of Disease Control, Ministry of Public Health.
- Skinner, T and Hampson, S. (1998). Social support and personal models of diabetes in relation to self-care and well-being in adolescents with type I diabetes mellitus. *Journal of Adolescence*, 21(6), 703-715.
- Skinner, T and Hampson, S. (2001). Personal models of diabetes in relation to self-care, well-being, and glycemic control: A prospective study in adolescence. *Diabetes Care*, 24(5), 828-833.
- Skinner, T, John, M, and Hampson, S. (2000). Social support and personal models of diabetes as predictors of self-care and well-being: A longitudinal study of adolescents with diabetes. *Journal of Pediatric Psychology*, 25(4), 257-267.
- Solberg, L, Desai, J, O'Connor, P, Bishop, D, and Devlin, H. (2004). Diabetic patients who smoke: Are they different? *Annals of Family Medicine*, 2(1), 26-32.
- Sombat, T. (1996). *A biopsychosocial intervention program to improve medical regimen adherence and glycemic control in type 2 diabetic patients*. [Dissertation Abstracts International]. University of New Brunswick, Canada.
- Sricharatchanya, P and Buruma, I. (1987). Praise the Buddha and pass the Baht. *Far Eastern Economic Review* (June, 18), 53-55.
- Sritanyarat, W. (1996). *A Grounded Theory study of self-care processes among Thai adults with diabetes*. PhD thesis [Unpublished]. The University of Texas at Austin, Texas.
- Straus, M. (1994). Corporal punishment by parents. In M. Mason & E. Gambrell (Eds.), *Debating Children's Lives: Current controversies on children and adolescents* (pp. 197-203): Thousand Oaks, CA:Sage Publications, 1994.
- Strauss, A. (1987). *Qualitative analysis for social scientists*. Cambridge, UK: Cambridge University Press.

- Strauss, A and Corbin, J. (1990). *Basics of Qualitative Research: Grounded Theory procedures and techniques*. Newbury Park, CA: Sage Publications.
- Strauss, R and Pollock, H. (2001). Epidemic increase in childhood overweight, 1986-1998. *The Journal of the American Medical Association*, 286(22), 2845-2848.
- Sudhir, P, Kumaraiah, V, and Munichoodappa, C. (2003). Role of family in the management of type 1 diabetes: An Indian experience. *Journal of Clinical Psychology*, 59(6), 715-722.
- Suthirat, A. (2002). *Factors affecting health-promoting behaviors of diabetic patients seeking care at Trat Hospital, Trat Province [abstract]*. MSc thesis [Unpublished]. Mahidol University, Bangkok.
- Suwanwalaikorn, S. (2007). Drugs in diabetes management (in Thai). In W. Nitiyanant, S. Vannasaeng & C. Deerochanawong (Eds.), *Diabetes Situation in Thailand 2007* (pp. 53-59). Bangkok: Vivatprinting.
- Tangwitoon, A. (2007). Snack and beverage consumption of the grade 6 school children in Hat Yai: Association with nutritional status [Abstract]. Retrieved 11/03/2010, from http://www.thaipediatrics.org/detail_journal.php?journal_id=257
- Tansakul, P. (2000). *Health behavior affecting plasma glucose controls in type 2 diabetes patients*. MSc thesis [Unpublished]. Mahidol University, Bangkok.
- Tantarux, S. (1999). *Development of health education program on self-care for Diabetes mellitus patients at Nakornthai Crown Prince Hospital in Phitsanulok [abstract]*. MSc thesis [Unpublished]. Naresuan University, Phitsanulok.
- Tantiwarasakool, R. (2003). *Self-care agency and diabetic control in type 2 diabetic patients [abstract]*. MSc thesis [Unpublished]. Mahidol University, Bangkok.
- Thai Royal Institute. (1999). Thai monolingual dictionaries (Publication. Retrieved 13/10/2009: <http://rirs3.royin.go.th/dictionary.asp>
- Thai Webmaster Association. (2007). Thai family (Publication. Retrieved 22/10/2010: <http://www.panyathai.or.th/wiki/index.php/ครอบครัวไทย>
- Thailand Health Research Network. (2007, 21/12/2007). Obesity in children: A current situation (in Thai). Retrieved 28/10/2009, from http://hrn.thainhf.org/document/edoc/edoc_234.pdf
- Thailand National Health Foundation. (2007, 30/10/2007). *Sii martakarn rongrieian kaepunha dek-uan* (Four school policies to solve the problem of obese children). Retrieved 22/11/2009, from <http://www.thainhf.org/index.php?module=news&page2=detail&id=19>
- Thamronglouthaphun, D. (2003). *Health impacts from television advertising of snacks on primary schoolchildren*. MSc thesis [Unpublished]. Chiang Mai University, Chiang Mai.

- The Diabetes Control and Complications Trial Research Group. (1993). The Effect of intensive treatment of diabetes on the development and progression of long-term complications in insulin-dependent diabetes mellitus. *The New England Journal of Medicine*, 329(14), 977-986.
- The Diabetes Prevention Program Research Group. (2002). Reduction in the incidence of type 2 diabetes with lifestyle intervention or metformin. *New England Journal of Medicine*, 346, 393-403.
- The Expert Committee on the Diagnosis and Classification of Diabetes Mellitus. (2003). Report of the expert committee on the diagnosis and classification of diabetes mellitus. *Diabetes Care*, 26(Supplement 1), S5-S20.
- The National Diabetes Information Clearinghouse. (2007). National diabetes statistics, 2007 [Electronic Version]. Retrieved 15/10/2009, from http://diabetes.niddk.nih.gov/dm/pubs/statistics/DM_Statistics.pdf
- The Pediatric Endocrine Society of Thailand. (2007). Diabetes situation in childhood and adolescents (in Thai). In W. Nitiyanant, S. Vannasaeng & C. Deerochanawong (Eds.), *Diabetes Situation in Thailand 2007* (pp. 67-81). Bangkok: Vivatprinting.
- The RxList Inc. (2009). Cyproheptadine. Retrieved 04/12/2009, from <http://www.rxlist.com/cyproheptadine-drug.htm>
- The Thailand Food and Drug Administration. (2005). Announcement of the Ministry of Public Health (issue 287): Regulations of infant formula and follow-on formula milk powder for infant and younger children (in Thai). Retrieved 12/11/2009, from <http://newsser.fda.moph.go.th/food/file/Laws/Announcement%20of%20the%20Food%20and%20Drug%20Administration/12Milk286.pdf>
- The Thailand Food and Drug Administration. (2007). Announcement of the Ministry of Public Health (issue 305): The determination of nutritional labels on ready-to-eat foods (in Thai). Retrieved 12/11/2009, from <http://newsser.fda.moph.go.th/food/file/Laws/Announcement%20of%20the%20Food%20and%20Drug%20Administration/45.pdf>
- Theerawit, T. (2007). Health situation among children and youths: Lesson 1 nutritional situation (in Thai) [Electronic Version]. *Health information system development office*. Retrieved 22/11/2009, from http://www.hiso.or.th/hiso/analystReport/download.php?download=9&lesson=2&lesson_id=460
- Thongrain, O. (2003). *An application of protection motivation theory to behavior modification among diabetic patients attending Banleam Hospital Phetchaburi Province*. MSc thesis [Unpublished]. Mahidol University, Bangkok.
- Thonguthaisiri, A. (2007). *Lifestyles of type 2 diabetic patients with controlled and uncontrolled plasma glucose level at the diabetic clinic of Nongbualamphu Hospital*. MSc thesis [Unpublished]. Khon Kaen University, Khon Kaen.

- Tilden, B, Charman, D, Sharples, J, and Fosbury, J. (2005). Identity and adherence in a diabetes patient: transformations in psychotherapy. *Qualitative Health Research*, 15(3), 312-324.
- Toljamo, M and Hentinen, M. (2001a). Adherence to self-care and glycaemic control among people with insulin-dependent diabetes mellitus. *Journal of Advanced Nursing*, 34(6), 780-786.
- Toljamo, M and Hentinen, M. (2001b). Adherence to self-care and social support. *Journal of Clinical Nursing*, 10(5), 618-627.
- Totemsuck, V. (2000). *The study of perceived benefits and situational influences to exercise behavior in the elderly with diabetes mellitus [abstract]*. MSc thesis [Unpublished]. Mahidol University, Bangkok.
- Trevino, R, Pugh, J, Hernandez, A, and Menchaca, V. (1998). Bienestar: A diabetes risk-factor prevention program. *The Journal of School Health*, 68(2), 62-67.
- Tripathi, S. (2008). "Tuensai, tidgame, clungkuadwicha" wungwon dek-thai chuang pid term ("Wake up late - addict games - study crazily" the vicious cycle of Thai children during a school break). *Manager online*. Retrieved 24/11/2008, from <http://www.manager.co.th/QOL/ViewNews.aspx?NewsID=951000003250>
1
- Tuchinda, C. (2004). Nutritional problem of children and youth from a pediatrician's perspective. *Journal of The Medical Association of Thailand*, 87(8), 996-999.
- Tuchinda, C. (2006). Past - present - future of childhood diabetes mellitus. *Siriraj Medical Journal*, 58(4), 759-762.
- Tuomilehto, J, Lindstrom, J, Eriksson, J, and Timo, T. (2001). Prevention of type 2 diabetes mellitus by changes in lifestyle among subjects with impaired glucose tolerance. *New England Journal of Medicine*, 344(18), 1343-1350.
- Un-Em, P. (2007). *Factors affecting obesity among preschool children in Nonthaburi, Thailand*. MSc thesis [Unpublished]. Mahidol University, Bangkok.
- UNFPA. (1998). *The sexual and reproductive health of adolescents: A review of UNFPA assistance. Technical Report No.43*. New York: UNFPA.
- Unwin, N, Shaw, J, Zimmet, P, and Alberti, K. (2002). Impaired glucose tolerance and impaired fasting glycaemia: the current status on definition and intervention. *Diabetic Medicine*, 19(9), 708-723.
- Vandewater, E, Shim, M, and Caplovitz, A. (2004). Linking obesity and activity level with children's television and video game use. *Journal of Adolescence*, 27(1), 71-85.
- Vannasaeng, S. (2007). Burden of diabetes in Thailand. In S. Nitayarumphong, S. Vannasaeng & C. Deerochanawong (Eds.), *Diabetes Situation in Thailand 2007* (pp. 1-16). Bangkok: Vivatprinting.

- Vijan, S, Stuart, N, Fitzgerald, J, Ronis, D, Hayward, R, Slater, S, and Hofer, T. (2005). Barriers to following dietary recommendations in type 2 diabetes. *Diabetic Medicine*, 22(1), 32-38.
- Viklund, G and Wikblad, K. (2009). Teenagers' perceptions of factors affecting decision-making competence in the management of type 1 diabetes. *Journal of Clinical Nursing*, 18(23), 3262-3270.
- Wang, J, Obici, S, Morgan, K, Barzilai, N, Feng, Z, and Rossetti, L. (2001). Overfeeding rapidly induces leptin and insulin resistance. *Diabetes*, 50(12), 2786-2791.
- Watkins, R and Plant, A. (2004). Pathways to treatment for tuberculosis in Bali: Patient perspectives. *Qualitative Health Research* 14(5), 691-703.
- Wei, J-N, Sung, F-C, Li, C-Y, Chang, C-H, Lin, R-S, Lin, C-C, Chiang, C-C, and Chuang, L-M. (2003a). Low birth weight and high birth weight infants are both at an increased risk to Have type 2 diabetes among schoolchildren in Taiwan. *Diabetes Care*, 26(2), 343-348.
- Wei, J-N, Sung, F-C, Lin, C-C, Lin, R-S, Chiang, C-C, and Chuang, L-M. (2003b). National surveillance for type 2 diabetes mellitus in Taiwanese children. *The Journal of the American Medical Association*, 290(10), 1345-1350.
- Wei, X-L, Liang, X-Y, Walley, JD, Liu, F-Y, and Dong, B-Q. (2009). Analysis of care-seeking pathways of tuberculosis patients in Guangxi, China, with and without decentralised tuberculosis services. *International Journal of Tuberculosis and Lung Disease*, 13(4), 514-520.
- Weinger, K, O'Donnell, K, and Ritholz, M. (2001). Adolescent views of diabetes-related parent conflict and support: A focus group analysis. *Journal of Adolescent Health*, 29(5), 330-336.
- Weinman, J and Petrie, K. (1997). Illness perceptions: A new paradigm for psychosomatics? *Journal of Psychosomatic Research*, 42(2), 113-116.
- Weiss, R. (2007). Impaired glucose tolerance and risk factors for progression to type 2 diabetes in youth. *Pediatric Diabetes*, 8(s9), 70-75.
- Weissberg-Benchell, J, Glasgow, A, Tynan, W, Wirtz, P, Turek, J, and Ward, J. (1995). Adolescent diabetes management and mismanagement. *Diabetes Care*, 18(1), 77-82.
- Weller, S, Baer, R, Pachter, L, Trotter, R, Glazer, M, Garcia de Alba Garcia, J, and Klein, R. (1999). Latino beliefs about diabetes. *Diabetes Care*, 22(5), 722-728.
- Wen, L, Parchman, M, and Shepherd, M. (2004). Family support and diet barriers among older Hispanic adults with type 2 diabetes. *Family Medicine*, 36(6), 423-430.

- Whitaker, R, Wright, J, Pepe, M, Seidel, K, and Dietz, W. (1997). Predicting obesity in young adulthood from childhood and parental obesity. *New England Journal of Medicine*, 337(13), 869-873.
- White, P, Smith, S, Hevey, D, and O'Dowd, T. (2009). Understanding type 2 diabetes: Including the family member's perspective. *The Diabetes Educator*, 35(5), 810-817.
- Wibulpolprasert, S. (1999). Inequitable distribution of doctors: Can it be solved? [Electronic Version]. Retrieved 22/02/2011, from <http://www.moph.go.th/ops/hrdj/hrdj6/pdf31/INEQUIT.PDF>
- Wibulpolprasert, S. (2008). *Thailand Health Profile 2005-2007* Retrieved 01/11/2009, from http://www.moph.go.th/ops/health_50
- Wiebe, D, Berg, C, Korbel, C, Palmer, D, Beveridge, R, Upchurch, R, Lindsay, R, Swinyard, M, and Donaldson, D. (2005). Children's appraisals of maternal involvement in coping with diabetes: Enhancing our understanding of adherence, metabolic control, and quality of life across adolescence. *Journal of Pediatric Psychology*, 30(2), 167-178.
- Wild, S, Roglic, G, Green, A, Sicree, R, and King, H. (2004). Global prevalence of diabetes. *Diabetes Care*, 27(5), 1047-1053.
- Winkley, K, Landau, S, Eisler, I, and Ismail, K. (2006). Psychological treatments improve glycaemic control in children and adolescents with diabetes. *British Medical Journal*, 333(7558), 53-57.
- Wolfe, W, Campbell, C, Frongillo, E, Haas, J, and Melnik, T. (1994). Overweight schoolchildren in New York State: Prevalence and characteristics. *American Journal of Public Health* 84 (5), 807-813.
- Wongsatit, C. (2005). Medicinal plants in the Khok Pho District, Pattani Province (Thailand). *Thai Journal of Phytopharmacy* 12(2), 23-45.
- World Health Organization. (1999). *Report of a WHO Consultation Part 1: Diagnosis and classification of Diabetes mellitus and its complications*. Geneva: Department of Noncommunicable Disease, World Health Organization.
- World Health Organization. (2006). *Definition and diagnosis of diabetes mellitus and intermediate hyperglycemia: Report of a WHO/IDF consultation*. Geneva: World Health Organization.
- Wray, N, Markovic, M, and Manderson, L. (2007). Discourses of normality and difference: Responses to diagnosis and treatment of gynaecological cancer of Australian women. *Social Science and Medicine*, 64(11), 2260-2271.
- Yainontad, K. (2000). *The relationship between selected factors, self-esteem, social support and self care behavior of menopausal women with diabetes mellitus in Chaiyaphum Province [abstract]*. MSc thesis [Unpublished]. Mahidol University, Bangkok.

- Yasmeen, G. (2000). Not 'From Scratch': Thai food systems and 'public eating'. *Journal of Intercultural Studies*, 21(3), 341-352.
- Zdravkovic, V, Daneman, D, and Hamilton, J. (2004). Presentation and course of type 2 diabetes in youth in a large multi-ethnic city. *Diabetic Medicine*, 21(10), 1144-1148.
- Zoffmann, V and Kirkevold, M. (2005). Life versus disease in difficult diabetes care: conflicting perspectives disempower patients and professionals in problem solving. *Qualitative Health Research*, 15(6), 750-765.

APPENDIX 1.1

Ethics Approval: Chulalongkorn University



No.161/2007
REC. No. 40/50

Certificate of Approval

The Institutional Review Board of the Faculty of Medicine, Chulalongkorn University, Bangkok, Thailand, has approved the following study which is to be carried out in compliance with the ICH/GCP according to the protocol of the principal investigator.

The Institutional Review Board of the Faculty of Medicine, Chulalongkorn University reviewed the protocol based on the international guidelines for human research protection and ICH-GCP

Study Title : Thai Adolescents and Type 2 diabetes: Understanding the social context

Study Code : -

Center : Chulalongkorn University

Principal Investigator : Ms. Sappaporn Wirattanapokin

Document Reviewed : -

.....
(Emeritus Professor Anek Aribarg, M.D.)
Chairman of Institutional Review Board

.....
(Associate Professor. Vilai Chentanez, M.D.)
Associate Dean for the Research Affairs
With Representative of Dean

Date of Approval : March 27, 2007

Approval Expire Date : March 27, 2008

Approval is granted subject to the following conditions: (see back of this Certificate)

APPENDIX 1.2

Ethics Approval: Rajavithi Hospital

Documentary Proof of Ethics Committees on Researches Involving Human Subjects
Rajavithi Hospital, Bangkok, THAILAND

No. 018 / 2007

Title of Project : Thai Adolescents and Type 2 diabetes: Understanding the social context

Principal Investigator : Sappaporn Wirattanapokin, PhD student

Name of Department : The School of Psychology, Psychiatry and Psychological Medicine,
Faculty of Medicine, Nursing and Health Sciences,
MONASH UNIVERSITY, AUSTRALIA

The aforementioned project and informed consent have been reviewed and approved by
Committee on Human Right to Researches Involving Human Subjects.

Date of Approval : February 15, 2007

Signature of Chairman

Ethics Committee on Researches Involving Human Subjects :


Siriwat Arnantapunpong, M.D.

Signature of Director

: 

Jedsada Chokdamrongsuk, M.D.

APPENDIX 2.1

PARTICIPANT INFORMATION SHEET [THAI]

เอกสารชี้แจงผู้เข้าร่วมการวิจัย

ชื่อโครงการ: การศึกษาบริบทแวดล้อมทางสังคมที่เสี่ยงต่อการเป็นโรคเบาหวานชนิดที่ 2 หรือโรคแทรกซ้อนของเบาหวานในวัยรุ่นไทย

คำนำ

ผู้วิจัยชื่อ สรรพพร วิรัตน์โกติน เป็นนักเรียนทุนรัฐบาลไทยกำลังศึกษาระดับปริญญาเอก สาขาสาธารณสุขศาสตร์ ณ มหาวิทยาลัยโมนาช ประเทศออสเตรเลีย มีอาจารย์ที่ปรึกษา คือ ดร. มิลลิชา มาร์โควิต และ ศาสตราจารย์ เลนนอร์ แมนเดอร์สัน ซึ่งเป็นนักวิจัยและอาจารย์ จากมหาวิทยาลัยโมนาช ประเทศออสเตรเลีย อาจารย์ที่ปรึกษาร่วม ได้แก่ ดร.แอนเดรีย วิททิเกะ จากสถาบันเอเชีย ณ มหาวิทยาลัยเมลเบิร์น และ อาจารย์ที่ปรึกษาระหว่างออกภาคสนาม ได้แก่ ดร.ทิพาพร สุโกลิต จากสถาบันพระบรมราชชนก กระทรวงสาธารณสุข ประเทศไทย

วัตถุประสงค์ของโครงการวิจัย

โครงการวิจัยนี้ทำขึ้นเพื่อ 1) ศึกษาปัจจัยส่วนตัว ครอบครัวและสังคม (เช่น ความสัมพันธ์ภายในครอบครัวและสังคม ความเชื่อ ทักษะคิด และวิถีการดำเนินชีวิตทางด้านสุขภาพของตนเอง และครอบครัว) ที่นำไปสู่ความเสี่ยงต่อการเป็นโรคเบาหวานชนิดที่ 2 หรือ โรคแทรกซ้อนของเบาหวาน ในกลุ่มเด็กวัยรุ่นไทยทั้งที่เป็นและไม่เป็นโรคเบาหวานชนิดที่ 2 และ 2) วิเคราะห์ถึงผลกระทบของปัจจัยต่างๆเหล่านี้ที่มีต่อเด็กวัยรุ่นไทยที่เป็นโรคเบาหวานชนิดที่ 2 ซึ่งจะมีประโยชน์ที่คาดว่าจะได้รับคือ ได้ข้อมูลเชิงลึกและครอบคลุมบริบทแวดล้อมทางสังคมที่เสี่ยงต่อการเป็นโรคเบาหวานชนิดที่ 2 ของวัยรุ่นไทย โดยเริ่มตั้งแต่ประเด็นทั่วไปเกี่ยวกับสุขภาพ วิถีชีวิตจนถึง ประเด็นที่เฉพาะเจาะจงเกี่ยวกับโรคเบาหวานชนิดที่ 2 ซึ่งข้อมูลที่ได้จากการสัมภาษณ์เชิงลึกโดยตรงจากผู้ป่วยเบาหวานวัยรุ่น จะช่วยให้เข้าใจถึงปัญหาทางสุขภาพ ครอบครัวและสังคม ที่ผู้ป่วยเบาหวานวัยรุ่นเผชิญอยู่ได้ดียิ่งขึ้น รวมถึงทัศนคติและพฤติกรรมของวัยรุ่นทั่วไปที่แสดงออกต่อผู้ป่วยเบาหวานวัยรุ่น นั่นมีผลกระทบต่อวิถีชีวิตของผู้ป่วยกลุ่มนี้อย่างไรบ้าง นอกจากนี้งานวิจัยนี้ยังช่วยเพิ่มความตระหนักแก่เด็กวัยรุ่นไทย ในเรื่องของพฤติกรรมและวิถีการดำเนินชีวิตที่เสี่ยงต่อการเป็นโรคเบาหวานชนิดที่ 2 และให้ข้อมูลที่อาจเป็นประโยชน์ในการช่วยจัดทำโปรแกรมส่งเสริมสุขภาพ หรือป้องกันโรคเรื้อรังต่างๆ เช่น เบาหวาน และโรคอ้วน สำหรับวัยรุ่นไทย

คุณสมบัติและจำนวนผู้เข้าร่วมโครงการวิจัย

ท่านได้รับเชิญให้เข้าร่วมการวิจัยนี้ ถ้าท่านมีคุณสมบัติดังต่อไปนี้ คือ

- 1) เป็นคนไทย อายุ 13-18 ปี อาศัยอยู่ในกรุงเทพ หรือเขตปริมณฑล และได้รับการวินิจฉัยเป็นโรคเบาหวานชนิดที่ 2 มาแล้วอย่างน้อย 1 ปีก่อนเข้าร่วมโครงการวิจัย
- 2) เป็นคนไทย อายุ 13-18 ปี อาศัยอยู่ในกรุงเทพ หรือเขตปริมณฑล มีสุขภาพแข็งแรงและไม่ป่วยเป็นโรคใดๆ
- 3) เป็นพ่อ แม่ หรือสมาชิกในครอบครัว ที่อาศัยอยู่กับเด็กวัยรุ่นในข้อ 1 หรือ 2
- 4) เป็นบุคลากรทางการแพทย์ที่เกี่ยวข้องในการรักษาและดูแลผู้ป่วยวัยรุ่นเบาหวาน

จะมีผู้เข้าร่วมการวิจัยทั้งสิ้นประมาณ 60-70 คน ระยะเวลาที่จะทำวิจัยทั้งสิ้น 8 เดือน (มีนาคม – ตุลาคม 2007)

ผู้เข้าร่วมวิจัยจะต้องทำอะไรบ้าง

ผู้เข้าร่วมวิจัยจะได้รับเอกสารชี้แจงโครงการ เพื่อท่านจะได้อ่าน และซักถามข้อสงสัยจากผู้วิจัยก่อนตัดสินใจเข้าร่วมโครงการ เมื่อท่านยินดีเข้าร่วมโครงการวิจัยแล้ว ท่านจะได้รับใบยินยอมจากผู้วิจัยเพื่อขอลายเซ็นจากท่านไว้เป็นหลักฐาน ซึ่งท่านและผู้วิจัยจะเก็บไว้คนละ 1 ฉบับ

- 1) กลุ่มวัยรุ่น (กลุ่ม 1 และ 2) จะได้รับใบยินยอม (เอกสารหมายเลข 1) และจะได้รับแบบฟอร์มให้กรอกประวัติส่วนตัว 1 หน้า (เอกสารหมายเลข 4) ในกรณีที่ผู้เข้าร่วมวิจัยอายุ 13-17 ปี จะต้องได้รับการยินยอมจากผู้ปกครอง และต้องมีลายเซ็นของผู้ปกครองในใบยินยอมนั้นด้วย จากนั้นผู้วิจัยจะขอนัดหมายเพื่อทำการสัมภาษณ์ท่าน ตามวันเวลา และสถานที่ที่ท่านสะดวก เช่น โรงพยาบาลราชวิถี, บ้านของผู้เข้าร่วมวิจัย, ศาลาวัด หรือสวนสาธารณะที่เงียบสงบและใกล้บ้านท่าน ระยะเวลาในการสัมภาษณ์ประมาณ 1 ชั่วโมง จำนวนครั้งในการสัมภาษณ์อย่างน้อย 1 ครั้ง ซึ่งผู้วิจัยจะพยายามเก็บข้อมูลสัมภาษณ์ให้ได้ครบทุกประเด็นของคำถาม แต่ถ้าข้อมูลที่เก็บได้ยังไม่ชัดเจน และต้องการรายละเอียดหรือคำอธิบายเพิ่มเติมจากท่าน ผู้วิจัยจะขอนัดสัมภาษณ์ครั้งที่ 2 หรือครั้งต่อไปจนกระทั่งไม่มีข้อมูลใหม่เพิ่มเติม (ข้อมูลอ้อมตัว) นอกจากนี้บางท่านอาจได้รับการขออนุญาตจากผู้วิจัยเพื่อขอเข้าไปสังเกตการณ์ ในระหว่างที่ท่านได้รับการตรวจรักษา หรือได้รับการให้คำปรึกษาจากบุคลากรทางการแพทย์ (เอกสารหมายเลข 2) และบางท่านอาจได้รับการขออนุญาตจากผู้วิจัยขอไปเยี่ยมบ้านของท่าน (เอกสารหมายเลข 3) ซึ่งทั้งหมดนี้เป็นไปตามความสมัครใจของท่านและผู้ปกครอง
- 2) กลุ่มผู้ปกครอง และสมาชิกในครอบครัว จะได้รับใบยินยอม (เอกสารหมายเลข 1) ให้เซ็นชื่อก่อนเริ่มการสัมภาษณ์ ซึ่งผู้วิจัยจะขอทำการสัมภาษณ์ท่านหลังจากสัมภาษณ์เด็กของท่านแล้ว ภายในวันเดียวกัน แต่ถ้าท่านไม่สะดวกที่จะให้สัมภาษณ์ในวันดังกล่าว ผู้วิจัยจะทำการนัดหมายท่านใหม่ในวัน เวลา และสถานที่ที่ท่านสะดวก ระยะเวลาในการสัมภาษณ์ประมาณ 1 ชั่วโมง จำนวนครั้งในการสัมภาษณ์ 1 ครั้ง
- 3) กลุ่มบุคลากรทางการแพทย์ที่เกี่ยวข้อง ได้แก่ หมอ พยาบาล นักโภชนาการ นักการศึกษา จะได้รับใบยินยอม (เอกสารหมายเลข 1) เพื่อเซ็นยินยอมให้การสัมภาษณ์ ระยะเวลาในการสัมภาษณ์ประมาณ 30 นาที ที่หน่วยงานของท่านหรือสถานที่อื่น ๆ ตามที่ท่านสะดวก

หมายเหตุ: ในการสัมภาษณ์แต่ละครั้ง ผู้วิจัยจะขออนุญาตบันทึกเทปไว้เพื่อให้มั่นใจว่าได้เก็บข้อมูลสัมภาษณ์ถูกต้อง ครบถ้วน และเพื่อช่วยในการแปลคำสัมภาษณ์เป็นภาษาอังกฤษในภายหลัง ทั้งหมดนี้เป็นไปตามความสมัครใจของท่าน

ความเสี่ยงที่อาจเกิดขึ้นจากงานวิจัย

เนื่องจากงานวิจัยนี้เก็บข้อมูลจากการสัมภาษณ์ และไม่มีทดสอบหรือ ตรวจร่างกายใดๆทั้งสิ้น จึงไม่มีความเสี่ยงทางร่างกาย ความเสี่ยงที่อาจเกิดขึ้นได้ เช่น ความเศร้า ที่เกิดจากคำถามวิจัย ที่ทำให้ท่านระลึกถึงเหตุการณ์ที่เศร้า สะเทือนใจ หรือความยากลำบากในอดีต หากเกิดผลข้างเคียงที่ไม่พึงประสงค์จากการวิจัยดังกล่าว ผู้วิจัยพร้อมจะให้ความช่วยเหลือ เช่น ช่วยติดต่อประสานแพทย์หรือพยาบาลของสถานพยาบาลใกล้บ้านหรือที่อื่นตามความต้องการของท่าน หรือแนะนำศูนย์บริการช่วยเหลือหรือให้คำปรึกษาที่เหมาะสมให้แก่ท่าน

ค่าตอบแทน

การเข้าร่วมโครงการวิจัยนี้เป็นไปโดยความสมัครใจของท่าน ดังนั้นจึงไม่มีค่าตอบแทนในการเข้าร่วมโครงการ แต่ท่านจะได้รับค่าชดเชยเช่น กรณีที่ท่านมีค่าใช้จ่ายในการเดินทางเพื่อมาให้สัมภาษณ์ตามนัด ณ สถานที่ที่ท่านสะดวกและเป็นผู้เลือกสถานที่ในการให้สัมภาษณ์ ท่านจะได้รับค่าเดินทางเหมาจ่าย 100บาท/ครั้ง และเมื่อจบโครงการท่านจะได้รับของขวัญหรือของที่ระลึกจากผู้วิจัย เช่น สมุดบันทึก หรือ ปากกา เป็นต้น เพื่อเป็นการขอบคุณในการเข้าร่วมโครงการวิจัยด้วยความสมัครใจ

การเก็บรักษาข้อมูลที่ได้จากผู้เข้าร่วมวิจัย

ข้อมูลส่วนตัวของผู้เข้าร่วมการวิจัยจะถูกเก็บรักษาไว้ ไม่เปิดเผยต่อสาธารณะเป็นรายบุคคล แต่จะรายงานผลการวิจัยเป็นข้อมูลส่วนรวม ในรายงาน สิ่งตีพิมพ์ และวิทยานิพนธ์จากงานวิจัยนี้ทั้งหมด จะใช้นามสมมุติ แทนชื่อจริงของท่าน ชื่อและสถานที่ติดต่อของท่านจะถูกเก็บไว้ในแฟ้มข้อมูลคอมพิวเตอร์ที่มีรหัสรักษาความปลอดภัย ที่บ้านของผู้วิจัยในระหว่างเก็บข้อมูลในกรุงเทพฯ หลังจากนั้นข้อมูลทั้งหมดจะถูกเก็บรักษาไว้ ณ the School of Psychology, Psychiatry and Psychological Medicine มหาวิทยาลัยโมนาช เป็นเวลาอย่างน้อย 5 ปี และจะถูกทำลายทิ้งในภายหลัง ข้อมูลของผู้เข้าร่วมการวิจัยเป็นรายบุคคลอาจมีคณะบุคคลบางกลุ่มเข้ามาตรวจสอบได้ เช่น ผู้ให้ทุนวิจัย ,สถาบัน หรือองค์กรของรัฐที่มีหน้าที่ตรวจสอบ ,คณะกรรมการจริยธรรมฯ เป็นต้น

การถอนตัวออกจากโครงการ

ผู้เข้าร่วมการวิจัยมีสิทธิ์ถอนตัวออกจากโครงการวิจัยเมื่อใดก็ได้ โดยไม่ต้องแจ้งให้ทราบล่วงหน้า และการไม่เข้าร่วมการวิจัยหรือถอนตัวออกจากโครงการวิจัยนี้จะไม่มีผลกระทบต่อค่าบริการและการรักษาที่สมควรจะได้รับแต่ประการใด เนื่องจากคำถามในการสัมภาษณ์บางข้ออาจทำให้ท่านรู้สึกอึดอัดและไม่สบายใจที่จะตอบ ท่านสามารถที่จะไม่ตอบ หรือหยุดให้การสัมภาษณ์ได้ทันที

ท่านสามารถหาข้อมูลเพิ่มเติมได้จากที่ใด

ภายหลังจากเสร็จสิ้นโครงการวิจัย รายงานสรุปผลการวิจัยจะส่งให้กับผู้เข้าร่วมวิจัยทุกท่านที่ต้องการรับผลการวิจัยดังกล่าว หากท่านต้องการข้อมูลเพิ่มเติมหรือมีข้อข้องใจที่จะสอบถามเกี่ยวข้องกับกรวิจัย กรุณาติดต่อผู้วิจัยได้ที่ **สรรพพร วิรัตน์โกคิน** เบอร์โทร: 02-889 0666 หรือ 08- 4023 9677 Email: [REDACTED] หรือติดต่ออาจารย์ที่ปรึกษาประจำภาคสนาม **ดร.ทิพาพร สุโขสิต** เบอร์โทร 02-590 1925 Email: tippyp@health.moph.go.th

หากผู้วิจัยมีข้อมูลเพิ่มเติมทั้งด้านประโยชน์และโทษที่เกี่ยวข้องกับการวิจัยนี้ ผู้วิจัยจะแจ้งให้ทราบโดยรวดเร็วไม่ปิดบัง

หากท่านได้รับการปฏิบัติที่ไม่ตรงตามที่ได้ระบุไว้ในเอกสารชี้แจงนี้ ท่านจะสามารถแจ้งให้ประธานคณะกรรมการจริยธรรมฯ ทราบได้ที่ สำนักงานคณะกรรมการจริยธรรมการวิจัยในคน ชั้น M อาคารเฉลิมพระเกียรติฯ ร.พ.ราชวิถี เบอร์โทร(02) .3548108-37 ต่อ 2803-5

ข้าพเจ้าได้อ่านรายละเอียดในเอกสารนี้ครบถ้วนแล้ว

ลงชื่อ..... (ผู้เข้าร่วมวิจัย) วันที่.....

()

APPENDIX 2.2

PARTICIPANT INFORMATION SHEET [ENGLISH]

RESEARCH TITLE: Thai adolescents and Type 2 diabetes: understanding the social context

Introduction

My name is Sappaporn Wirattanapokin, and I am a PhD student of the School of Psychology, Psychiatry and Psychological Medicine at Monash University, Australia. I received a Thai Government Scholarship to conduct my study. My supervisors are Dr Milica Markovic and Professor Lenore Manderson of the School of Psychology, Psychiatry and Psychological Medicine at Monash University. My external supervisors are Dr Andrea Whittaker of the Asia Institute at The University of Melbourne and Dr Tipaporn Sukosit of the Ministry of Public Health, Thailand.

I wish to study social relationships, health lifestyles, beliefs and attitudes of Thai teenagers, and how these factors affect teenagers who have type 2 diabetes. If you are Thai, aged 13-18 years, live in Bangkok, and have type 2 diabetes for at least 1 year, you are invited to take part in this study. This project has been approved by the *Monash University Standing Committee on Ethics in Research Involving Humans*.

Possible benefits

I hope this study will be helpful in developing approaches to the basic prevention of developing type 2 diabetes, such as the health education programs for young people, and to raise awareness of type 2 diabetes among teenagers.

What will I be asked to do?

If you want to join this project, you will be asked firstly to complete a demographic form about your personal details before the interview. Parents/guardians can help you to complete this form. An appointment for the first interview will be arranged at a time and place of your choice. My contact details will be given in case you or your parents/guardians have further questions about the project. I will ask you to tell me your story and your opinions about health, food, exercise, family, friends and type 2 diabetes. If parents/guardians wish to be present at the first interview, they will be welcome. The first interview will take around 60 minutes and a second interview will only be requested if your answers need to be clarified. With your permission, the interview will be tape recorded to make sure that I get a correct record of what you say, and to help me with translation.

Inconvenience/discomfort

You may find some of the questions upsetting and you may be reminded of some difficult or sad memories during or after our talk. If this happens, or at any other point in time, you can request that I stop the interview. You don't have to give me the answers if you do not know or do not want to answer. A list of counselling services will be provided should you or your parents/guardians find completing the interview upsetting.

Payment

The participation is absolutely voluntary. No payment will be offered to you for being involved in this research. However, you and your parents/guardians will be reimbursed for transport expenses if the interview does not take place at your house.

Can I withdraw from the research?

If you do not want to participate or wish to withdraw from the study, you can do so at any time. All unprocessed data that you had already provided will also be destroyed.

Confidentiality

In all transcriptions, reports, publications and my thesis, I will use a pseudonym instead of your real name. Your name and address will be stored in a separate password protected computer file independently from any interview data. I will not discuss your answers with anybody else. However, please note that due to a small number of participants from which I will recruit participants, there is a chance that someone who reads my thesis or article may guess that it is you who provided the information.

Storage of data

During fieldwork in Bangkok, all data and materials will be stored securely in a locked cabinet at the researcher's house. During analysis and writing up the thesis at the Monash University, the data and materials will be kept securely in a locked cabinet at the School of Psychology, Psychiatry and Psychological Medicine at Monash University for 5 years. After 5 years, all data, if no longer required for further analysis, will be destroyed. If still used, they will be kept securely in a locked cabinet in the School of Psychology, Psychiatry and Psychological Medicine at Monash University. Electronic data will be saved in a separate password protected computer file independently. Only I and my supervisors will have access to the cabinet and the computer file.

Results

At the end of my project, a brief summary of the findings will be available to you, if you would like to receive this information. The results will be presented at academic conferences and in scientific journals. If you have further questions regarding this research project, please feel free to contact me Ms Sappaporn Wirattanapokin: Ph. [REDACTED]

Email: [REDACTED]

Where can I get further information?

If you would like to contact the researchers about any aspect of this study, please contact my supervisors:	If you have a complaint concerning the manner in which this research is being conducted, please contact:
<p>Dr Milica Markovic: Ph. + 61 3 9903 4043 Fax. +61 3 9903 4508 Email: Milica.Markovic@med.monash.edu.au</p> <p>Prof. Lenore Manderson: Ph. +61 3 9903 4047 Email: Lenore.Manderson@med.monash.edu.au</p> <p>Dr Andrea Whittaker: Ph. +61 3 8344 3558 Email: a.whittaker@unimelb.edu.au</p> <p>Dr Tipaporn Sukosit: Ph. +66 2 590 1925 Email: tippyp@health.moph.go.th</p>	<p>Human Ethics Officer Standing Committee on Ethics in Research Involving Humans (SCERH) Building 3d Research Office Monash University VIC 3800 Tel: +61 3 9905 2052 Fax: +61 3 9905 1420 Email: scerh@adm.monash.edu.au</p>

APPENDIX 3.1

CONSENT FORM [THAI]

หนังสือแสดงเจตนายินยอมเข้าร่วมการวิจัย (การสัมภาษณ์)

วันที่ เดือน พ.ศ.

ข้าพเจ้า..... อายุ..... ปีอาศัยอยู่บ้านเลขที่.....
 ถนน..... ตำบล..... อำเภอ.....
 จังหวัด..... รหัสไปรษณีย์..... โทรศัพท์.....

ขอแสดงเจตนายินยอมเข้าร่วมโครงการวิจัย การศึกษาบริบทแวดล้อมทางสังคมที่เสี่ยงต่อการเป็นโรคเบาหวาน ชนิดที่ 2 หรือโรคแทรกซ้อนของเบาหวานในวัยรุ่นไทย

โดยข้าพเจ้าได้รับทราบรายละเอียดเกี่ยวกับที่มาและจุดมุ่งหมายในการทำวิจัยรายละเอียดขั้นตอนต่างๆ ที่จะต้องปฏิบัติหรือได้รับการปฏิบัติ ประโยชน์ที่คาดว่าจะได้รับของการวิจัยและความเสี่ยงที่อาจเกิดขึ้นจากการเข้าร่วมการวิจัย รวมทั้งแนวทางป้องกันและแก้ไขหากเกิดอันตรายขึ้น ไม่มีค่าตอบแทนและค่าใช้จ่ายที่ข้าพเจ้าจะต้องรับผิดชอบจ่ายเอง โดยได้อ่านข้อความที่มีรายละเอียดอยู่ในเอกสารชี้แจงผู้เข้าร่วมการวิจัยโดยตลอด อีกทั้งยังได้รับคำอธิบายและตอบข้อสงสัยจากหัวหน้าโครงการวิจัยเป็นที่เรียบร้อยแล้ว

ข้าพเจ้าได้ทราบถึงสิทธิที่ข้าพเจ้าจะได้รับข้อมูลเพิ่มเติมทั้งทางด้านประโยชน์และโทษจากการเข้าร่วมการวิจัย และสามารถถอนตัวหรืองดเข้าร่วมการวิจัยได้ทุกเมื่อ โดยจะไม่มีผลกระทบต่อค่าบริการและการรักษาพยาบาลที่ข้าพเจ้าจะได้รับต่อไปในอนาคต และยินยอมให้ผู้วิจัย ใช้ข้อมูลส่วนตัวของข้าพเจ้าที่ได้รับจากการวิจัย แต่จะไม่เผยแพร่ต่อสาธารณะเป็นรายบุคคล โดยจะนำเสนอเป็นข้อมูลโดยรวมจากการวิจัยเท่านั้น

- ข้าพเจ้า **ยินยอม / ไม่ยินยอม** ให้มีการบันทึกเทป หรือ จดบันทึกข้อมูล ในระหว่างการสัมภาษณ์

ข้าพเจ้าได้เข้าใจข้อความในเอกสารชี้แจงผู้เข้าร่วมการวิจัย และหนังสือแสดงเจตนายินยอมนี้โดยตลอดแล้ว จึงลงลายมือชื่อไว้

ลงชื่อ..... ผู้เข้าร่วมการวิจัย / วันที่.....
(.....)

ลงชื่อ..... ผู้วิจัย / วันที่.....
(.....)

ในกรณีที่ผู้เข้าร่วมวิจัยอายุน้อยกว่า 18 ปี จะต้องได้รับการยินยอมจากผู้ปกครองให้เข้าร่วมในโครงการ และลงลายมือชื่อไว้เป็นหลักฐาน

ลงชื่อ..... ผู้ปกครอง / วันที่.....
(.....)

ในกรณีที่ผู้เข้าร่วมการวิจัยอ่านหนังสือไม่ออก ผู้ที่อ่านข้อความทั้งหมดแทนผู้เข้าร่วมการวิจัยคือ.....

จึงได้ลงลายมือชื่อไว้เป็นพยาน

ลงชื่อ..... พยาน / วันที่.....
(.....)

APPENDIX 3.2

CONSENT FORM [for adolescents]

**RESEARCH TITLE: THAI ADOLESCENTS AND TYPE 2 DIABETES:
UNDERSTANDING THE SOCIAL CONTEXT**

Name of a participant:

Name of researcher(s): Ms Sappaporn Wirattanapokin, Dr Milica Markovic, Professor Lenore Manderson, Dr Andrea Whittaker and Dr Tipaporn Sukosit

I agree to participate in this research project. The details of this project, including the details of interviews and filling out the demographic form, have been explained to me and a written copy of that information has been given to me to keep.

I understand that

- all my answers are secret and my privacy will be protected.
- I am free to withdraw from the study or interview at any time without explanation. All unprocessed information that I have provided will be destroyed.
- my treatment by medical staff will not be affected by whether I participate or not.
- I have asked questions regarding the research project and am satisfied with the answers. If I have questions in the future, I can contact the researcher or any of her supervisors.

I give consent to my interview being audio-taped or notes taken YES / NO

I give consent to an interview of about 60 minutes YES / NO

Signature of participant: _____ Date: _____

APPENDIX 3.3

CONSENT FORM [for parents/guardians]

RESEARCH TITLE: THAI ADOLESCENTS AND TYPE 2 DIABETES: UNDERSTANDING THE SOCIAL CONTEXT

Name of a parent/guardian:

Name of researcher(s): Ms Sappaporn Wirattanapokin, Dr Milica Markovic, Professor
Lenore Manderson,

Dr Andrea Whittaker and Dr Tipaporn Sukosit

I give permission for my child to participate in this research project. I also agree to join this project. The details of this research, including the details of interviews and filling out the demographic form have been explained to me and a written copy of that information has been given to me to keep.

I understand that

- all my answers are secret and my privacy will be protected.
- my child and I are free to withdraw from the study or interview at any time without explanation. All unprocessed information that my child and I have provided will be destroyed.
- my child's treatment by medical staff will not be affected by whether I give permission or not.
- I have asked all my questions regarding the research project and am satisfied with the answers. If I have questions in the future, I can contact the researcher or any of her supervisors.

I give consent to audio-taping or note taking during interviewing me and my child
YES / NO

I give consent to an interview of about 60 minutes
YES / NO

Signature of parents/guardians: _____ Date: _____

APPENDIX 4.1

DEMOGRAPHIC FORM [THAI]

แบบบันทึกข้อมูลส่วนตัวของเด็กวัยรุ่น

รหัสผู้เข้าร่วมวิจัย/ นามสมมติ.....

เพศ () ชาย () หญิง

วัน/เดือน/ปีเกิด อายุ ปี.....

ภูมิลำเนาที่เกิด.....

สถานภาพการสมรส () โสด () แต่งงาน () หย่า

เชื้อชาติ สัญชาติ..... ศาสนา.....

ระดับการศึกษาสูงสุด..... สถาบัน.....

อาชีพ..... () ทำเต็มเวลา (ระบุเวลา).....

() ทำเป็นช่วงเวลา (ระบุเวลา).....

จำนวนสมาชิกในครอบครัว คน ได้แก่.....

ระดับการศึกษาสูงสุดของมารดา..... อาชีพของมารดา

ระดับการศึกษาสูงสุดของบิดา อาชีพของบิดา.....

ปัจจุบันท่านอาศัยอยู่กับ

ที่อยู่ปัจจุบันของท่าน.....

.....

เบอร์โทรศัพท์..... อีเมล.....

APPENDIX 4.2

DEMOGRAPHIC FORM [ENGLISH]

Name Code			
Sex	<input type="checkbox"/> male	<input type="checkbox"/> female	
Date of birth	Ageyears.....
Place of birth			
Marital status	<input type="checkbox"/> single	<input type="checkbox"/> married	<input type="checkbox"/> divorced
Ethnicity			
Religion.....			
Educational level.....			
Occupation.....	<input type="checkbox"/> Full time	<input type="checkbox"/> Part-time	
Family members			
Mother's education.....		Father's education.....	
Mother's occupation.....		Father's occupation.....	
Residence.....			
.....			

APPENDIX 5.1

INTERVIEW GUIDELINE [THAI]

แนวคำถามในการสัมภาษณ์

ชุดที่ 1 : สำหรับเด็กวัยรุ่นที่เป็นและไม่เป็นโรคเบาหวานชนิดที่ 2

คำชี้แจง: แนวคำถามชุดนี้ประกอบด้วย 4 หัวข้อใหญ่ หัวข้อที่ 1-3 จะใช้ในการสัมภาษณ์เด็กวัยรุ่นทั้งที่เป็นและไม่เป็นเบาหวาน ยกเว้นคำถามที่มีเครื่องหมาย " ** " และทุกคำถามในหัวข้อที่ 4 จะใช้ถามเฉพาะกับวัยรุ่นที่เป็นเบาหวาน ในการสัมภาษณ์ผู้เข้าร่วมวิจัยแต่ละคน ผู้วิจัยอาจเรียงลำดับคำถามแตกต่างกันและอาจไม่ใช่ทุกคำถาม หรืออาจถามคำถามอื่นเพิ่มเติมนอกเหนือจากที่ได้ระบุไว้เพื่อให้เกิดความชัดเจนขึ้น ทั้งนี้ขึ้นอยู่กับสถานการณ์และธรรมชาติของผู้เข้าร่วมวิจัยแต่ละคนที่แตกต่างกัน

1. ความสัมพันธ์ทางครอบครัวและสังคม

- ช่วยเล่าเกี่ยวกับครอบครัวของน้องได้ไหมคะ น้องอาศัยอยู่กับใคร และความสัมพันธ์กับสมาชิกในครอบครัวเป็นอย่างไรบ้าง
- ใครเป็นตัวหลักของครอบครัวคะ และเขามีอิทธิพลหรือมีความสำคัญต่อชีวิตของน้องอย่างไร
- น้องเคยมีความขัดแย้งหรือทะเลาะกับคนในครอบครัวไหมคะ ส่วนมากจะขัดแย้งกับใคร สาเหตุของความขัดแย้งเกิดจากอะไร และน้องแก้ไขปัญหายังไง
- ช่วยเล่าเรื่องเกี่ยวกับเพื่อน โรงเรียนและกิจกรรมต่างๆที่ทำในโรงเรียน และเพื่อนที่มีความสำคัญกับชีวิตของน้องอย่างไรบ้าง (ถามเจาะในเรื่อง แรงกดดันจากเพื่อน หรือความช่วยเหลือจากเพื่อน และกิจกรรมต่างๆทางสังคมที่ทำร่วมกับเพื่อน)
- เวลามีปัญหาเกิดขึ้นน้องมักจะปรึกษาใคร ทำไม่ถึงขอปรึกษาคนนั้น และเขาช่วยน้องอย่างไร (ยกตัวอย่างเหตุการณ์)

2. วิถีชีวิต

อาหารและการกิน

- อาหารโปรดของน้องคืออะไร มักจะทานเมื่อไร และใครเป็นคนทำอาหารโปรดให้น้องคะ (ถามเจาะเรื่อง การกินข้าวนอกบ้านและไปกับใคร)
- ช่วยบอกเกี่ยวกับอาหารอะไรบ้างที่ดีและไม่ดีสำหรับวัยรุ่นที่เป็นเบาหวาน / วัยรุ่นทั่วไป
- น้องได้ทานอาหารพิเศษอะไรบ้างไหมเวลามีเทศกาลสำคัญเช่น วันเกิดของน้อง หรือของสมาชิกในครอบครัว หรือเพื่อนๆ ถ้ามีอาหารพิเศษนั้นได้แก่อะไรบ้าง น้องไปทานที่ไหน ทานอาหารเหล่านี้บ่อยแค่ไหน และอาหารเหล่านี้มีผลต่อสุขภาพของน้องอย่างไรบ้าง
- โฆษณาเกี่ยวกับอาหารและเครื่องดื่มในทีวี เช่น โก๋ทอด, พิซซ่า, น้ำอัดลมและอื่นๆ มีผลต่อการตัดสินใจเลือกซื้ออาหารของน้องหรือไม่ อย่างไร

กิจกรรมการออกกำลังกาย และกิจกรรมที่ไม่มีการเคลื่อนไหวร่างกาย

- สุขภาพหมายถึงอะไร ในความคิดเห็นของน้อง
- น้องคิดว่ารูปร่างของน้องเป็นอย่างไรบ้าง
- น้องเคยมีประสบการณ์ในการลดน้ำหนักไหม ถ้ามีน้องทำอย่างไร และผลเป็นอย่างไร
- กิจกรรมหลักที่น้องทำที่บ้านได้แก่อะไรบ้าง (งานบ้าน งานอดิเรก) และน้องสนุกกับการทำกิจกรรมเหล่านี้หรือไม่ เพราะอะไร

- น้องชอบใช้เวลาว่างยามพักผ่อนทำอะไรบ้าง และใช้เวลาไหนแค่นั้น
- น้องชอบออกกำลังกายหรือไม่ ชอบออกกำลังกายประเภทไหน เพราะอะไรถึงชอบ และไปออกกำลังกายบ่อยแค่ไหน
- น้องมีความคิดเห็นอย่างไรกับการออกกำลังกายเป็นประจำ และ/หรือ การกินอาหารสุขภาพ น้องเชื่อไหมว่าการทำสิ่งเหล่านี้สามารถควบคุมโรคเบาหวานได้ ทำไม่ถึงเชื่อ/ไม่เชื่อ
- กิจกรรมที่ไม่ต้องเคลื่อนไหวร่างกายที่น้องชอบมีอะไรบ้าง และกิจกรรมเหล่านี้มีผลกระทบต่อชีวิตของน้องอย่างไร (ถามเจาะผลกระทบต่อการเรียนหนังสือ)

3. ความเข้าใจเรื่องโรคเบาหวานชนิดที่ 2

- น้องรู้จักโรคเบาหวานไหม มันเป็นอย่างไร (ถามเจาะ ความหมายและทัศนคติต่อโรคนี้)
- ทำไมคนถึงเป็นเบาหวานได้ อะไรเป็นสาเหตุที่สำคัญที่สุดที่ทำให้เกิดโรคเบาหวาน
- น้องคิดว่าโรคเบาหวานสามารถรักษาให้หายขาดได้หรือไม่ เพราะอะไร
- การรักษาโรคเบาหวานทำอย่างไร คนเราสามารถป้องกันโรคนี้ได้ได้อย่างไร
- น้องมีเพื่อนที่เป็นโรคเบาหวานชนิดที่ 2 หรือไม่ น้องคิดอย่างไรกับเพื่อนกลุ่มนี้ น้องคิดว่าพวกเขารู้สึกอย่างไร และน้องให้ความช่วยเหลือพวกเขาอย่างไร
- ** ในความคิดเห็นของน้อง น้องเป็นเบาหวานได้อย่างไร (ถามเจาะ บั๊จจัยเสี่ยง หรือสถานการณ์ที่มีผลกระทบต่อวิถีชีวิตหรือพฤติกรรม) มีใครบ้างไหมในครอบครัวที่เป็นเบาหวาน และตอนนี้เขาเป็นอย่างไรบ้าง
- ** ก่อนที่น้องจะทราบว่าตนเป็นเบาหวาน น้องใช้ชีวิตอย่างไร และหลังจากนั้นเกิดอะไรขึ้นคะ
- ** น้องช่วยเล่าประสบการณ์ที่อยู่กับโรคเบาหวานนี้ (ถามเจาะ อาการหรือโรคแทรกซ้อน เช่น โรคตา ไต ตับ ความดันโลหิตสูงและไขมันในเลือดสูง เป็นต้น)
- ** โรคเบาหวานมีผลกระทบต่อชีวิตประจำวันของน้องอย่างไร (ถามเจาะ ผลกระทบต่อกิจกรรมปกติที่ทำเป็นประจำ)
- ** อาการเริ่มแรกที่ทำให้น้องต้องไปหาหมอคืออะไร และเกิดอะไรขึ้นในเวลาต่อมา
- ** น้องรู้สึกอย่างไรตอนที่คุณหมอบอกว่าน้องเป็นเบาหวาน และต่อมาน้องรู้สึกอย่างไร
- ** น้องเคยมีระดับน้ำตาลในเลือดต่ำ หรือสูงไหมคะ มีอาการอย่างไร เวลามีอาการดังกล่าวสมาชิกครอบครัวหรือเพื่อนที่พบเห็นทราบหรือเข้าใจใหม่น้องเป็นอะไร
- ** น้องรู้สึกอย่างไรเกี่ยวกับการใช้เข็มในการฉีดยาให้กับตัวเอง หรือเจาะเลือดตัวเองเพื่อวัดระดับน้ำตาลในเลือด (คำถามนี้เฉพาะสำหรับน้องที่ใช้อินซูลิน)
- ** น้องพบกับความยากลำบากอะไรบ้างเมื่อเป็นโรคเบาหวาน
- ** มีบั๊จจัยอะไรบ้างที่ช่วยส่งเสริมหรือสนับสนุนการดูแลตนเองของน้อง
- ** หลังจากน้องทราบว่าตนเป็นเบาหวานชนิดที่ 2 แล้วมีการเปลี่ยนแปลงที่เกี่ยวกับอาหารที่น้องรับประทานหรือไม่ อย่างไร และเพราะอะไร
- ** น้องคิดอย่างไรเกี่ยวกับอาหารที่คุณหมอแนะนำให้รับประทาน รับประทานได้หรือไม่ เพราะอะไร

4. การร่วมมือต่อการรักษาทางการแพทย์ (สำหรับถามวัยรุ่นเบาหวานเท่านั้น)

- โดยส่วนใหญ่แล้วใครที่เป็นผู้ให้ความช่วยเหลือน้องเกี่ยวกับโรคเบาหวาน และช่วยเหลืออย่างไร (ถามเจาะ การไปโรงพยาบาล หรือไปพบหมอตตามนัด)
- ครอบครัวของน้องให้ความช่วยเหลือน้องอย่างไร (ถามเจาะ พ่อแม่หรือพี่น้อง)
- น้องได้รับความช่วยเหลือจากคนอื่นบ้างไหม (ถามเจาะ เพื่อนหรือบุคลากรทางการแพทย์) พวกเขาให้ความช่วยเหลืออย่างไร และน้องรู้สึกอย่างไรเกี่ยวกับความช่วยเหลือที่ได้รับ
- น้องรู้สึกอย่างไรเมื่อถึงเวลาที่ต้องไปหาหมอตตามนัด และเกิดอะไรขึ้นในวันนั้น มีบ้างไหมที่น้องผัดนัดหมอ (ถ้ามี บ่อยแค่ไหน) เพราะอะไร

- มีอุปสรรคอะไรบ้างในการติดตามการรักษาอย่างต่อเนื่อง (ถามเจาะ การควบคุมน้ำตาลในเลือด/ การกินยา/ การฉีดอินซูลิน) น้องมีวิธีจัดการกับอุปสรรคเหล่านี้ได้อย่างไร
- อะไรบ้างที่เป็นอุปสรรคต่อการควบคุมเบาหวานของน้อง (ถามเจาะ อาหาร/ การออกกำลังกาย/ การลดน้ำหนัก/ การตรวจวัดน้ำตาลในเลือดด้วยตนเอง) น้องจัดการกับอุปสรรคเหล่านี้ได้อย่างไร
- ความสัมพันธ์ของน้องกับคุณหมอ พยาบาลและทีมงานที่ให้การดูแลรักษาน้อง เป็นอย่างไรบ้าง และน้องอยากได้รับความช่วยเหลือสนับสนุนแบบไหนจากบุคลากรทางการแพทย์เหล่านี้

ชุดที่ 2 : สำหรับผู้ปกครอง / สมาชิกครอบครัว

คำชี้แจง: แนวคำถามชุดนี้ประกอบด้วย 4 หัวข้อใหญ่ หัวข้อที่ 1-3 จะใช้ในการสัมภาษณ์ผู้ปกครอง / สมาชิกครอบครัว ของเด็กวัยรุ่นทั้งที่เป็นและไม่เป็นเบาหวาน ยกเว้นคำถามที่มีเครื่องหมาย (**) และทุกคำถามในหัวข้อที่ 4 จะใช้ถามเฉพาะกับผู้ปกครอง / สมาชิกครอบครัว ของวัยรุ่นที่เป็นเบาหวาน ในการสัมภาษณ์ผู้เข้าร่วมวิจัยแต่ละคน ผู้วิจัยอาจเรียงลำดับคำถามแตกต่างกันและอาจไม่ใช้ทุกคำถาม หรืออาจถามคำถามอื่นเพิ่มเติม นอกเหนือจากที่ได้ระบุไว้เพื่อให้เกิดความชัดเจนขึ้น ทั้งนี้ขึ้นอยู่กับสถานการณ์และธรรมชาติของผู้เข้าร่วมวิจัยแต่ละคนที่แตกต่างกัน

1. ความสัมพันธ์ภายในครอบครัว

- กรุณาเล่าเรื่องเกี่ยวกับเด็กในปกครองของคุณ
- ความสัมพันธ์ระหว่างท่านและเด็กของคุณเป็นอย่างไร
- ถ้ามีความขัดแย้งเกิดขึ้นระหว่างเด็กและพี่น้องของเด็ก คุณทำอย่างไร
- คุณมีเพื่อนที่มีลูกเป็นเบาหวานบ้างหรือไม่ ถ้ามี คุณมีกิจกรรมอะไรบ้างใหม่ที่ทำร่วมกัน

2. วิถีชีวิต

อาหารและการกิน

- ใครเป็นบุคคลหลักในการทำอาหารสำหรับทั้งครอบครัว อาหารอะไรที่เด็กของคุณชอบมากที่สุด และเขากินอาหารโปรดนั้นบ่อยแค่ไหน
- คุณได้ทานอาหารพิเศษอะไรบ้างใหม่เวลาที่มีเทศกาลสำคัญเช่น วันเกิดของคุณ หรือของสมาชิกในครอบครัว (ถ้ามี) อาหารพิเศษนั้น ได้แก่อะไรบ้าง คุณไปทานที่ไหน ทานอาหารเหล่านี้บ่อยแค่ไหน และอาหารเหล่านี้มีผลต่อสุขภาพของเด็กของคุณอย่างไรบ้าง
- คุณได้สอนอะไรบ้างเกี่ยวกับอาหารที่เหมาะสมและมีประโยชน์ต่อสุขภาพให้แก่เด็กของคุณ
- ในความคิดเห็นของคุณ อาหารสุขภาพคืออะไร

กิจกรรมการออกกำลังกาย และกิจกรรมที่ไม่มีมีการเคลื่อนไหวร่างกาย

- สุขภาพหมายถึงอะไร ในความคิดเห็นของคุณ
- เด็กของคุณทำอะไรบ้างในวันหยุดเสาร์-อาทิตย์
- คุณมักจะใช้เวลาวางยามพักผ่อนกับเด็กของคุณอย่างไร และใช้เวลานานแค่ไหน
- กิจกรรมที่ไม่ต้องเคลื่อนไหวร่างกายที่เด็กของคุณชอบมีอะไรบ้าง และกิจกรรมเหล่านี้มีผลกระทบต่อชีวิตของเด็กอย่างไร (ถามเจาะผลกระทบต่อการเรียนหนังสือ) และคุณแนะนำเด็กของคุณอย่างไร
- คุณชอบออกกำลังกายหรือไม่ ชอบออกกำลังกายประเภทไหน เพราะอะไรถึงชอบ มักจะไปออกกำลังกายกับใคร และไปออกกำลังกายบ่อยแค่ไหน

- คุณมีความคิดเห็นอย่างไรกับการออกกำลังกายเป็นประจำ และ/หรือ การกินอาหารสุขภาพ คุณเชื่อไหมว่าการทำสิ่งเหล่านี้สามารถควบคุมโรคเบาหวานได้ ทำไม่ถึงเชื่อ/ไม่เชื่อ

3. ความเข้าใจเรื่องโรคเบาหวานชนิดที่ 2

- คุณรู้จักโรคเบาหวานไหม มันเป็นอย่างไร (ถามเจาะ ความหมายและทัศนคติต่อโรคนี้)
- ทำไมคนถึงเป็นเบาหวานได้ อะไรเป็นสาเหตุที่สำคัญที่สุดที่ทำให้เกิดโรคเบาหวาน
- คุณคิดว่าโรคเบาหวานสามารถรักษาให้หายขาดได้หรือไม่ เพราะอะไร
- การรักษาโรคเบาหวานทำอย่างไร คนเราสามารถป้องกันโรคนี้ได้หรือไม่
- มีใครบ้างใหม่ในครอบครัวที่เป็นเบาหวาน และตอนนี้เขาเป็นอย่างไรบ้าง
- คุณมีเพื่อนที่เป็นเบาหวานหรือ เพื่อนที่มีลูกเป็นเบาหวาน หรือไม่ และความสัมพันธ์ของคุณกับเพื่อนเป็นอย่างไร
- ** ในความคิดเห็นของคุณ เด็กของคุณเป็นเบาหวานได้อย่างไร (ถามเจาะ บัญญัติเสียง หรือสถานการณ์ที่มีผลกระทบต่อวิถีชีวิตหรือพฤติกรรม)
- ** เมื่อคุณทราบว่าเด็กของคุณเป็นเบาหวาน คุณปฏิบัติต่อเด็กของคุณเปลี่ยนไปจากเดิมหรือไม่ อย่างไร
- ** คุณเข้าใจสภาพหรือข้อจำกัดของเด็กที่เป็นเบาหวานของคุณหรือไม่ อย่างไร
- ** คุณช่วยเหลือประสบการณ์ที่อยู่กับเด็กที่เป็นโรคเบาหวานชนิดนี้
- ** อาการเริ่มแรกที่ทำให้เด็กของคุณต้องไปหาหมอคืออะไร และเกิดอะไรขึ้นในเวลาต่อมา
- ** หลังจากเด็กของคุณได้รับการวินิจฉัยว่าเป็นเบาหวานแล้ว มีการเปลี่ยนแปลงที่เกี่ยวกับอาหารที่เด็กได้รับประทานหรือไม่ อย่างไร และเพราะอะไร
- ** คุณคิดอย่างไรเกี่ยวกับอาหารที่คุณหมอนแนะนำให้เด็กของคุณรับประทาน เด็กรับประทานได้หรือไม่ เพราะอะไร
- ** คุณให้ความช่วยเหลือเด็กของคุณในการจัดการกับโรคเบาหวานอย่างไร

4. การดูแลตนเองเกี่ยวกับเบาหวาน (สำหรับผู้ปกครอง / สมาชิกครอบครัวของเด็กวัยรุ่นเบาหวาน)

- ใครเป็นตัวหลักในการดูแลเด็กเบาหวานของคุณ มีสมาชิกคนอื่นในครอบครัวที่ช่วยในการดูแลหรือไม่ และมีวิธีการดูแลอย่างไร
- การดูแลเด็กเบาหวานของคุณมีผลกระทบต่อชีวิตประจำวันของคุณหรือไม่ อย่างไร (ถามเจาะ ผลกระทบต่อกิจกรรมปกติที่ทำเป็นประจำ)
- คุณพบความยากลำบากอะไรบ้าง ในการดูแลเด็กที่เป็นโรคเบาหวาน
- เด็กของคุณเคยนอนพักรักษาตัวที่โรงพยาบาลหรือไม่ เกิดอะไรขึ้นในตอนนั้น
- คุณได้มีส่วนช่วยส่งเสริมหรือสนับสนุนการดูแลตนเองเกี่ยวกับโรคเบาหวานของเด็กอย่างไร
- คุณรู้สึกอย่างไรเมื่อคุณหมอบอกว่าเด็กของคุณเป็นเบาหวาน และต่อมาเกิดอะไรขึ้น
- เด็กของคุณเคยมีระดับน้ำตาลในเลือดต่ำ หรือสูงไหมคะ มีอาการอย่างไร เวลามีอาการดังกล่าว คุณหรือสมาชิกอื่นๆในครอบครัวเข้าใจไหมว่าเด็กเป็นอะไร และให้ความช่วยเหลืออย่างไร
- มีอุปสรรคอะไรบ้างในการติดตามการรักษาอย่างต่อเนื่อง (ถามเจาะ การควบคุมน้ำตาลในเลือด/ การกินยา/ การฉีดอินซูลิน) คุณมีวิธีจัดการกับอุปสรรคเหล่านี้ได้อย่างไร
- อะไรบ้างที่เป็นอุปสรรคต่อการควบคุมเบาหวานของเด็กของคุณ (ถามเจาะ อาหาร/ การออกกำลังกาย/ การลดน้ำหนัก/ การตรวจวัดน้ำตาลในเลือดด้วยตนเอง) เด็กของคุณจัดการกับอุปสรรคเหล่านี้ได้อย่างไร คุณมีส่วนช่วยอะไรบ้าง
- ความสัมพันธ์ของคุณกับคุณหมอ พยาบาลและทีมงานที่ให้การดูแลรักษาเด็กของคุณ เป็นอย่างไรบ้าง และคุณอยากได้ความช่วยเหลือสนับสนุนแบบไหนจากบุคลากรทางการแพทย์เหล่านี้
- คุณคิดว่าทางโรงพยาบาลควรจัดให้มีบริการอะไรที่เหมาะสมกับผู้ป่วยวัยรุ่นเบาหวานชนิดที่ 2

ชุดที่ 3 : สำหรับบุคลากรทางการแพทย์

- คุณทำงานเกี่ยวกับการดูแลผู้ป่วยเด็กเบาหวานมานานแค่ไหน ช่วยกรุณาเล่าประสบการณ์ในการทำงานที่เกี่ยวข้องกับผู้ป่วยเด็กเบาหวาน
- มีการรักษาที่เฉพาะสำหรับผู้ป่วยกลุ่มนี้บ้างหรือไม่ ได้แก่อะไรบ้าง
- คุณรู้สึกอย่างไรเมื่อผู้ป่วยเด็กเบาหวานไม่สามารถควบคุมระดับน้ำตาลในเลือดให้อยู่ในระดับที่ต้องการได้ และคุณทำอย่างไรต่อไป
- อะไรบ้างที่เป็นอุปสรรคต่อการควบคุมเบาหวานของผู้ป่วยเด็ก (ถ้ามี) อาหาร/ การออกกำลังกาย/ การลดน้ำหนัก/ การตรวจวัดน้ำตาลในเลือดด้วยตนเอง) คุณช่วยจัดการอย่างไรกับปัญหาเหล่านี้
- อะไรคือความยากลำบากในการดูแลเด็กเบาหวาน
- มีปัจจัยอะไรบ้างที่ทำให้เด็กเบาหวานไม่ให้ความร่วมมือในการรักษาเบาหวาน
- คุณอยากได้ข้อมูลอะไรบ้างจากผู้ป่วยเด็กเบาหวาน เพื่อจะช่วยให้เข้าใจผู้ป่วยมากขึ้น และช่วยให้การรักษาโรคนี้ได้ดีขึ้น
- ผู้ป่วยเด็กเบาหวานควรจะมีควารู้อะไรบ้างเกี่ยวกับเบาหวานของเขา
- คุณทราบไหมว่าผู้ป่วยเด็กเบาหวานรู้สึกอย่างไรเกี่ยวกับโรคของเขา
- คุณคิดว่าทางโรงพยาบาลควรจัดให้มีบริการอะไรที่เหมาะสมกับผู้ป่วยวัยรุ่นเบาหวานชนิดที่ 2

ชุดที่ 4 : สำหรับคนปรุงอาหารในครอบครัว

(เฉพาะคำถามที่มีเครื่องหมาย (**) จะใช้ถามเฉพาะครอบครัวของเด็กเบาหวาน)

- อาหารชนิดใดที่คุณปรุงบ่อยๆ ให้กับครอบครัว คุณเลือกใช้วัตถุดิบหรือส่วนผสมในการปรุงอาหารอย่างไร และมักซื้อจากแหล่งใด
- อาหารโปรดปรานที่สุดของเด็กของคุณได้แก่อะไร และเด็กรับประทานบ่อยแค่ไหน
- คุณเป็นผู้ปรุงอาหารพิเศษเวลามีงานเทศกาลต่างๆ เช่น งานวันเกิดหรืองานเลี้ยงปีใหม่ ใช่หรือไม่ อาหารพิเศษนั้นได้แก่อะไรบ้าง และคุณปรุงบ่อยแค่ไหน
- ** หลังจากเด็กของคุณได้รับการวินิจฉัยว่าเป็นเบาหวานแล้ว มีการเปลี่ยนแปลงที่เกี่ยวกับอาหารที่คุณปรุงให้เด็กรับประทานหรือไม่ อย่างไร และเพราะอะไร)
- ** คุณคิดอย่างไรเกี่ยวกับอาหารที่คุณหมอบรรณาให้เด็กเบาหวานของคุณรับประทาน เด็กรับประทานได้หรือไม่ เพราะอะไร

APPENDIX 5.2

INTERVIEW GUIDELINE [ENGLISH]

A) For Adolescents with and without T2DM

Please note that these interview guides will be used for interviewing participants with and without T2DM. Only the questions with asterisk marks in themes 1-3 and all questions in theme 4 will be used for diabetic participants.

1. Social relationships

- Could you please tell me about your family (friends, school and activity)? Who lives with you? What is your relationship with them like?
- Who is a key person in your family? How does s/he influence your life?
- Have you had any conflicts with your family? With whom? Why did these conflicts happen? How did you solve the problems?
- How do friends affect your life? (Probe for peer pressure/ support and social activities).
- Whom do you prefer to consult when having a problem? Why? How does (s)he help you? Please tell me some examples.
- ** How was your life before having diabetes? What happened next?
- ** How did you feel at that time when the doctor told you had diabetes? How did you feel later?

2. Lifestyle behaviours

Food and eating

- What are your favourite foods? When do you eat them? And who makes them? (Probe for eating out and with whom?).
- Could you please tell me what foods are good or bad for diabetics / healthy people?
- Do you have any special foods for special events such as your birthday or birthday of others? What are the special foods? Where do you eat? How often do you eat these foods? How do they affect your health?
- Do food advertisements on TV such as KFC, Pizza and etc. influence making your decision for buying food? How?

Physical and sedentary activities

- What does the word “health” mean to you?
- What do you think about your body shape?
- Do you have any experiences with weight reduction? If so, what do you do? What have been the results?
- What are your main activities at home? (house tasks, hobbies, entertainments). Do you enjoy doing these? Why?
- How do you prefer to spend your leisure time? How long do you spend for that?
- Do you like exercises? What types of exercises do you like? Why? And how often?
- What do you think about doing exercises regularly and/or eating healthy food? Do you believe doing these things can control diabetes? Why?
- What sedentary activities do you prefer to perform? How do they affect your life? (Probe for studying).

3. *Understanding of T2DM*

- How do you understand diabetes? (Probe for meaning and attitude).
- Why do people get diabetes? What is the most important cause of diabetes?
- Can diabetes be cured or not? Why?
- What is the treatment of diabetes? How do people prevent this disease?
- Do you have any friends who have diabetes? What do you think about them? What do you think how do they feel? How do you support them?
- ** In your view, how did you get diabetes? (Probe for risk factors or situations affecting lifestyle or behaviour). Is there anyone in your family who have diabetes? Who else? How is s/he now?
- ** Could you please tell me about your experience of living with diabetes? (Probe for symptoms or complications such as eye/ kidney/ liver/ disease, high blood pressure, high blood lipids and etc.)
- ** How does diabetes affect your everyday life? (Probe for the ways in which and how it affects usual activities)
- ** What was the first symptom which leads you to see a doctor? What happened next?

- ** Have you ever had low blood sugar or high blood sugar? What happened? Did other people or friends understand?
- ** What are your feelings about using needles/ self injectors/ blood testing? (this question for those who use insulin)
- ** What do you find difficult about having diabetes?
- **What factors support / prevent your self-care?
- ** Have there been any changes in the food you eat after being diagnosed with T2DM? Why?
- ** What do you think about the diet the doctor has advised you to eat? Are you OK with this food? Why?

4. *Non-adherence to medical treatment (for the diabetics only)*

- Who primarily helps you with diabetes? In what way? (Probe for going to hospitals / doctor's appointments)
- How does your family support you? (Probe for parents or siblings).
- Do you get support from other people? (Probe for friends and health care providers). How do they help you? How do you feel about their support?
- What happens at your follow-up appointments? How often do you miss doctors' appointments? Why?
- What are the difficulties with following medical treatments? (Probe for: oral medications / insulin injection /). How do you deal with these?
- What are the barriers to controlling diabetes? (Probe for: diet / exercise / weight / glucose monitoring). How do you deal with these?
- What is your relationship with your doctor and other health staff? What kind of support do you want from health care providers?

B) For Family Members

Please note that these interview guides will be used for interviewing parents with and without diabetic children. Only the questions with asterisk marks in themes 1-3 and all questions in theme 4 will be used for parents of diabetic children.

1. *Family relationship*

- Please tell me about your children
- What is your relationship with your children like?

- If any conflicts occur between the young child and his/her sibling? What do you do?
- Do you have any friends who have diabetic children? If so, do you have any activities that you do together

2. Lifestyle and behaviours

Food and eating

- Who mainly cooks for the whole family? What food does your child like most? How often does s/he eat that food?
- Do you have any special foods for special events such as your birthday or birthday of others? What are the special foods? Where do you eat? How often do you eat these foods? How do they affect your child?
- What do you do about teaching your children about appropriate food?
- What is a healthy diet for you?
- ** Have there been any changes in the food your child eats after being diagnosed with T2DM? Why?
- ** What do you think about the diets the doctor has advised your child to eat? Is s/he OK with this food? Why?

Physical and sedentary activities

- What does the word “health” mean to you?
- What does your child do on weekends?
- How do you prefer to spend your leisure time with your child?
- Do you like exercises? What types of exercises do you like? Where?, How often? Why do you like this exercise?
- What sedentary activities does your child prefer to perform? How do they affect the child’s life? (Probe for studying) How do you suggest them?
- What do you think about doing exercises regularly and/or eating healthy food?

3. Understanding of T2DM

- How do you understand diabetes? (Probe for meaning and attitude).
- Why do people get diabetes? What is the most important cause of diabetes?
- How do people control diabetes?
- Is there anyone in your family who has had diabetes? Who else? How is s/he now?

- Can diabetes be cured or not? Why?
- What is the treatment of diabetes? How do people prevent this disease?
- Do you have any friends having diabetes or a diabetic child? What is your relationship with them like?

4. Diabetes self-management (for parents of a diabetic child)

- In your view, how did your child get diabetes? (Probe for risk factors or situations affecting lifestyle or behaviour).
- Have you treated your child differently since you have found out his/her diabetes? How?
- How do you understand your child's condition?
- How do you help your child manage his/her diabetes?
- Are there others in your family who can help you manage your child with diabetes? How?
- When a doctor told you that your child had diabetes, how did you feel at that time? What happened next?
- Has your child ever had low blood sugar or high blood sugar? What happened? Did other people or the child's friends understand?
- How do you and other members cope with the situation of having a diabetic child?
- What do you find difficult about having a diabetic child?
- What is the worst thing about taking care of your child with diabetes? Any hospitalisation?
- What are the difficulties with following medical treatments? (Probe for: oral medications / insulin injection). How do you deal with these?
- What are the barriers to controlling diabetes? (Probe for: diet / exercise / weight / glucose monitoring). How do you deal with these?
- What kind of support do you want from health care providers?
- What hospital services should be available for young patients with T2DM?

C) For Health Care Providers

- How long have you worked with young patients with diabetes? Please tell me about your experiences with the diabetics.
- Are there any specific treatments for these patients? What are they?
- What do you feel when the young diabetics cannot control their blood sugar levels?
- What are the difficulties about taking care of children with diabetes?
- Which factors lead to poor compliance among the young diabetics?
- What information do you need about your patients in order to understand and manage this disease successfully?
- What should patients know about their diabetes?
- Do you know how do young patients feel about their diabetes?
- What are the barriers to controlling diabetes? (Probe for: diet / exercise / weight / glucose monitoring). How do you deal with these?
- How do you tell them when they have poor blood sugar control?
- What hospital services should be available for young patients with T2DM?

D) For the Family Cooks

(Only the questions with asterisk marks will be used for the diabetic family.)

- What food do you cook often for the whole family? Do you use fresh or prepared foods?
- What food does the adolescent like most? How often does s/he eat that food?
- Do you cook any special foods for special events such as a birthday party or New Year celebration? What and how often do you cook those foods?
- ** Have there been any changes in the food that you cook after the adolescent got diabetes? Why?
- ** What do you think about the diet the doctor has advised the diabetic child to eat? Is s/he OK with this food? Why?

APPENDIX 6.1

STUDY QUESTIONS [THAI]

Code NO: _____ Age _____ Gender _____ Ed. Level _____ Hometown _____

Collection Date _____ Time _____ Place _____ Interviewer _____

คำถามเกี่ยวกับอาหารและกิจกรรมยามว่าง

ประเด็นคำถาม	อะไร (ชนิด)	บ่อยแค่ไหน	มาก/นาน แค่ไหนที่ไหนกับใคร	ผลต่อสุขภาพ
อาหารโปรด ที่กินบ่อย						
อาหารสุขภาพ ที่กินบ่อย						
Fast food ที่กินบ่อย						
ขนมขบเคี้ยว ที่กินบ่อย						
Exercises ที่ออกบ่อย						
กิจกรรมยามว่าง ที่ทำบ่อย						

APPENDIX 6.2

STUDY QUESTIONS [ENGLISH]

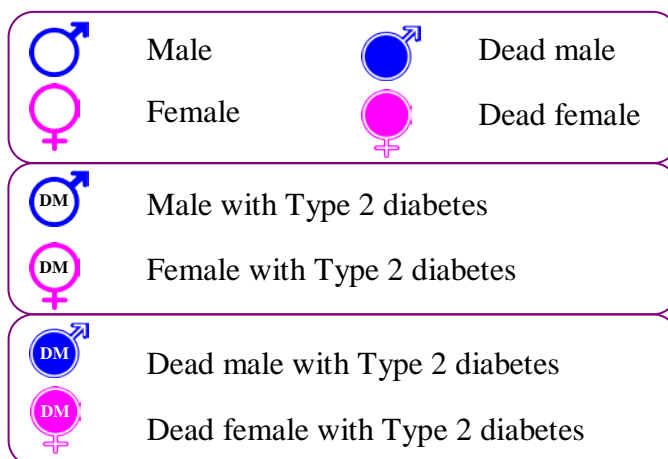
Code NO: _____ Age _____ Gender _____ Ed. Level _____ Hometown _____
 Collection Date _____ Time _____ Place _____ Interviewer _____

Questions about food and activities in spare time

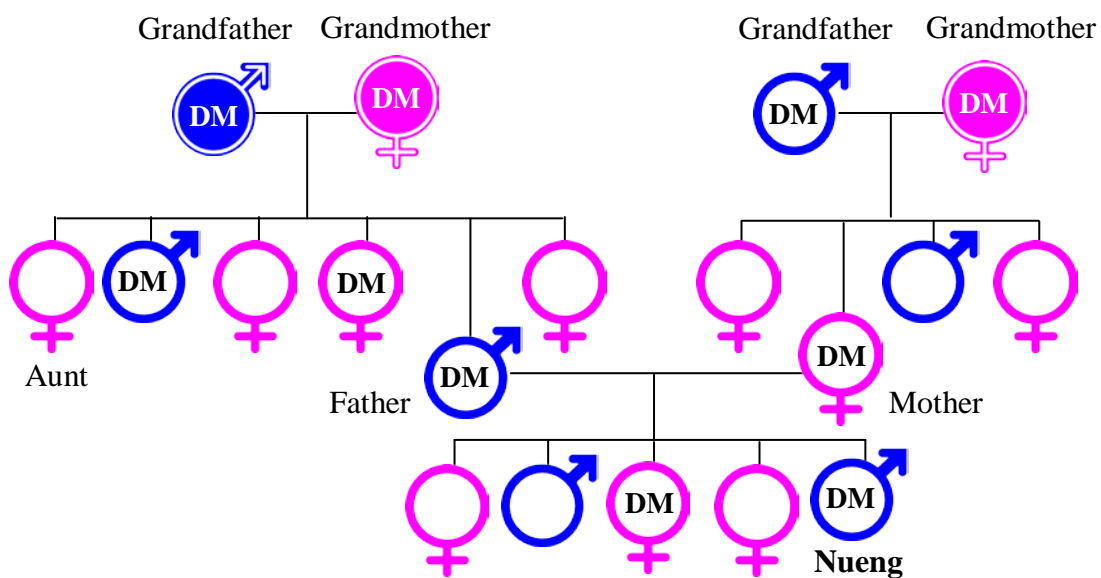
Issues	What type	How often	How much/long	Where	With whom	Effect on your health
Favourite food						
Healthy food						
Fast food						
Snacks						
Exercise						
Activity in your spare time						

APPENDIX 7

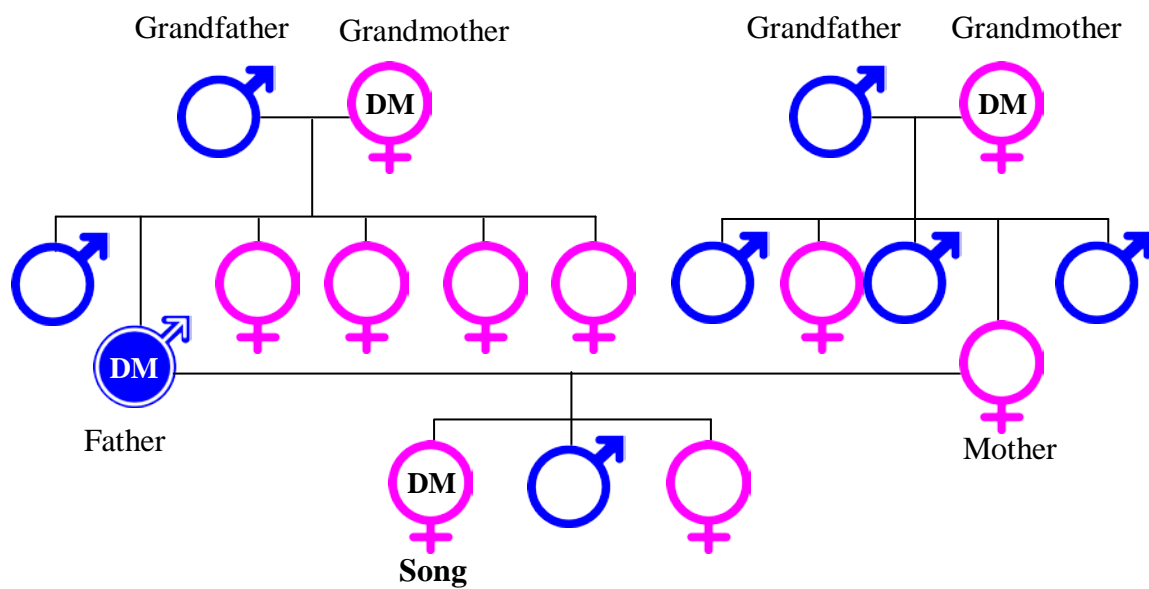
PARTICIPANTS' GENEALOGY



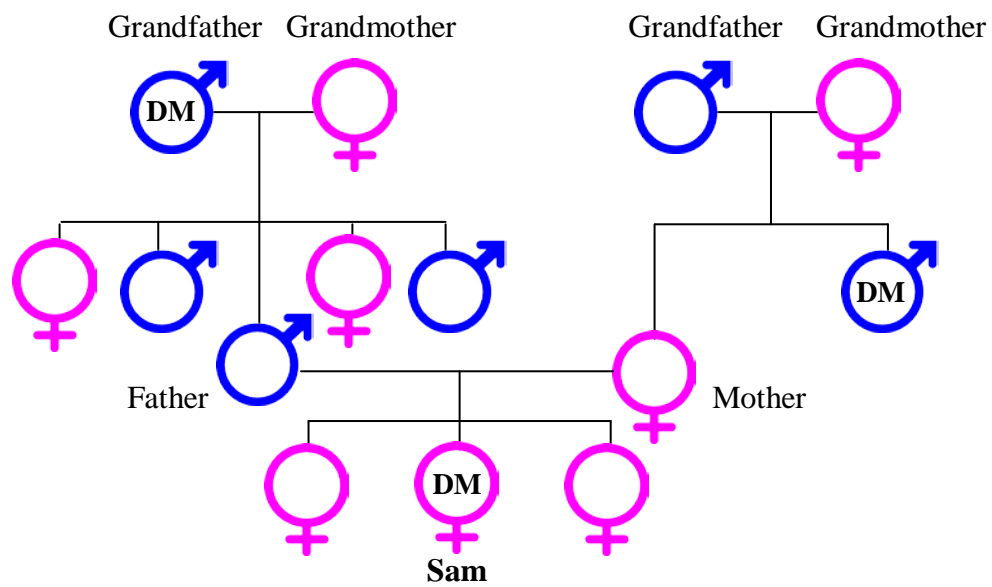
7.1 Nueng's lineage



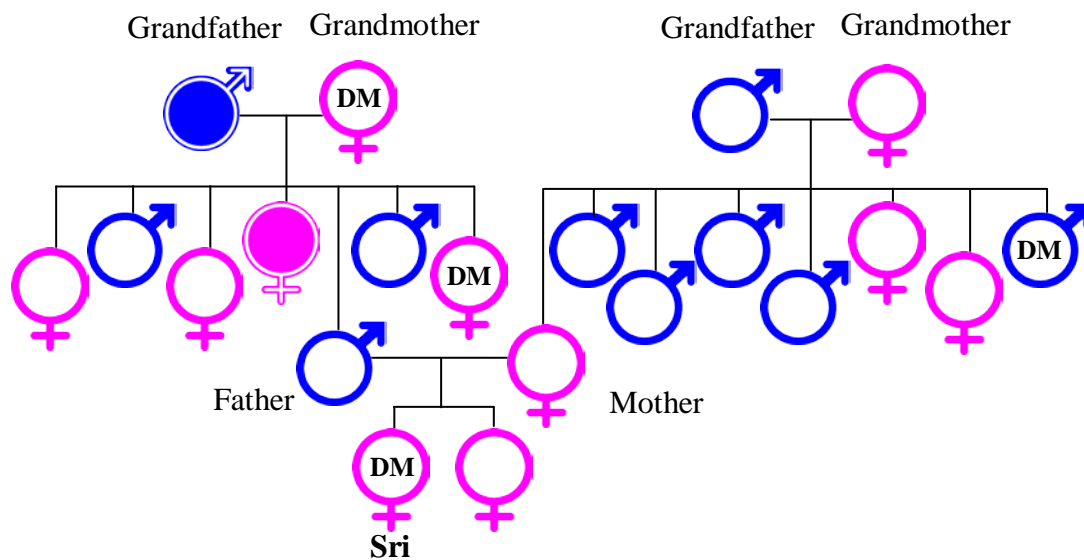
7.2 Song's lineage



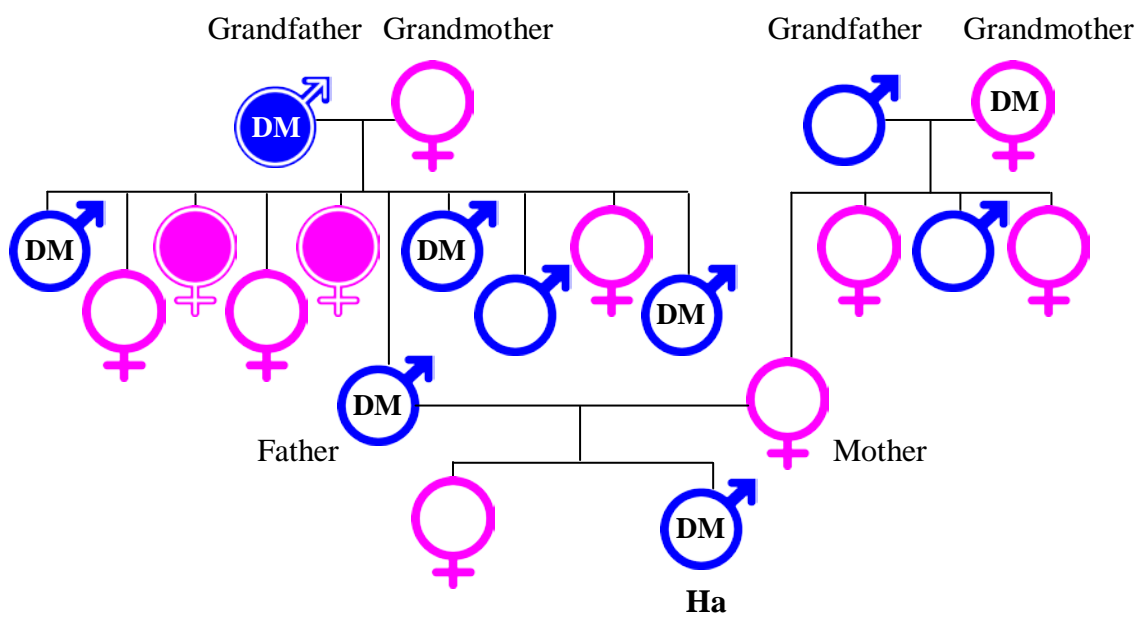
7.3 Sam's lineage



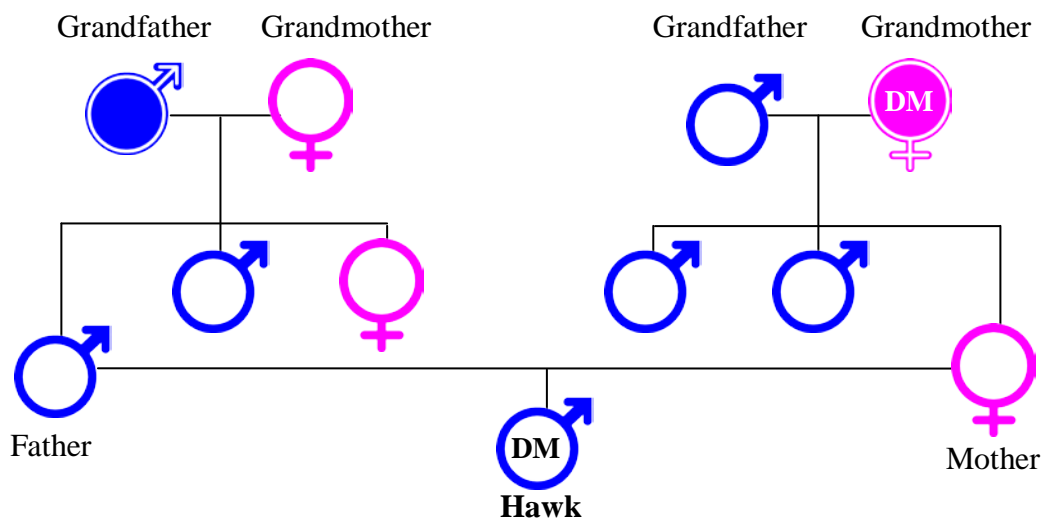
7.4 Sri's lineage



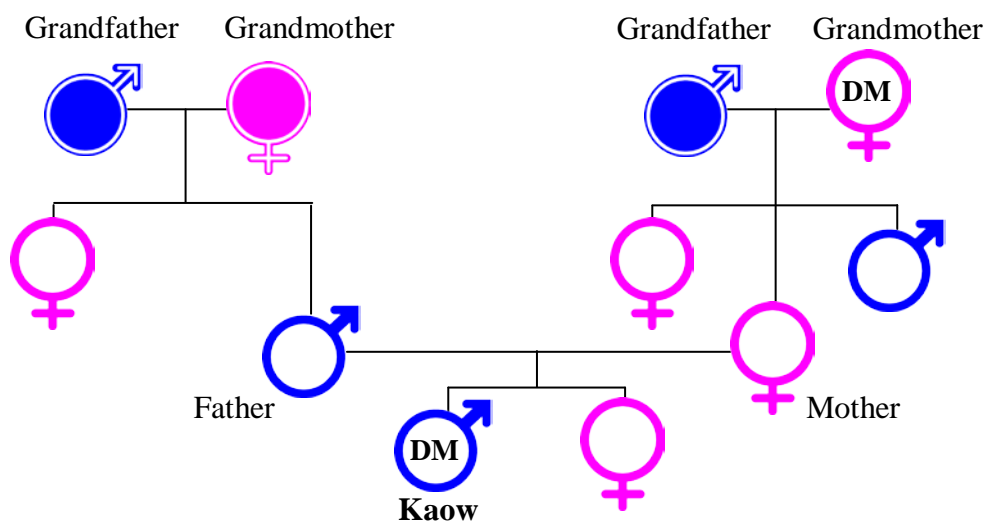
7.5 Ha's lineage



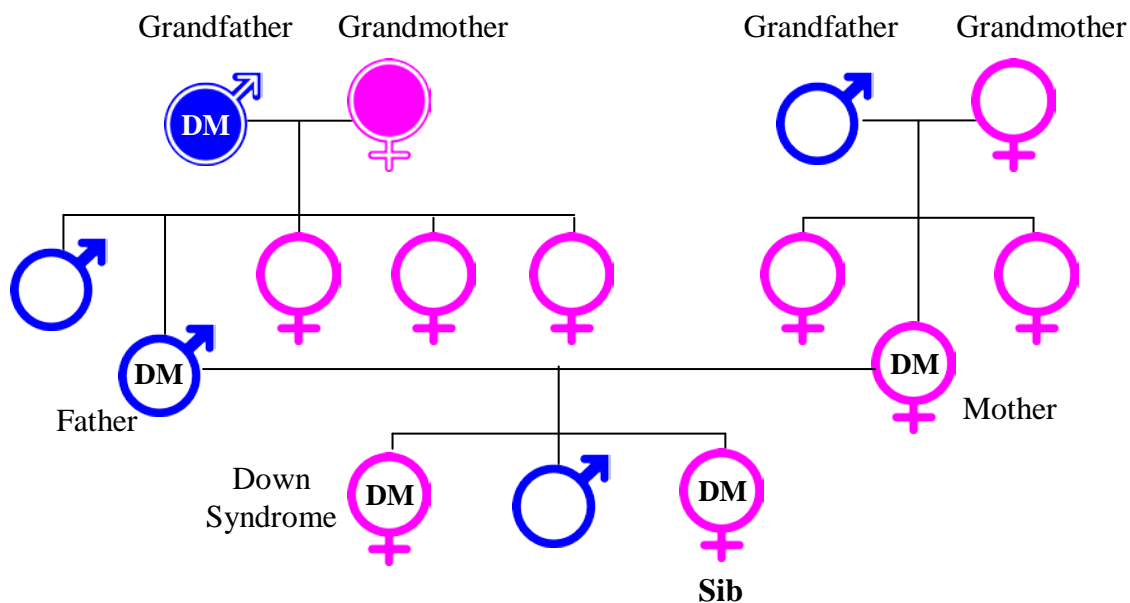
7.6 Hawk's lineage



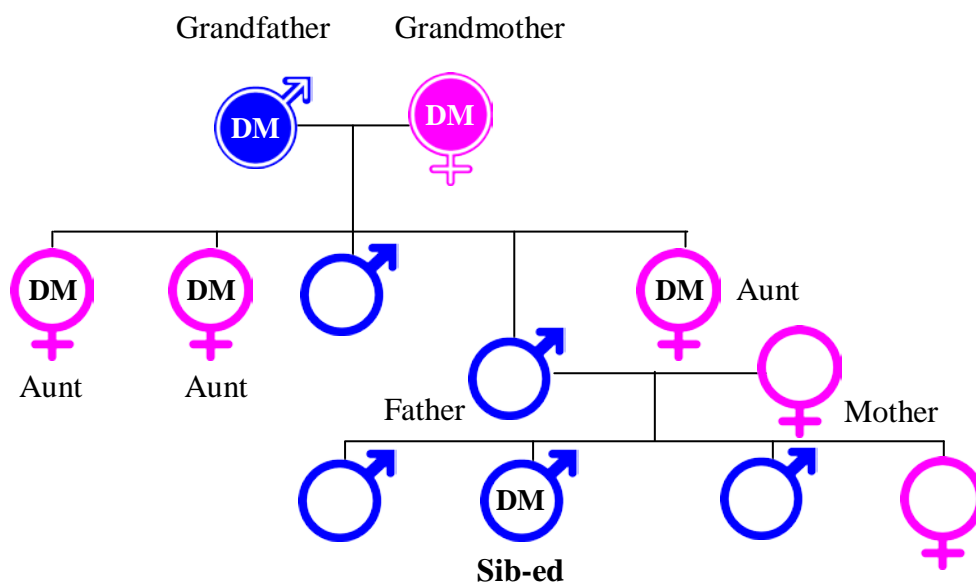
7.7 Kaow's lineage



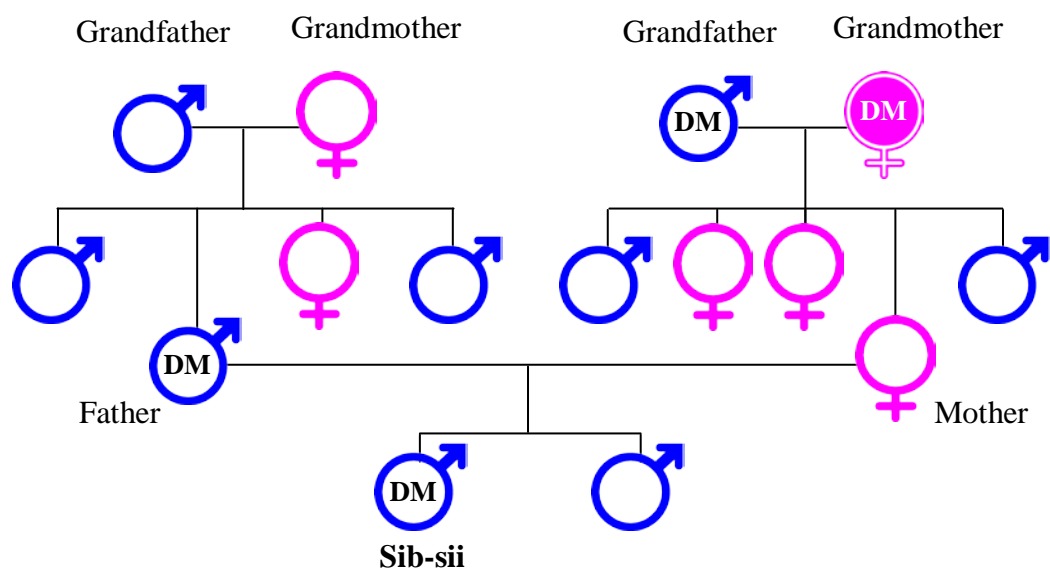
7.8 Sib's lineage



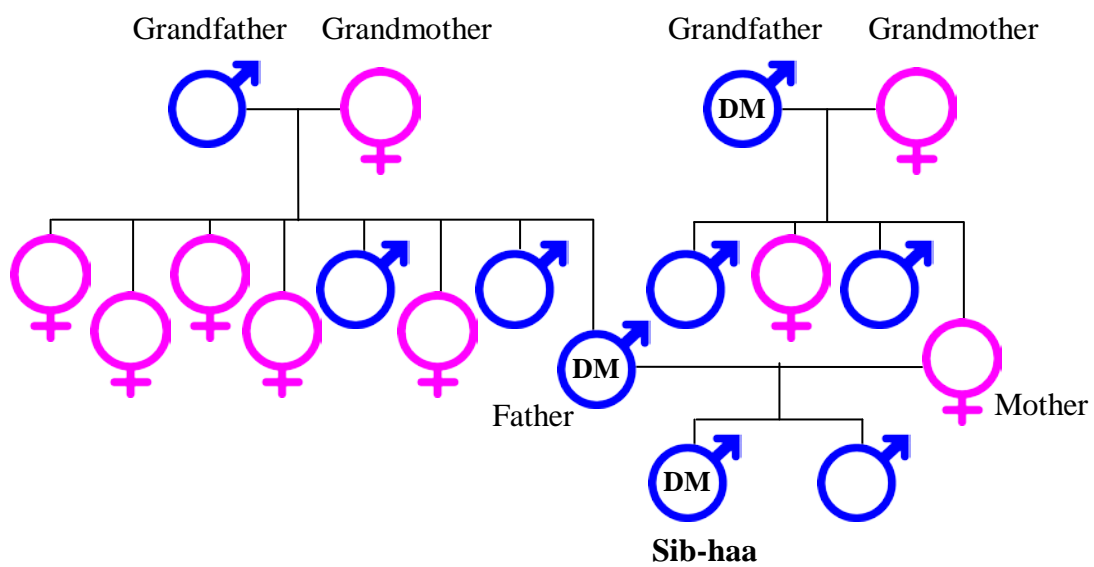
7.9 Sib-ed's lineage



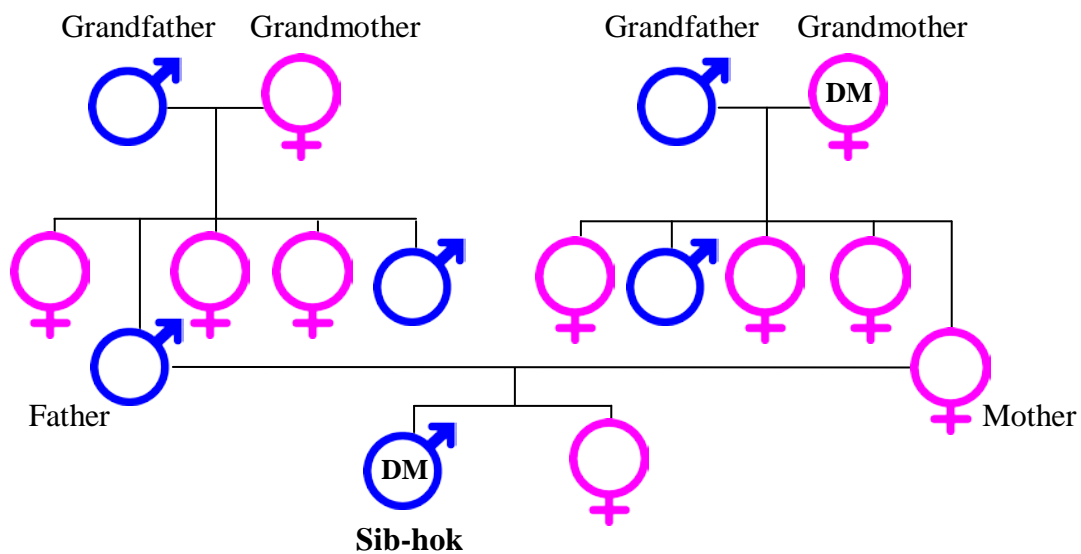
7.12 Sib-sii's lineage



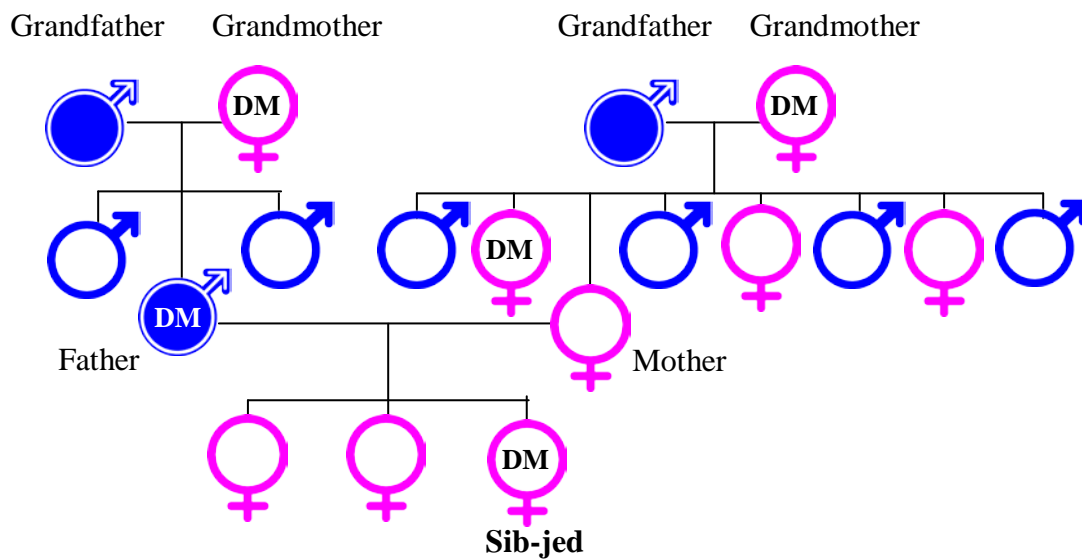
7.13 Sib-haa's lineage



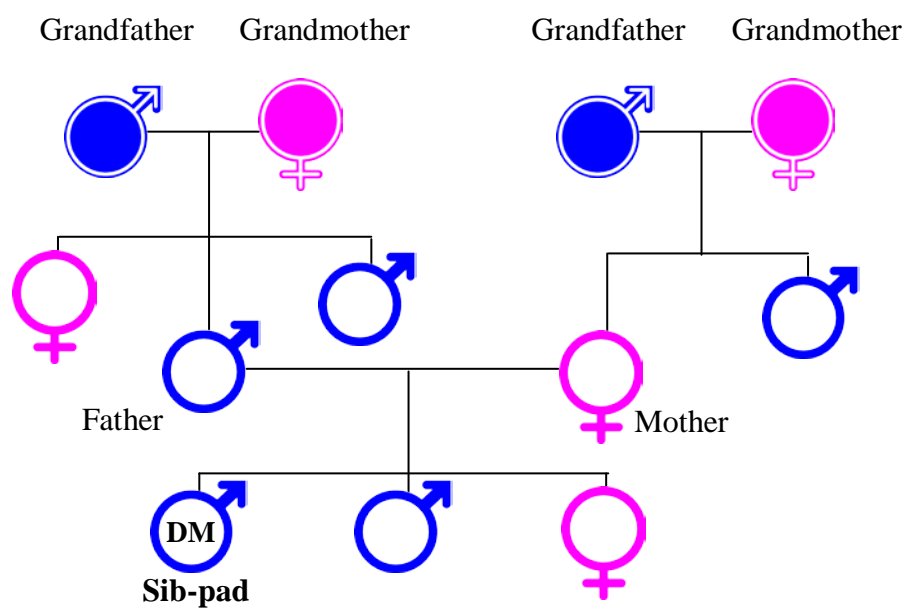
7.14 Sib-hok's lineage



7.15 Sib-jed's lineage



7.16 Sib-pad's lineage



APPENDIX 8.1

Messages of “Jumbo Queens” from the website



ราชินีช้างประจำปี 2541 (“Jumbo Queen” in 1998)

ให้กำลังใจคนอ้วนว่า (providing an encouragement for obese people that)

" อย่าอายที่เราอ้วน เพราะเราอ้วนอย่างมีคุณค่า "

(“Don’t be shy even we are fat because we are fat but we are valuable”)



ราชินีช้างประจำปี 2542 (“Jumbo Queen” in 1999)

ให้กำลังใจคนอ้วนว่า (providing an encouragement for obese people that)

“เชื่อว่าผู้หญิงอ้วนก็ทำประโยชน์ได้ และในฐานะราชินีช้าง จะใช้ตำแหน่งช่วยเหลือช้างและอนุรักษ์ช้างให้ดีที่สุด”

(“I believe that obese women can do useful things and as my position of Jumbo Queen I will use this position to help and preserve Thai elephants the best”)

Source: <http://www.jumboqueen.com/detel/detel1.php>

Accessed on 20th October, 2010

APPENDIX 8.2

A beauty competition of overweight women “Jumbo Queen” (In Thai Rachinee chaang)



APPENDIX 9

TABLES OF DIABETES MANAGEMENT STYLES

	Sib-jed (F)*	Nueng (M)*	Sib-song (F)	Sib-sii (M)	Sib-pad (M)	Sam (F)	Hawk (M)	Sib-haa (M)
Management style	Thriving	Accommodate*	Accommodate	Accommodate	Accommodate	Accommodate	Indulging	Indulging
Age group	15-17	12-14	12-14	12-14	15-17	15-17	12-14	15-17
Child views of self	Healthy, NDM*, Chubby	Unwell, DM*, Not fat	Well, DM, Fat	Unwell, DM, Fat	Unwell, NDM, Fat	Unwell, DM, Fat	Well, NDM, Fat	Unwell, NDM, Fat
Child views of illness impact	Unaffected	Affected	Unaffected	Unaffected	Unaffected	Unaffected	Unaffected	Unaffected
Family focus	Body image/Study	Diabetes	Body image	Diabetes	Study	Study/Career	Activities	Study
Self-ability	High confidence	High Confidence	High confidence	Low Confidence	Low Confidence	Low Confidence	Low Confident	Low Confident
Child's life goal	Body shape, Study, NDM	NDM, Job	Study, Body shape	Study	Study	NDM, Study	Job	Study
Self-practice	Proactive	Proactive	Passive	Passive	Passive	Passive	Passive	Reactive
Lifestyle change (score)	High (9.5)	High (7)	High (6)	High (6.5)	Moderate (5)	Low (4.5)	Low (3.5)	Low (3.5)

Diabetes management styles of 16 adolescents with type 2 diabetes (Continued)

	Sib-jed (F)	Nueng (M)	Sib-song (F)	Sib-sii (M)	Sib-pad (M)	Sam (F)	Hawk (M)	Sib-haa (M)
Weight	Normal	Normal	Obese	Obese	Obese	Obese	Obese	Obese
Blood sugar	Normal	Higher	Slightly high	Normal	Slightly high	High	Slightly high	Slightly high
Parenting style	Authoritative	Authoritative	Authoritative	Authoritative	Authoritative	Authoritative	Authoritative	Authoritarian
Caregivers' view of child	Normal, Not fat	Ill, DM, Not fat	Ill, DM, Fat	Ill, DM, Fat	Normal, NDM, Fat	Normal, DM, Fat	Normal, NDM, Fat	Normal, NDM, Fat
Caregivers' view of illness impact on child	Unaffected	Affected	Unaffected	Affected	Unaffected	Affected	Affected	Unaffected
Caregivers' involvement	Mother - continuous	Relative - continuous	Father - continuous	Both - continuous	Mother - continuous	Mother - continuous	Parents-discontinuous	Mother - discontinuous

(F) = Female; (M) = Male; DM = being diabetic; NDM = not being diabetic; Accommodate = Accommodating

Diabetes management styles of 16 adolescents with type 2 diabetes (Continued)

	Sib (F)*	Song (F)	Ha (M)*	Sib-hok (M)	Sib-sam (M)	Sri (F)	Sib-ed (M)	Kaow (M)
Management style	Indulging	Indulging	Indulging	Indulging	Indifferent	Indifferent	Indifferent	Indifferent
Age group	15-17	18-19	18-19	18-19	12-14	15-17	15-17	18-19
Child views of self	Well, DM, Fat	Well, DM, Fat	Well, DM*, Chubby	Unwell, NDM*, Fat	Unwell, NDM, Fat	Unwell, DM, Fat	Unwell, DM, Fat	Well, NDM, Fat
Child views of illness impact	Unaffected	Unaffected	Unaffected	Affected	Unaffected	Affected	Unaffected	Unaffected
Family focus	Study/Career	Body image	Social life	Study/Career	Playing games	Body image/weight	Social life	Social life
Self-ability	No confidence	Low Confidence	No confidence	Low Confidence	No confidence	No confidence	No confidence	Low Confidence
Child's life goal	Job, Diabetes control	Body shape, Job	Study, Job	Study	No idea	No idea	No idea	No idea
Self-practice	Reactive	Reactive	Reactive	Passive	Inactive	Inactive	Inactive	Inactive
Lifestyle change (score)	Low (2.5)	Low (4)	Low (2)	Low (4)	Low (2)	Low (0.5)	Low (1.5)	Low (1)

Diabetes management styles of 16 adolescents with type 2 diabetes (Continued)

	Sib (F)	Song (F)	Ha (M)	Sib-hok (M)	Sib-sam (M)	Sri (F)	Sib-ed (M)	Kaow (M)
Weight	Overweight	Overweight	Obese	Obese	Obese	Overweight	Obese	Obese
Blood sugar	High	High	High	Slightly high	High	High	High	High
Parenting style	Permissive	Permissive	Authoritarian	Authoritative	Neglecting	Neglecting	Neglecting	Neglecting
Caregivers' view of child	Healthy, DM, Fat	Normal, DM, Chubby	Normal, DM, Fat	Normal, NDM, Fat	Ill, NDM, Fat	Normal, DM, Fat	Normal, DM, Fat	Normal, DM, Fat
Caregivers' view of illness impact on child	Unaffected	Unaffected	Affected	Affected	Unaffected	Affected	Affected	Unaffected
Caregiver involvement	Mother - discontinuous	Mother - discontinuous	Parents - discontinuous	Parents - discontinuous	Nobody	Nobody	Nobody	Nobody

(F) = Female; (M) = Male; DM = being diabetic; NDM = not being diabetic

APPENDIX 10

PUBLICATIONS

10.1 Intensive self – management of diabetes: A family case study of Thai boy with type 2 diabetes

Oral Presentation at Asian Studies Association of Australia (ASAA) 17th Biennial Conference: Is this the Asian century? 1-3 July 2008, Sebel Albert Park Hotel, Melbourne, Australia

Abstract

Type 2 diabetes (T2DM) among young people is a global public health issue. The prevalence of T2DM in the young is continuously increasing, in parallel with the rising numbers of overweight or obese young people, in many Asian countries, including Thailand. A major finding of diabetes studies is poor diabetes control. This phenomenon also happens in Thailand in which either poor diabetes control in adult patients with T2DM or in adolescents diagnosed with type 1 diabetes (T1DM) has been reported in many qualitative studies. However, such research with Thai young people having T2DM has not been conducted.

This paper, based on my thesis, presents one example of good diabetes control. Based on in-depth interview and observation methods, the paper draws on one family case study to demonstrate how a young girl/boy and the family can successfully handle the disease and how the family context influences the ill child. Through thematic analysis, two assumptions have been identified. The first assumption is that primary care givers, who are seriously concerned about the disease and closely involved in diabetes management, are likely to successfully educate the ill children to be aware of food choice and eating behaviours, and assist the child with self – regulating their diabetes. The second one proposes that the perception of diabetes, which effectively induces the feeling of fear (i.e. being insulin injected and developing blindness) in the child's mind, can result in changing the behaviours.

10.2 Healthy lifestyle models: Thai adolescents with T2DM

Poster presentation at School of Psychology, Psychiatry and Psychological Medicine, Clayton, Monash University. 19 April, 2009

Abstract

Thailand is now facing a high incidence of childhood obesity and T2DM due to the exposure to an “obesogenic” environment. The ethnographic study aims to explore lifestyles that contribute to the development of T2DM and self-management among adolescents with (pre)diabetes, in Bangkok, Thailand. In-depth interview and observations were used to collect data from 16 adolescents (aged 12 - 19 years) with (pre)diabetes, and their caregivers. This paper illustrated the two different models of adjusting lifestyle and maintaining healthiness. The “Family-Support Model” showed the predominant influence of family support, while the “Self-Motivation Model” presented the outstanding of self-motivation, intention and self-control. This study has implications for both families and healthcare providers when counseling parents.

10.3 Lay understanding of type 2 diabetes: Thai adolescents and their caregivers

Poster presentation at the Society for Medical Anthropology Conference, "Medical Anthropology at the Intersections: Celebrating 50 Years of Interdisciplinarity," Yale University, New Haven, CT, 24-27 September, 2009

Abstract

In urban Thailand, there has been a dramatic increase in obesity and associated disease, including a sharp rise in the incidence of diabetes mellitus in young people. The therapeutic goal of diabetes treatment for young people requires co-operation among young patients, caregivers and physicians. In this ethnographic study, 16 adolescents with pre-diabetes and diabetes, and their main caregivers were interviewed to explore their explanations and experiences of diabetes. Children and adolescents benefit from caregivers' involvement to modify "unhealthy" lifestyles, adhere to drug administration and achieve optimal therapeutic outcomes. Lay explanatory models were constructed through the combination of respondents' past experiences, doctors' messages and diabetes-related knowledge acquired from family members, school, other patients and the media. Understandings of the aetiology, symptoms, pathophysiology, severity and treatment options of diabetes influenced disease management and behavioural modification. Young people and caregivers lacked comprehensive understanding, and this inhibited medical treatment and achievement of the optimal therapeutic outcomes. The investigation of adolescents' and caregivers' understandings of diabetes has generated data that may be helpful in aiding physicians to review which problems of their explanations need to be clarified to patients and their caregivers, and what knowledge and support should be provided to them.