Evaluation of a Mentoring Intervention for Public Health Nutrition Workforce Development

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Abstract

Public health nutrition is a field of practice that is concerned with the prevention of nutrition related disease and the maintenance of nutritional health of populations. Public health nutrition efforts are dependent on the capacity of the workforce to respond to priority issues. Developing the public health nutrition workforce is therefore a key strategy to build society's capacity to address public health nutrition challenges and improve health. The evidence available suggests that the public health nutrition workforce in Australia does not have the capacity to respond to current health and nutrition issues. On-the-job learning and mentoring have been proposed as strategies for practice improvement in public health nutrition. However there is limited evidence of their effectiveness. This study aimed to evaluate mentoring as a public health nutrition workforce development strategy.

Action research methodology embedded within an evaluation framework provided the approach from which to guide this research, which had three phases. Formative evaluation (phase 1) involved an iterative literature review to define the role and models of mentoring as well as in-depth interviews with 18 advanced-level public health nutritionists in Australia to explore the role of mentoring in competence development. The results of phase one were used to inform the intervention (phase 2). This involved a mentoring circle, defined by the literature, where one mentor worked with a group of mentees. Thirty two recently graduated dietitians participated in the intervention and self-selected to one of two face-to-face mentoring circles or the electronic (video-link) mentoring circle for those in rural areas. Participants were required to complete a learning plan and attend the mentoring circle, every six weeks, for two hours, over a six month period. Each session was structured similarly including written reflective practice and facilitated group discussion. After the six month intervention a subset of 12 of the initial participants requested to continue with the mentoring circle for an extended nine months (phase 3). The one mentor, the PhD candidate, facilitated all mentoring circles.

Process, impact and outcome evaluation data were obtained through mixed methodologies. A pre-intervention baseline questionnaire, estimation of time dedicated to public health nutrition

practice within the participants' work role and competence importance ranking were used. In-depth interviews with participants following the six month intervention, mentor reflections/observation diary and focus groups at the end of the extension phase added qualitative data. A competency self-assessment was designed and administered at baseline, post the six month mentoring intervention and 12 months post the completion of the intervention.

The process evaluation identified that the intervention met participants' expectations. The participants explained the intervention facilitated the sharing of ideas and strategies and promoted reflective practice. The important attributes of the mentor as having experience in and a passion for public health, facilitating a trusting relationship and providing effective feedback were described. The impact evaluation revealed that participants reported an increase of 15% ($p<0.05$) in the sum of self-reported competence during the six month intervention. Outcome evaluation showed that many participants described reorienting their practice towards population based prevention and increasing the time dedicated to public health nutrition within existing work roles by an average of 1.5 hours per week per participant, equating to an addition of 1.5 Effective Full Time (EFT) positions to the workforce.

This study revealed that mentoring is a potentially powerful experience for the public health nutrition workforce in Australia. Mentoring may be viewed as part of a multi-strategy approach to workforce development in public health nutrition in Australia that is focused on developing competencies and organisational supports for population based prevention in the practice setting.

Declaration

This thesis contains no material which has been accepted for the award of any other degree or diploma in any university or other institution. To my knowledge the thesis contains no material previously published or written by another person, except where due reference is made in the text of the thesis. The research was approved by the Monash University Standing Committee on Ethics in Research Involving Humans (CF07/3535 – 2006000593).

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List of Abbreviations

APD	Accredited Practising Dietitian
APHNAC	Australian Public Health Nutrition Academic Collaboration
CPD	Continuing Professional Development
DAA	Dietitians Association of Australia
EFT	Effective Full Time

Glossary

Capacity building	An approach to the development of sustainable skills, structures, resources and commitment to improvements in health and other sectors to prolong and multiply health gains. It increases the range of people, organisations and communities who are able to address health problems, and in particular, problems that arise out of social inequity and social exclusion[1].
Insider research	Involvement of the research and participants as active members of the research process[2].
Intervention	A strategic set of activities or strategies informed by the analysis of determinants aimed at bringing about change.
Mentoring	An enabling relationship that facilitates another's personal growth and development (and learning). The relationship is dynamic, reciprocal and can be emotionally intense. Within such a relationship the mentor assists with career development and guides the mentee through the organisational, social and political networks[3].
Practice improvement	The combination of professional and personal development and the reorientation of practices of the existing workforce. Practice improvement typically occurs post-graduation while practising in the field[4].
Public health nutrition	The promotion and maintenance of nutrition-related health and wellbeing of populations through the organised efforts and informed choices of society[5]. Public health nutrition encompasses community nutrition and is distinct from clinical and community dietetics whose focus is secondary and tertiary prevention with individuals and small groups rather than primary prevention in populations[6].
Workforce capacity	The ability of the workforce to effectively address public health nutrition issues in the population it serves[7]. Includes analysis of the size, practices and competencies[8].
Workforce development	Strategic investment of resources by organisations and communities in activities that reach and maintain a critical mass of human resources, develop organisational environments that enable and promote effective practices and enhance the competence of the workforce for more effective public health nutrition effort that achieves public health outcomes[9].

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Chapter 1

Mentoring for Public Health Nutrition Workforce Development

1.0. Preamble

This thesis evaluates mentoring as a public health nutrition workforce development initiative. Developing the public health nutrition workforce is a key strategy to build society's capacity to address public health nutrition challenges. It is therefore an essential component of efforts to improve population health.

The limited evidence available suggests that the public health nutrition workforce in Australia does not have the capacity to respond to current health and nutrition issues due to a range of factors[10, 11]. Mentoring is acknowledged as an effective educational strategy and has been recognised as a major determinant of public health nutrition competence development among advanced level public health nutritionists[12]. The effectiveness of mentoring as a workforce development intervention in public health nutrition has not been explored and there is limited evidence linking mentoring to improvements in practice, competence or workforce capacity.

This research aims to explore and evaluate mentoring as a post-graduate workforce development initiative and to bridge the gap between the current level of understanding of the determinants of workforce capacity and strategies to address perceived deficits. This chapter sets the context for the research, and outlines the potential significance of this research for workforce development.

1.1. Background and Justification to the Research

1.1.1. Burden of preventable chronic disease and the importance of public health nutrition

Preventable chronic diseases, such as obesity, type 2 diabetes, cardiovascular disease, renal disease and some cancers are the leading causes of death and disability in developed countries across the world[13]. There is growing evidence to support a population-based prevention or public health approach to address this burden of disease[13]. Public health is defined as 'efforts organised by society to protect, promote and restore the people's health through collective or social actions'[13(page 531)]. Population based prevention approaches aim to effect the underlying determinants of a health problem rather than simply the treatment of symptoms[13]. The rising prevalence of preventable chronic diseases has lead to a greater emphasis on the importance of a public health or a prevention approach to disease. Prevention of chronic disease has the potential to reduce the cost, both personal and economic, to society of ill health from this disease burden[13].

The public health workforce is an important determinant of society's capacity to address population health issues and prevent this burden of chronic disease. The public health workforce is the section of society that is largely responsible for 'organising the effort' as it rarely occurs spontaneously. This workforce faces great challenges in being able to address current and future population health issues. Internationally, this workforce capacity is inadequate due the lack of sufficient and adequately skilled professionals[14].

1.1.2. Need for organised effort

Optimal nutrition is a fundamental determinant of public health. A healthy diet has been identified as a key modifiable risk factor for obesity, type 2 diabetes, cardiovascular disease and some cancers, and as such, public health efforts to improve the intake of nutritious food have significant potential to improve population health[15]. This recognition has prompted governments worldwide to develop national plans that prioritise action required to improve the public's health through nutrition[16]. In Australia *Eat Well Australia* provides the strategic plan for national public health nutrition action[17]. These action plans provide evidence for the need for an organised effort to address nutrition related disease internationally with a focus on priority nutrition issues such as obesity and describe or recommend the work required to address the populations nutrition needs. Despite their detailed descriptions of the work required, few of these published plans identify who will do this work or the need to develop the public health nutrition workforce to effectively be able to deliver interventions aimed at reducing the burden of nutrition related disease[16]. Without a focus on capacity for implementation, these plans area at risk of being ineffective[16].

1.1.3. Workforce as a key determinant for action to improve public health

Figure 1.1 illustrates the framework that links public health nutrition problem identification and prioritisation with workforce development. This framework describes a sequential process for identifying public health nutrition workforce development needs. Identification of priority public health nutrition problems is the first step from which the work needed can be more clearly defined. The differential in the work needed and capacity to do the work identifies the workforce development needs. Workforce development needs are further defined by factors previously identified in the literature as determinants of workforce development[4]. The first three steps in this framework (public health nutrition problems, priority best buys, work needed) are largely covered by national action plans however the workforce development stages relevant to strategy implementation are largely unaddressed.

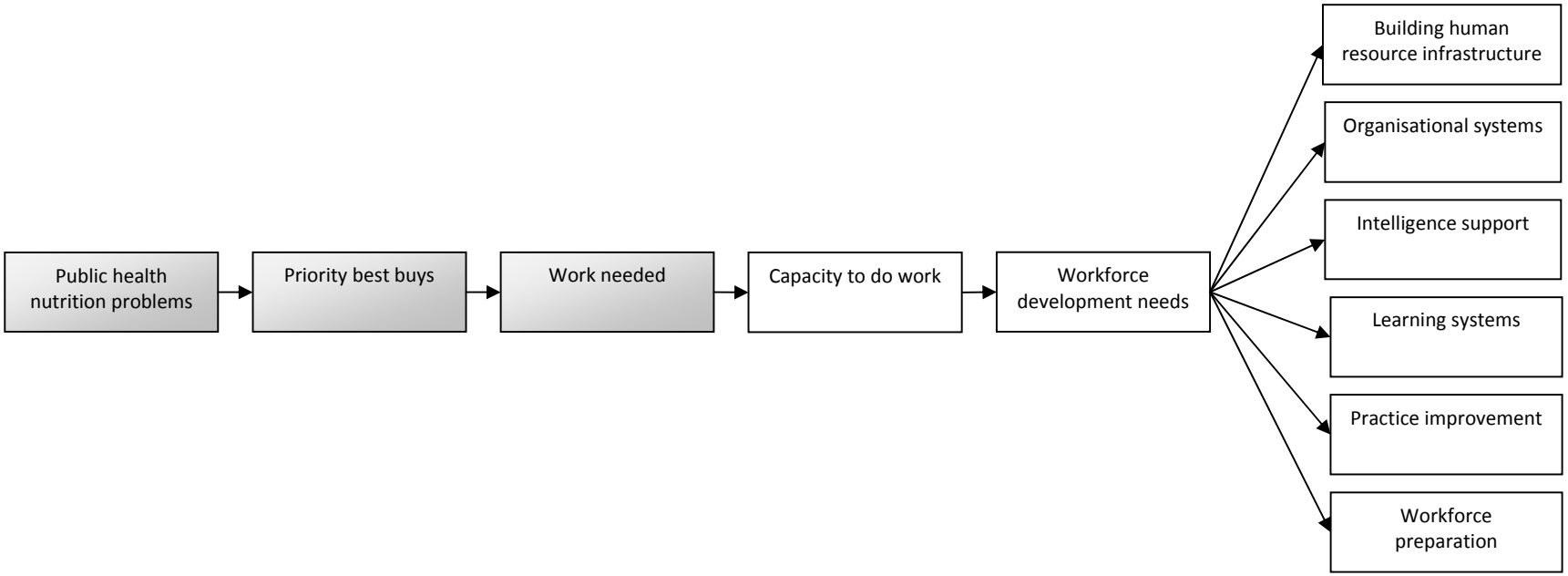


Figure 1.1. Framework for addressing public health nutrition issues and determinants of workforce development. Adapted from Hughes[4, 9].

1.1.4. Workforce capacity is limited

In the early 2000's a series of studies of the Australian public health nutrition workforce demonstrated that this workforce lacks the capacity to respond to the population nutrition needs facing Australia today[4, 11, 18]. The public health nutrition workforce in Australia refers to the workers employed specifically to provide preventive nutrition services and/or provide organisational leadership in this field[18]. Multiple reasons for this lack of capacity have been identified, including human resource infrastructure; the organisation and policy environment; access to and use of evidence (intelligence); practice improvement and learning systems (competence); and workforce preparation are key capacity concerns[4] (Figure 1.1). These determinants of workforce capacity are described in more detail in Chapter 2.

The Victorian public health nutrition workforce has been specifically identified as having limited capacity to address population nutrition issues. The Victorian population predominately relies on the state government funded community health services dietitians to address population nutrition needs. These dietitians are compromised in their ability to provide community based primary prevention initiatives due to their more major responsibility in providing direct care dietetics counseling services to individuals or small groups. The focus given to individual care over prevention is consistent across community nutrition practice in other parts of the world[19, 20]. In 2003 there was only one full-time equivalent state public health nutritionist employed by the State government to support activities across the jurisdiction[8]. Today this capacity has increased only marginally with 3.0 Effective Full Time Equivalent public health nutrition positions employed at the state level, 1.0 of which is in food safety/standards (Veronica Graham, State Public Health Nutritionist, Victorian Department of Health, personal communication, 8 February 2010). These factors are significant barriers to improving Victorians health through better nutrition. In 2003, a strategic plan for workforce development in Victoria was commissioned[21] but implementation of this plan has been limited.

1.1.5. Workforce development needed

It is generally recognised that development of health professionals, in training and in the workforce, is an essential step towards improving population health[22].

> 'there is need for more health professional education ….that meets the health and social needs of the populations being served.'[22(page 15)]

Efforts to enhance workforce development are often narrowly focused on the training and education of workers[23]. However, without the creation of supporting systems and structures, this limits the outcomes of training. In public health nutrition, workforce development is now accepted as a broad approach to preparedness for practice. Focusing on individual practice and skills (the work and worker) together with the environment in which skills are implemented (the work setting) are essential for workforce development initiatives[4].

> 'Workforce development refers to the strategic investment of resources by organisations and communities in activities that reach and maintain a critical mass of human resources, develop organisational environments that enable and promote effective practices and enhance the competency of the workforce for more effective public health nutrition effort that achieves public health outcomes'[9(page 4)].

Workforce development in public health nutrition requires multiple strategies, and a structured strategic approach[4, 24]. One of these strategies is the development and improvement of practice and enhanced learning systems. Competencies provide a framework for workforce development as they inform learning and practice improvement[4].

1.1.6. Public health nutrition competencies – architecture for workforce development

Competence development is a key strategy for workforce development through encouraging practice improvement. Public health nutrition competence refers to the attainment of a set of knowledge, skills, attitudes and values required to effectively perform in the work setting. Competence standards or competencies are statements about a work role that are used to assist with assessment and credentialing which in turn is a system that promotes individual's competence to practice[25]. Competencies provide the architecture for workforce development by providing a structure on which to base curriculum development, professional program accreditation, teaching and assessment[26].

Work has been undertaken to articulate public health competence standards or competencies[27]. More recently there has been a focus on identifying and describing public health nutrition competencies[28, 29]. This development of competencies forms a platform from which to plan and evaluate workforce development initiatives in the field.

1.1.7. Competence development: from novice to expert

The development of competence is cumulative and progresses over time and learning exposures. Competence development has been described as a continuum from novice to expert[30, 31]. It is recognised that many public health nutrition competencies are developed after entry into the workforce when practitioners are exposed to authentic and complex learning situations that are not achievable or reproducible in the training or University environment[18]. There is evidence to suggest that public health nutrition competence is most effectively developed through on-the-job experience and post-graduate training[14, 32]. Post-graduate professional development and education is an essential step forward and work has been undertaken internationally, in the United States, Canada and Europe, and in Australia, on the development of post-graduate qualifications and education specific to public health nutrition. It has been recognised, however, that further training alone will not fill the competence gaps in the existing public health workforce[33]. The principles, aims and resources of the organisations

that employ the workforce and the work duties and responsibilities required, also play a significant role in workforce development[33].

1.1.8. Mentoring as a practice improvement strategy

Mentoring, a reciprocal, mutual and supportive learning relationship[34] is a practice improvement strategy which has been used to bridge the theory practice gap successfully for health professionals[3]. Mentoring has been demonstrated as an effective method for developing specific competence in areas of public health practice[35, 36], acknowledged as having a role in competence development by public health nutritionists[12] and proposed as a framework for developing public health nutrition workforce capacity in Australia[37]. Although there are speculative reports on the advantages of mentoring as a means to improve workforce development, mentoring as a system or modality has not been formally evaluated in the field of public health nutrition.

1.2. Overview of Research

1.2.1. Research questions

The overarching aim of the research was to investigate mentoring as a public health nutrition workforce development strategy. The defined research questions are listed in Table 1.1.

Table 1.1 Research question addressed in this thesis

(i)	What is the nature and role of mentoring in public health nutrition workforce development?
(ii)	What are the key elements of effective mentoring in public health nutrition?
(iii)	Is mentoring an effective public health nutrition workforce development strategy?

1.2.2. Overview of approach

This study used action research methodology embedded in an evaluation framework to address the research questions. The research used mixed methods (qualitative and quantitative) and comprised three key phases:

Phase one constituted a formative evaluation through an iterative literature review process and qualitative in-depth interviews with advanced-level public health nutritionists to investigate the need, and potential role for, mentoring in public health nutrition workforce development.

Phase two involved the implementation of a group mentoring intervention (mentoring circle) with recently graduated dietitians working in public health or community nutrition in Victoria. The evaluation framework for the research was established to measure the process (experience), impact (public health nutrition practice improvement) and outcome (public

health nutrition capacity) of the mentoring intervention. At the commencement of the intervention participants completed a written questionnaire on their work role, experience and expectations of the mentoring intervention and estimated the time working in public health nutrition as part of their work roles. They also ranked public health nutrition competencies in order of importance. The mentoring intervention ran for a total of six months. Qualitative in-depth interviews with the participants and the mentor's reflective qualitative diary together with quantitative competence self-assessment (pre- and post-intervention), were collected. At the end of the intervention, participants also documented their current work role and function and estimated the amount of time they were working in public health nutrition. In line with the action research methodology, at the end of the six month intervention, a number of participants requested to continue with the group mentoring.

Phase three involved ongoing group mentoring (9 months extension) with a subset of the participants who were part of the initial mentoring intervention. Qualitative focus group methodology was used to build on the process (experience) data already obtained from the interviews conducted in phase 2. The focus groups were also used to propose a framework for the role of mentoring in workforce development. All original participants were asked to repeat the quantitative competence self-assessment after the end of phase 3 to determine the effect of additional mentoring on practice.

1.3. Significance of the Research

This research is significant as it:

1) Provides evidence for the role of mentoring in public health nutrition workforce development;
2) Is the first Australian evaluation of mentoring for public health nutrition workforce development;
3) Fills a gap in the current state of knowledge of effective workforce development strategies in public health nutrition; and
4) Provides recommendations for mentoring as public health nutrition workforce development strategy and offers guidance for other public health professionals.

1.3.1. Evidence for the role of mentoring in public health nutrition workforce development

There is some evidence to suggest that mentoring has played a role in public health nutrition competence development in Australia[12]. Advanced-level public health nutritionists in Australia identified mentoring as one of the factors contributing to their professional development a study by Hughes (2003)[12]. The nature and potential role of mentoring in public health nutrition has not been explored beyond Hughes (2003) study[12] and some preliminary consideration by the Australian Public Health Nutrition Academic Collaboration (APHNAC)[28, 37].

1.3.2. Evaluation of mentoring for public health nutrition workforce development

There is a range of literature describing mentoring and its benefits across health and other professional groups[38]. Much of this data describes the short term personal benefits of the mentoring relationship. Very few studies provide evidence of the outcomes of mentoring on workforce development. In the health care setting few studies describe potential or actual impacts of mentoring on public health. This study involved a detailed evaluation of the

process, impact and outcomes of mentoring on practice with the assumption that practice improvement leads to improvement in capacity to address and improve public health.

1.3.3. Fills a gap in the current state of knowledge of effective workforce development strategies in public health nutrition

The last decade has seen a surge in the international interest and activity related to public health nutrition workforce development[4, 19, 20, 24, 39, 40]. This has been in part due to health policy shifts in favour of prevention and advocacy directed at increasing capacity for effective public health nutrition action. Much of the effort towards practice improvement in public health nutrition has been invested in the development of post-graduate education and training[28, 41]. There is limited published evidence on the effect of this training or other practice improvement strategies on workforce capacity. This study is the first evaluation of a formal intervention for post-graduate public health nutrition workforce development in Australia.

1.3.4. Provides recommendations for mentoring as public health nutrition workforce development strategy

Mentoring has been proposed as a potentially effective strategy for public health nutrition workforce development[37] however the framework, structure and format of this mentoring has not been articulated. This study will use the results of the action research evaluation to inform a model for effective mentoring in public health nutrition with the aim of practice improvement for workforce development.

1.4. Research Disclosure

The background and perspectives of the researcher are important to acknowledge in relation to this research project. The experience of the researcher as a public health nutritionist is important to consider in the interpretation of the data presented. This perspective is discussed as it is relevant throughout the appropriate chapters and the first person will be used as appropriate to identify where the researcher has influenced the process. The experience of the researcher as it is relevant to the research can be summarised as follows:

- Over ten years experience practising as a community dietitian and nutritionist in Australia, including at least six years in Victoria;
- Experience in the training and education of entry-level dietitians in public health and community nutrition practice domain; and
- Association and involvement with the Dietitians Association of Australia (DAA) at a local and national level. This includes as a member of the board of directors and representation on committees and working groups relevant to continuing professional development (CPD).

These experiences have informed the evaluation of mentoring as a workforce development strategy in public health nutrition through knowledge, experience and insight into the context of the research.

1.5. Thesis Structure

This chapter outlined the background and the need for this research and described an overview of the research. The remainder of the thesis is presented around an evaluation framework as shown in Figure 1.2. Chapter 2 provides the background and context to workforce capacity and workforce development with a specific emphasis on public health nutrition. Capacity building is defined in the context of public health nutrition practice, and the link between workforce capacity and practice improvement through workforce development is established. Competencies are presented as the architecture for workforce development. Practical or situated and experiential learning, higher education and mentoring are described as potential strategies for practice improvement. This chapter provides an overview of the literature. A more detailed review of the literature is provided in Chapter 5 as it formed part of the methodology for the study.

Chapter 3 outlines action research and intervention evaluation as the theoretical foundations of the methodological framework used in the study. The multiple and mixed (qualitative and quantitative) evaluation methods used for formative, process, impact and outcome evaluation are described in detail in Chapter 4. The formative evaluation aimed to explore and describe the potential role of mentoring in public health nutrition workforce development, which is presented and discussed in Chapter 5. Chapter 6 outlines the mentoring circle intervention that was developed for the study based on the findings of the formative evaluation. Chapter 7, 8 and 9 outline the results and discussion from the process, impact and outcome evaluation, respectively. The process evaluation aimed to determine the quality and experience of the mentoring intervention. The impact evaluation focused on measuring the effect of mentoring on competence, confidence and professional networks. Outcome evaluation aimed to assess the change in public health nutrition capacity, determined through estimation of time dedicated to practice in this area, as a result of the mentoring intervention. Chapter 10 describes recommendations for practice and policy for public health nutrition workforce development based on the results. The findings are drawn together and summarised in Chapter 11. This chapter also critiques the results, limitations and provides recommendations for future research and work in this field.

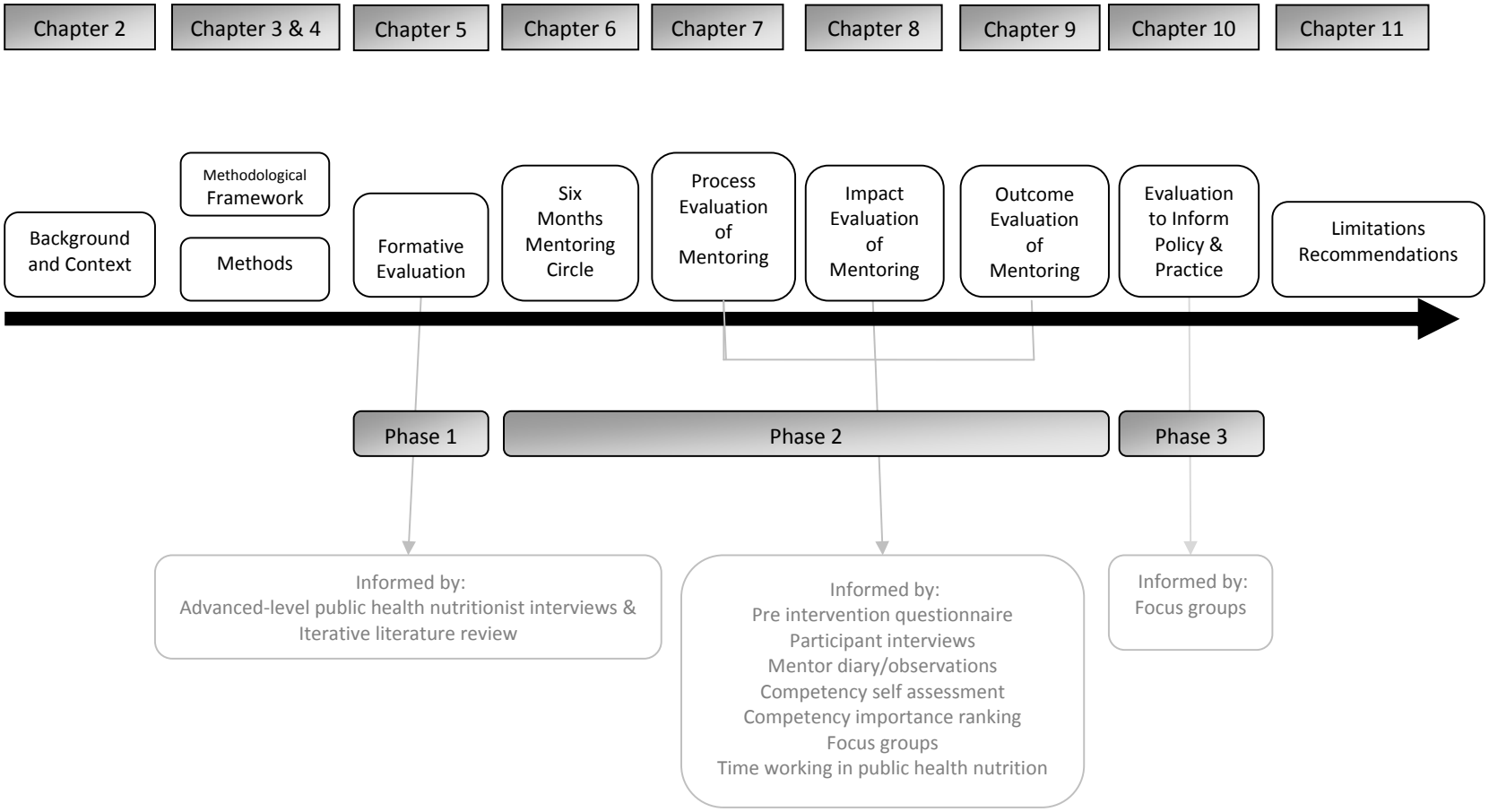


Figure 1.2. Schematic representation of thesis structure

Chapter 2

Background and Context - Practice improvement as a workforce development strategy

2.0. Preamble

This chapter provides the background to public health nutrition workforce development, the need for practice improvement interventions, and provides a case for the need for this research. It builds on the literature presented in Chapter 1 to:

(i) Describe the context of building capacity to improve population health;

(ii) Define workforce development;

(iii) Describe and situate the development of competence in the context of public health nutrition; and

(iv) Summarise effective educational strategies for practice improvement.

This overview aims to identify the issues and gaps in research and provide a strong foundation argument for the need for this research project.

The chapter is structured under two key headings:

1. Limited capacity for public health nutrition action; and
2. Strategic development of the public health nutrition workforce.

The capacity of the public health system to address priority population health needs is described at an international, national and local state level. Workforce development is identified and described as a key element for building the capacity for public health nutrition action. The chapter moves on to explore strategic interventions for workforce development with a specific focus on the existing workforce, initially by providing an overview of competence based training and then summarising a range of different educational methods to building the competence of the public health nutrition workforce in practice. A summary of the literature on mentoring is provided however a detailed and critical review of mentoring is presented in Chapter 5.

2.1. Limited Capacity for Public Health Nutrition Action

2.1.1. Capacity defined

The population's health is dependent on the capacity of the public health system, the workforce, organisations and its communities[42]. Capacity building has been defined as

> 'any activity….that improves the ability of a health system to bring about positive health outcomes'[42(page 6)].

Capacity building can occur within public health programs and systems[1]. Capacity is a measure of the ability of a society to achieve its objectives[43]. While there is a clear need for investment in health treatment, there is growing emphasis on the need for population based prevention interventions.

Figure 2.1 illustrates the multiple components of public health capacity. Public health capacity is influenced by a range of determinants including workforce capacity, organisational capacity and information systems, community development, leadership, partnerships and resource allocation[1, 44]. Individually, or combined, there is evidence to suggest that addressing these determinants has the potential to increase the capacity of the public health system to improve population health[1]. The public health workforce, and its capacity, is a crucial determinant of society's capacity to address public health issues.

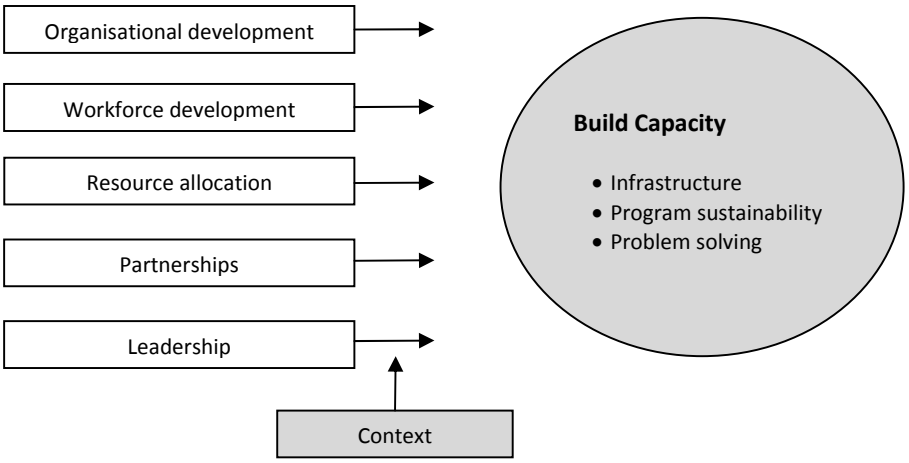


Figure 2.1: Capacity building framework from NSW capacity building framework[1].

There is evidence to suggest that the capacity of public health systems internationally is inadequate to address population health problems[23, 45]. The complex, dynamic and multifactorial aspects of capacity building makes it a vital area for investment in order to see improvements in population health.

2.1.2. Public health nutrition capacity

Public heath nutrition is being increasingly recognised as a specialist discipline within public health and emerging as distinct from clinical dietetics in the field of nutrition as a discipline and area of practice[6]. There has been much debate about the definition of public health nutrition in Australia[46, 47]. Recent international work has attempted to define public health nutrition[47] and consensus now exists in the definition adopted by the World Public Health Nutrition Association as,

> ‘the promotion and maintenance of nutrition-related health and wellbeing of populations through the organised efforts and informed choices of society’[24(page 765)].

Public health nutrition is concerned with the prevention of nutrition related disease in populations and the maintenance of the nutritional health of well populations. Terms such as community nutrition have largely been superseded by public health nutrition. Community nutrition has been described as public health nutrition and the local level or with smaller population reach[6]. Public health and community nutrition has medium to long term outcomes and involves a range of multidisciplinary and intersectorial stakeholders. Public health nutrition is distinct from clinical and community dietetics which focus on the treatment of illness in individuals within the health system. Clinical dietetics is placed in hospitals and community dietetics is set in the community[6].

Public health nutritionists are involved in a continuum of strategies or effort. Public health nutrition effort has been described as,

> ‘…comprehensive and collaborative activities, ecological in perspective and intersectoral in scope – including environmental, educational, economic, technical and legislative measures.’[6 (page 44)]

Public health nutrition efforts are largely dependent on the capacity of the workforce to be able to respond to priority issues.

> ‘In the context of public health nutrition practice, it [capacity building] relates to the ability at various level to perform effectively, efficiently and in a sustainable manner in order to achieve objectives such as improved health’[43 (page 1032)].

Capacity building is a strategy in itself that should be addressed continually through the planning, implementation and evaluation of public health nutrition action[43]. Recent work about the importance of capacity building in the context of public health nutrition practice has

highlighted the following determinants that provide a focus for capacity building efforts[43] (Figure 2.2.)

(i) Leadership and partnerships. This includes the process of influencing and gathering groups together to address nutrition problems.

(ii) Resources. Financial as well as human resources, and the mobilisation of these, enhance capacity.

(iii) Intelligence. This refers to information or evidence that assists in the planning of strategies to address public health nutrition problems is essential to strengthen capacity.

(iv) Organisational development refers to the infrastructure within organisations.

(v) Workforce development involves the development of effective public health nutrition practice.

(vi) Community development refers to community's ability to initiate and support public health action.

(vii) Project management is essential to ensure that existing capacity (resources, expertise etc.) is optimally utilised.

This model recognises that workforce development in itself, and workforce practice improvement by default, will be inadequate without other capacity building activities. Workforce development is only part of the solution to building capacity in public health nutrition. The public health nutrition workforce is central to the planning, delivery and monitoring of nutrition prevention activities and building the capacity of the health system to improve population nutrition.

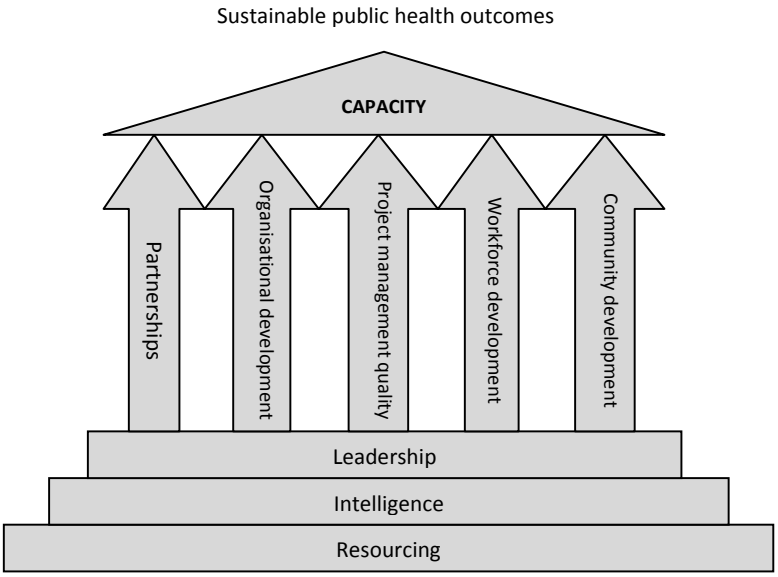


Figure 2.2. Capacity building conceptual framework: Elements required to build the capacity for public health nutrition action from Baillie, Bjarnholt, Gruber, Hughes[43].

2.1.3. Public health nutrition workforce capacity

Workforce development is a major determinant of overall public health nutrition capacity. There has been recent interest and research internationally regarding the public health nutrition workforce[19, 20, 24, 39, 40]. This work has identified that public health nutrition workforces internationally face similar challenges. Across the world the workforce is inadequate in size to address the populations nutrition needs[19, 20, 40]. In Australia the most recent data available, from Hughes study in 2003, suggests that the workforce is estimated to only met 37 percent of projected need at that time, based on workforce ratios previously proposed[18]. This estimate is This is further complicated by the expectation of this workforce to undertake direct service delivery or the provision of individual dietetic management or nutrition education to small groups. In addition, the fact that the majority of the workforces are dietitians limits its diversity and the extent of preparedness for public health nutrition work[11]. This work by Hughes argued that in order to strengthen the capacity of the public health nutrition workforce, there is a need to invest in more designated positions and to reorientate and improve the practices of the existing workforce (practice improvement).

Five key determinants of workforce capacity in Australia have been identified and categorised in Table 2.1[4]. These determinants further expand on the reasons for the lack of capacity of the Australian public health nutrition workforce and in turn provide a conceptual framework for the assessment, evaluation and development of workforce capacity. However, Hughes work omits an analysis of the role of non-dietitians working in public health nutrition. In Australia for example, health promoters, nurses, community development workers play a significant role in implementing public health nutrition efforts. The lack of capacity may not be as significant if these workforces were included in the analysis. There are also opportunities to explore factors that limit their capacity for public health nutrition action. Landman (2003) also criticises Hughes work describing the vital role of non-nutrition professionals and those without significant education in public health nutrition[48]. The hierarchy that is assumed to be essential for public health nutrition workforce development is also challenged. She argues that public health efforts require generalists involved in interdisciplinary work[48]. In addition Hughes analysis does not recognise the role of registration and credentialing as a determinant

of workforce capacity. There are opportunities to further expand on this new area of research to continue to better understand the determinants of public health nutrition workforce capacity.

Table 2.1. Determinants of public health nutrition workforce capacity from Hughes[4].

Capacity Determinant	Description
Human resource infrastructure	Workforce size relative to need. Designated mandate, with ongoing funding for positions for public health nutrition action, career progression opportunities and leadership positions. Collaboration within and outside the health system.
Organisational and policy environment	Policy and strategy documents for public health nutrition action, including workforce development with appropriate resource allocation. Organisational expectations of the role of public health and community nutritionists in prevention.
Intelligence access and use	Intelligence refers to information that provides evidence for effective prioritisation, planning and evaluation of public health nutrition action. Availability and accessibility of intelligence (availability of data and the awareness for where to obtain) Evidence of effectiveness of public health nutrition interventions. Sharing of intervention effectiveness (research and evaluation) and partnerships with academia.
Practice improvement and learning systems	Workforce practices and competencies match priority action areas Practice reorientation from individuals to populations Access to mentors for support, challenge and networks Incentives for excellence of practice Agreement of core functions Competencies for workforce preparation, professional development and credentialing Competence (knowledge, skills, attitudes) development
Workforce preparation	Dietetic training in public health nutrition and opportunities for nutrition science education for non-nutrition public health professionals Post graduate public health nutrition training and education programs

Investing in public health nutrition workforce development has the potential to improve population health and nutrition because of the flow on effects on public health system capacity. The implication of not addressing this public health nutrition workforce problem has the potential to have significant effects on the population's health. While the difficulties in measuring the impact of public health nutrition efforts are acknowledged, in Queensland the

increased capacity for public health nutrition has been attributed to increases in intakes of fruit and vegetables and breastfeeding rates[49]. Ignoring the issue of workforce development is likely to worsen the issues of escalating chronic disease across the world due to the strong links between diet and these diseases. The development of knowledge, skills and ability (i.e. competence) of the workforce to deal with population nutrition problems is a key determinant of capacity. This need is compounded by the challenge of engaging the target populations in interventions focused on environmental change. Capacity is also affected by inconsistent effort towards priority population nutrition issues, inadequate preparation for work in this area and inadequate access to and use of evidence based practice[4].

2.2. The Need for Practice Improvement

2.2.1. Public health nutrition practice in Australia

The attributes and practices of the public health nutrition workforce in Australia have been previously identified[11, 18, 50] and summarised in Table 2.2. In Australia the public health nutrition workforce is predominately employed by state health departments either in public health or community health settings. With the exception of public health and community nutritionist in Queensland, their roles often involve the need to provide individual dietetic services as well as community or population based prevention activities. Despite the existence of a national policy framework (Eat Well Australia) their work is often focused on local activities and priorities rather than a consistent effort reducing the impact of their efforts. The workforce is generally isolated and has limited opportunities for professional development and access to mentors and academic support. These findings suggest that the Australian public health nutrition workforce has limited capacity to address public heath nutrition issues.

Table 2.2. Attributes and practices of Australian Public health nutrition workforce.

- Employed separately by state and territory government health systems or other state/territory based non-government organisations - there is no national public health nutrition workforce
- Different employment structures and systems within states and territories
- Different number of positions and mandates within states and territories
- Small in size
- Competing demands for clinical or direct care dietetic services
- Unstable and short-term funded positions
- Young (26-45 years), female and are mostly dietitians
- Competence development needs – e.g. policy processes, epidemiology and biostatistics, advocacy and economics
- Limited access to evidence based practice or information to guide practice
- Barriers for professional development - lack of mentors, limited opportunities for skills development or educational opportunities, limited incentives for increased competence
- Existence of national policy framework (*Eat Well Australia*) but no resources to supports its implementation

2.2.2. The Victorian workforce

The Victorian public health nutrition workforce has been shown to be particularly limited in its capacity to address population nutrition issues. In 2001 the Victorian government identified the Victorian Public Health Nutrition Workforce as a priority for action[51]. Hughes and Woods from Griffith and Monash University respectively were commissioned to define and assess the capacity of the Victorian Public Health Nutrition workforce. This work identified that the Victorian public health nutrition workforce was limited in its capacity to respond to public health nutrition issues. The Victorian workforce was found to be very small is size (estimate 30.4 Effective Full Time (EFT) positions for a population of 5 million), mostly part-time or short-term tenured positions with very little time (approximately 5-6 hours per week) available for public health nutrition due to demand for direct care dietetics and nutrition education services[8]. This workforce self-reported a wide range of competence development needs, a lack of access to public health nutrition mentors and the need for workforce development initiatives to be integrated into work role or on-the-job learning[8].

The Victorian population relies on the state government funded community health service dietitians to predominately address population nutrition needs as there is only one state funded public health nutritionist[8]. The state public health nutritionist role has no official supervisory or support role to the community dietitians. Community dietitians are individually supported by their relevant community health service through a program manager or team leader, who may or may not be from the nutrition or public health discipline[8]. (Table 2.3).

Table 2.3. Attributes and practices of Victorian public health nutrition workforce[8].

- 1.0 EFT state public health nutritionist employed by public health group in Department of Human Services (DHS)
- Employed by community health services (DHS funded) or other non-government organisations
- Limited number of positions (approximately total EFT 30.4)
- Different job descriptions and no mandatory requirement for public health nutrition action
- Dual role and competing demands for community dietetic services
- Part-time funded positions
- Young (26-45 years), female and all are dietitians

Hughes and Woods work identified the Victorian workforce's priorities for workforce development as being more positions, improved access to professional development and organisational change that supports reorientation of practice towards prevention. The importance of integration of on-the-job learning into competence development was also recognised[51].

2.3. Strategic Development of the Public Health Nutrition Workforce

2.3.1. Workforce development

As identified previously, workforce development is a key determinant of public health nutrition capacity (Figures 2.1 and 2.2). Workforce development has previously been narrowly regarded as the task of providing a workforce with adequate knowledge and skills[45]. The following definition demonstrates the complex and multifactorial components of workforce development requiring a mix of approaches. Public health nutrition workforce development in this thesis borrows from earlier work and

> 'refers to the strategic investment of resources by organisations and communities in activities that reach and maintain a critical mass of human resources, develop organisational environments that enable and promote effective practices and enhance the competency of the workforce for more effective public health nutrition effort that achieves public health outcomes'[9(page 4)].

Dietitians are well placed as a profession and have been identified and prioritised for public health nutrition competence development[5]. Although it has been recognised that entry-level dietetic training is inadequate in preparation for practice in public health nutrition, dietetics graduates' sound knowledge in nutrition and problem-solving skills[50], render them appropriate for public health nutrition practice development. Developing the knowledge, skills and attitudes of dietitians in public health nutrition practice is likely to be an efficient workforce development strategy.

> 'There is a greater opportunity to build capacity when workforces comprise employees with training or experience specific to the issue, have organisational and management support, have opportunities for professional development, engage with the target community and base their practice on intelligence and intervention research. Ensuring that the

> public health nutrition workforce is of adequate size and is comprised of competent staff is essential to building capacity in public health nutrition.'[43(page 1036)]

In Australia there have been a number of different approaches, across different states, to workforce development in public health nutrition. This has ranged from reviewing appropriate approaches to workforce development for the primary care sector in South Australia[52] to creating additional positions for public health nutritionists in Queensland[49]. This work has highlighted the need to increase the size of the workforce and develop the capacity of organisations and communities to address public health nutrition problems. It also identified the need for competencies to standardise the workforce and provide a mechanism for quality assurance[52] and that increasing the size of the workforce alone is not sufficient to build public health nutrition workforce capacity[49]. No state appears to be adopting the multi-strategy approaches inspired by the workforce development analysis proposed by Hughes[9] most likely due to the significant financial investment, detailed coordination and partnerships required.

2.3.2. Continuing competence development

Developing the capacity of the public health nutrition workforce will be in part addressed through practice improvement. Improvement in the public health nutrition practice of dietitians may be achieved through a range of strategies. In public health nutrition it is recommended that practice improvement strategies involve further education and mentoring[5]. The importance of gaining practical or on-the-job experience is also acknowledged[12]. The development of competence, along the skills acquisition continuum, leads to practice improvement[30].

Competence development is a key element of workforce development and refers to the attainment of a set of knowledge, skills and attitudes relevant to performance[30]. Competence refers to the scope and quality of a professional's work. Competence standards or competencies are statements about a work role, tasks performed in that role and the situation.

They are used to assist with credentialing which in turn is a system that promotes individual's competence for safe practice[25, 30]. Competency standards provide the architecture for workforce development[29].

The development of professional competence is increasingly being recognised as a valuable framework for performance development and management across the health professions. Competence development leads to practice improvement. Competence based teaching, learning and assessment has emerged among health professions with an international movement towards competence based training in all vocational sectors[25]. Competence based training has gained importance in the health sector due to the potential ability to improve quality of the workforce and thus efficiency of health services[26]. This is in contrast to traditional or historical health professional training where the focus was on content to be delivered and time in training rather than a focus on the outcomes or performance which is the case for competence based training[25, 53]. Competence frameworks provide the architecture for workforce development in many health professions, providing a structure on which to base curriculum development, professional program accreditation, teaching and assessment[26]. They also can be used to inform post-graduate human resource management such as in the development of job descriptions for recruitment, informing CPD and performance feedback and review.

Articulation of competencies for safe and effective practice among the health professions identified the need to explore a range of different teaching and learning strategies to develop the competence of the health workforce. A combination of classroom and practical or situated learning has evolved as key methods for the development of skills, knowledge and attitudes, or competencies, particularly for entry into the health workforce. Prior to this, methods to develop the practice of health professionals nurses and doctors were initially trained through an apprenticeship model whereby learning occurred on-the-job with no formalised training program[54]. It is acknowledged that learning occurs once in the health workforce through a combination of practice, participation in the workplace and professionals taking responsibility for their participation[55].

The development of these professional practice skills and knowledge, or competence, across the health professions is complex and there are a number of published models to describe the progressive acquisition of skills and knowledge. Miller's model provides a useful framework to describe this progression as it integrates knowledge with practical experience. This model acknowledges that professional authenticity is a process of development from 'know', know how', 'shows how' and 'does' (Figure 2.3). Evidence suggests that knowledge alone ('know' and 'knows how') does not guarantee effective practice. Similarly, competence ('shows how') is not a consistent predictor of day to day performance ('does')[56, 57]. Competence is a key step on the skills acquisition continuum towards proficiency and expert practise[30]. This continuum builds on the notion of the theory-practice gap[58] and that knowledge must be contextualised in the development of skills for practice[59].

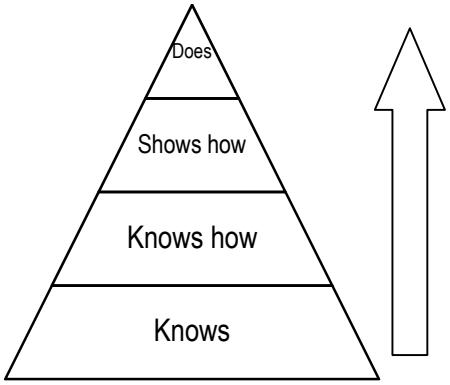


Figure 2.3. Millers pyramid of cognition and behaviour[56].

The development of competence described by this model (Figure 2.3) is a developmental process that demonstrates the need for a range of different teaching and learning strategies, including but not limited to, classroom based and practical or situated learning. Competence is also recognised as being socially constructed through experience[60]. The advancement of competence in public health nutrition is not as well described with little evidence available that describes its development. This is also the case for other areas of nutrition and dietetic practice, such as food service and clinical practice. It is however assumed that public health nutrition competence development is cumulative, staged and influenced by the exposures and

experiences that precipitate learning and practice developments. The importance of defining competence for public health nutrition practice is an essential framework from which to better describe the process of competence development in this field.

2.3.3. Competence for public health nutrition practice

Efforts to identify and describe the work of public health nutritionists have recently been made in Australia [11, 18], Canada [20], United States [19, 61] and South Africa [40]. The importance of clearly articulated competencies for improving public health workforce capacity has been well documented[23, 33, 62]. Internationally public health nutrition is a discipline within public health that is currently applying effort towards articulating competencies and creating credentialing systems for public health nutritionists[63].

The scope of practice of the public health nutrition workforce has been previously described through the development of consensus in competencies for public health nutrition [29] and more recently validated through repeat consensus[64]. These competency standards or competencies are an important development process as they provide a mechanism for planning, implementing and evaluating the effect of workforce development strategies and can also assist with credentialing. A set of core competencies for public health nutrition have been identified by Hughes (2003) (Table 2.4). These competence areas were based on generic public health practice[65] and developed through a Delphi process through expert consensus building and represent 39 competence areas that were rated by ≥85 percent of the expert panelist after three rounds of the Delphi process[29]. These core functions codify the work required by the public health nutrition workforce and thus are an essential step for workforce development.

Table 2.4: Public health nutrition core competence areas identified by Hughes[29].

Core Competence Areas Identified as Essential Unanimously (by ≥85% of experts) by Consensus
ANALYTICAL
1. Nutrition monitoring and surveillance
2. Food monitoring and surveillance
3. Assess the evidence and impact of health and health care interventions, programs and services and apply these assessment to practice
4. Needs assessment- assessing population needs using various methods
5. Applied research, research and development. The ability to appraise, plan and manage research, interpret research findings and apply in practice
6. Analysing the determinants of nutrition issues using a range of information sources
SOCIO-CULTURAL & POLITICAL
7. Knowledge and understanding of the psychological, social and cultural factors which influence food and dietary choices
8. Policy processes: policy development skills, influence policy development, evaluate policy impacts, organizational politics
9. Building community capacity: community engagement, collaboration, partnership, coalition building and community dimensions of practice skills
10. Advocacy at government, organization, profession levels
11. Awareness, knowledge and skills that enable a system, agency, or professional to work effectively in cross-cultural situations
PUBLIC HEALTH SERVICES
12. Design, plan, implement, monitor and evaluate nutrition strategies and programs for promoting health and well-being of the population that reduce inequalities
13. Principles and practice of health education, health promotion theory, behaviour change and health promotion policy and programs, public health methods
14. Knowledge of food and nutrition systems and community food needs
15. Provision of preventive nutrition programs
16. Building capacity of the health workforce through training, up-skilling and mentoring
17. Service and program prioritisation based on identified needs, their potential impact, as defined by objective measurable criteria
18. Provide nutrition information/intelligence to various target groups
COMMUNICATION
19. Interpersonal communication
20. Written communication
21. Grantsmanship-submission writing to access resources to enable intervention and service delivery
MANAGEMENT AND LEADERSHIP
22. Strategic planning
23. Negotiation skills
24. Systems thinking skills
25. Team building
26. Computing and technology utilisation/information technology
27. Leadership: motivation, dedication, vision
NUTRITION SCIENCE
28. Assessment of food, nutrient and dietary intakes and status in populations
29. Food composition
30. Food guidance and goals
31. Nutritional requirements of populations
32. Population nutrition intervention strategy options and selection
33. Lifespan nutrition
PROFESSIONAL
34. Professional accountability and social responsibility
35. Ethics of public health nutrition practice
36. Commitment to continual competence development and lifelong learning
37. Able and willing to consult and refer to others when extra competencies are required
38. Values and participates in peer review
39. Reflective practice to enhance performance

It is recognised that a significant proportion of public health nutrition competencies are developed after entry into the workforce[28]. While this makes it clear that post-graduate professional development is an essential step towards development of this competence in public health and public health nutrition, the educational framework or strategies for developing competence in public health nutrition have not been clearly articulated. The role of entry-level qualifications, further training, on-the-job experience and mentoring have been identified as contributing to public health nutrition competence in Australia[12] and the core elements of public health nutrition competence recently described[28]. There is a need to determine the most effective educational approaches to develop the competence of the public health nutrition workforce.

2.4. Approaches to the Development of Public Health Nutrition Competence

The development of professional competence and practice is a complex process of attaining knowledge, skills and attitudes. It has been acknowledged that the development of these attributes in the health professions can be achieved through a range of strategies. There is evidence to support the use of a range of different educational strategies to improve competence and support professional development[66]. Learning has been proposed to occur through a combination of cognition, practise and attitudinal change[66]. Key strategies, including workplace based learning, higher education and training and mentoring, are shown in Table 2.5. These strategies are described because of their previously demonstrated influence on competence development in public health nutrition[12] and their relevance to this research project. Each educational method is defined and discussed in terms of its development and use in health professional education and then the issues relevant to the field of nutrition explained.

Table 2.5. Strategies for competence development.

Strategy	Definition
Experiential learning	Also referred to as practical, situated or on-the-job learning, experiential learning refers to the learning gained through the application of knowledge in real life settings and reflection on this practice.
Higher education and training	Formalised education after school based education. In health fields it is generally occurs in the University environment and is characterised by a combination classroom based theoretical knowledge and practical experience.
Mentoring	A deliberate yet voluntary, non-judgmental relationship providing support for professional and personal development.

2.4.1. Experiential learning

Work based or on-the-job learning, often referred to more generally as experiential learning, is accepted as an effective method of developing competence and bridging the gap between theory and practice[67, 68]. Work based learning has formed the origins of health professional education through history through apprenticeship-type schemes. Based on Kolb's theory of experiential learning[69], on-the-job learning allows for the application of knowledge in real life practice or by experience. The theory of experiential learning was developed by Kolb in 1984 based on earlier learning theories of Dewey, Lewin and Piaget who recognised the role that observation, knowledge and judgment played in learning[68]. Kolb's theory of experiential learning recognises the role that both personal and social experience have in shaping learning and that learning is a process of experience, reflection, conceptualisation and experimentation that aids development[69] (Figure 2.4). In this theory, experiential learning is described as a process of learning through actual and practical experience in a simulated or actual on-the-job workplace environment, whereby learning can be transferred into performance. Learning can commence at any stage of the four stage cycle, although typically it commences through actual experience. While there are criticisms that this model oversimplifies the process of learning and may lead to unsafe practice in the absence of adequate supervisory frameworks[70], it provides a useful theoretical framework from which to understand learning by experience in the workplace.

There is some evidence to suggest that experiential learning or learning on-the-job may be an effective method of developing competence in public health nutrition[12, 71]. Public health nutritionists in Australia have identified the role of experience and learning on-the-job through problem solving as significantly contributing to their professional development[12]. This research uses the term on-the-job learning to describe the process of experiential learning as described by Kolb in a workplace setting.

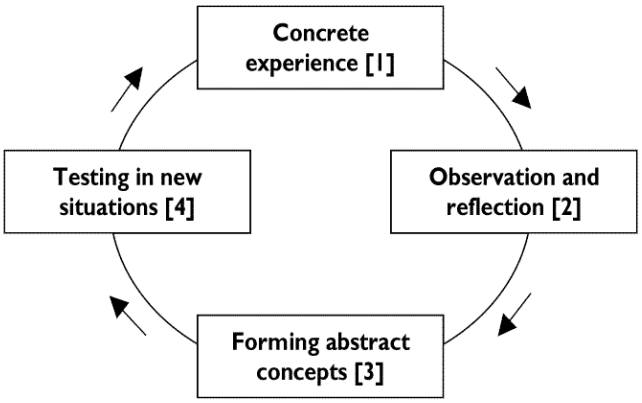


Figure 2.4 . Kolb's experiential learning theory[69].

2.4.2. Higher education and training

The role of University based education is acknowledged as a foundation to competent practice[30]. Over the years all health professional education has seen a shift from the traditional apprenticeship or work based education system to the higher education sector. University education provides deep learning opportunities and, combined with practical experience, better prepares health professionals for practice[30]. Health professional training today recognises the value of both University classroom based education and learning through practical experience and thus incorporates these into training programs.

Education in nutrition and dietetics has a similar history commencing with hospital based training schemes and moving to University education in the late 1960s[72]. Today the attainment of base or entry-level knowledge and skills is provided through higher education in the University sector[73] and further professional skills developed post-graduation. Entry-level dietitians are prepared for practice across the three key domains: individual care; food service management; and public health and community nutrition. The credentialing system for dietitians in Australia, the Accredited Practising Dietitian (APD) program, although not mandatory, provides a stimulus for self-directed CPD. This program encourages development through a range of self-directed strategies including, further education, workshops/seminars, self study and mentoring[74]. The increasing evidence available for best practice in nutrition

demands a need for ongoing professional development and commitment to lifelong learning post-entry-level education.

Dietitians form the majority of the public health nutrition workforce but there is some evidence to suggest that the entry-level dietetic competencies have been inadequate to prepare dietitians for public health nutrition practice[10]. While it is acknowledged that other disciplines such as epidemiologists, nurses and health promoters, for example, are important contributors to public health nutrition effort, workforce development efficiency arguments suggest that the dietetic workforce should be a priority for public health nutrition workforce development[5]. This is due to the existing workforces strong foundation in nutritional science and the employment opportunities with privileged access to work in nutrition[5].

The competencies for entry-level dietitians in Australia were initially written in 1998 and revised in 2009. Public health nutrition practice is specifically identified as a core competence element (Table 2.6)[73]. In comparison to core public health nutrition competencies[29], the entry level competencies focus on the planning implementation and evaluation of public health nutrition efforts and under emphasise the importance of capacity building as a key element of practice in this domain. Capacity building has been identified as a critical component of public health nutrition practice[43].

Table 2.6: Extract from National Competency Standards for Entry Level Dietitians in Australia.

Unit 5: Community and Public Health Nutrition and Advocacy for Food Supply Plans, implements and evaluates nutrition programs* with groups, communities or populations as part of a team[73].

(*Program refers to programs, projects or pilots)

5.1 Conducts a needs assessment	5.1.1 Uses qualitative and/or quantitative methods to collect and analyse data to identify and inform program development and nutrition issues 5.1.2 Identifies individual, socio-economic, cultural and environmental determinants, including equity and social justice issues 5.1.3 Identifies, consults and engages key stakeholders and partners 5.1.4 Reviews relevant literature 5.1.5 Assesses and critically reviews priorities for action and strategy development based on assessment of data and available capacity 5.1.6 Clearly articulates and justifies conclusions and recommendations for action
5.2 Assesses opportunities to improve nutrition and food supply in a community or population group	5.2.1 Applies existing standards to identify opportunities to improve an aspect of the food supply 5.2.3 Applies food legislation and regulations to evaluate an aspect of the food supply 5.2.4 Assesses the nutrition implications of changes to the food supply on individuals, groups and populations including the impact on vulnerable groups 5.2.5 Identifies socio-cultural and environmental determinants of the food supply, relevant to the nutrition issue 5.2.5 Assesses and assigns priorities for action based on assessment of data and available capacity 5.2.6 Clearly articulates and justifies conclusions and recommendations for action
5.3 Plans nutrition programs with the population group	5.3.1 Identifies and contributes to the development of community and organisational capacity for program management and implementation 5.3.2 Develops program plans, that are relevant to the target group, which consider the social determinants of health 5.3.3 Develops program plans that incorporate goals, objectives and strategies relevant to identified determinants and needs assessment findings 5.3.4 Develops program plans that incorporate process, impact, outcome evaluation 5.3.5 Develops program plans that incorporate a communication strategy 5.3.6 Uses appropriate behaviour change, health promotion, social marketing, communication, community development and public health policy frameworks in the planning of nutrition programs 5.3.7 Demonstrates consideration of resource implications for community/public health programs 5.3.8 Considers the sustainability of the program
5.4 Develops plans to provide safe and nutritious food	5.4.1 Identifies goals for addressing nutrition issues in collaboration with stakeholders, where possible 5.4.2 Proposes modifications to improve nutrition and food standards including a practical time-frame 5.4.3 Identifies benefits, costs and potential savings, both economic and health related 5.4.4 Demonstrates consideration of sustainability issues, environmental and economic 5.4.5 Identifies risks and develops a basic risk management plan for a safe and nutritious food supply
5.5 Implements nutrition programs with the population group	5.5.1 Contributes to the implementation of a nutrition program 5.5.2 Modifies the implementation plan to accommodate changes
5.6 Makes recommendations on food and nutrition policy	5.6.1 Develops recommendations to improve food and nutrition policy in an aspect of the food supply 5.6.2 Advocates to improve nutritional quality or safety or food accessibility in an aspect of the food supply
5.7 Evaluates nutrition programs with the population group	5.7.1 Contributes to process, impact and outcome evaluation plans to determine the effectiveness and efficiency of a nutrition program 5.7.2 Critically reflects and makes recommendations about the nutrition program based on evaluation data
5.8 Documents and disseminates all steps of the process	5.8.1 Maintains clear and concise records of all program components 5.8.2 Considers confidentiality of information and records 5.8.3 Communicates outcomes of nutrition programs to relevant internal and external stakeholders 5.8.4 Provides handovers to relevant personnel as required in relation to program

In public health and public health nutrition internationally, there has been an emphasis on developing professional competence via post-graduate education and training programs. Masters of public health nutrition programs aim to achieve advanced-level skills across a range of public health nutrition content areas[28, 41, 75]. The needs of a diverse range of learners has been recognised within these programs and as such different and innovative educational designs, such a distance or electronic learning recognised and used to address these needs[75]. The key challenges for further education and training in public health nutrition includes securing ongoing funding and funding support for learners and creating incentives for practitioners to undertake higher learning. While the benefits of further training are clear it is acknowledged that education alone will not fill the competence needs of the public health workforce[33, 62].

2.4.3. Mentoring

Mentoring is one of a range of supervisory models to support performance and development in practice[54]. There is a high degree of consensus in the literature that mentoring is a deliberate yet voluntary, non-judgmental relationship that provides support for the purposes of professional and personal growth and development for those in the relationship and development of the profession as a whole[3, 34, 38, 54]. The following definition of mentoring has been adopted for this research.

> 'an enabling relationship that facilitates another's personal growth and development. The relationship is dynamic, reciprocal and can be emotionally intense. Within such a relationship the mentor assists with career development and guides the mentee through the organisational, social and political networks.'[3(p189)]

While mentoring has traditionally been in the form of a more junior professional being placed with a senior experienced colleague, today peer and group mentoring models are described, and both formal and informal relationships recognised[34]. Mentoring is distinct from other supervisory models which involve direct observation of performance and assessment, such as

clinical supervision[3]. It is also different from preceptorship which is an imposed and formal mechanism that focuses on guidance and orientation in a workplace setting[3]. Health professionals typically look to mentoring as a professional development tool to support practice improvement or career development whereas other supervisory models may be imposed and guided by external factors or workplaces to manage performance[54].

Mentoring has been demonstrated as a method for developing public health skills[76, 77] and proposed as a framework for developing public health nutrition workforce capacity in Australia[37]. Public health nutritionists in Australia have previously recognised the role of mentoring as contributing to competence development[12]. There is some evidence to suggest that mentoring in a range of public health disciplines creates opportunities for networking and access to resources, improves career and personal satisfaction, increases professional and interpersonal skills, increases mentee confidence and develops reflective capacity in both the mentee and mentor[76, 78-80].

Mentoring is recognised as an effective professional development tool in the area of nutrition and dietetics[81-84]. A process evaluation of a mentoring program implemented in Victoria in 2004 with community dietitians found that mentoring improved skills, enhanced networks and improved the practice of dietitians interested in public health nutrition[85]. However, there is limited evidence available that describes the impact and experience of mentoring especially in the area of public health nutrition. A detailed critique of the literature on mentoring is described in Chapter 5 as part of the formative evaluation phase of this research.

2.5. Summary

This chapter identified that the capacity to improve population health and nutrition is dependent upon the capacity of the public health nutrition workforce. The Australian public health nutrition workforce lacks the capacity to adequately address emerging nutrition issues due to a range of factors, including the need for practice improvement and reorientation of this workforce. Effective strategies for practice improvement in the public health nutrition workforce have yet to be adequately enlisted and described however, further training, on-the-job learning and/or mentoring have been proposed as potential measures.

This discussion has identified the need to describe and evaluate potential solutions to practice improvement in the public health nutrition workforce. The following chapter describes the methodological framework proposed to plan and evaluate a public health nutrition workforce development intervention.

Chapter 3

Methodological Framework

3.0. Preamble

This chapter describes the three phase, multi-method research process, based on insider evaluation, that supported the development of a mentoring circle intervention and evaluated the intervention's effectiveness. Action research methodology provided the approach from which to guide this research. Action research encourages involvement of the researcher (as research instrument) and participants in the research (as recipients of the intervention). As a research methodology, action research has the capacity to be flexible and responsive to new knowledge gained as part of the research process. These factors rendered it an effective approach for this investigation. The action research approach to evaluation assisted in structuring the approach and interpreting the findings.

This chapter provides an overview of how action research and evaluation methodology was applied in this research, including historical origins and data types.

3.1. Overview of Action Research and Intervention Evaluation

An overview of action research and its application in intervention evaluation is needed to provide the methodological context for this thesis.

3.1.1. What is action research and evaluation?

Action research methodology is a frequently used approach to social research in health and education[86]. Like all forms of predominately qualitative methods, action research is based on investigating the cultural, socio-economic and political factors that influence research interventions[87]. Action research aims to create new knowledge through the analysis of understandings and experiences of those involved in the research which are in turn used to transform practice. It has been defined as,

> '…a participatory, democratic process concerned with developing practical knowing in the pursuit of worthwhile human purposes……It seeks to bring together action and reflection, theory and practice, in participation with others, in the pursuit of practical solutions to issues of pressing concern to people, and more generally the flourishing of individual persons and their communities.'[86(page 1)]

Action research has been proposed as an effective model to use in developing and evaluating education and workforce development interventions as it has the potential to respond to the needs of the learners[88].

Evaluation serves to provide evidence to support the effectiveness (or lack of effectiveness) of an intervention, and provides a basis from which to refine a set intervention. The need to develop a flexible methodological model incorporating a mix of qualitative and quantitative methods that had the potential to guide recommendations for change along the way was considered essential for this research. Action research embedded into an evaluation framework was chosen as the theoretical foundations for this research.

Evaluation is a process used to measure the effectiveness of interventions and whether they have achieved anticipated outcomes[89]. Evaluation provides measurement of intended outcomes, observed outcomes and their effectiveness and also has the capacity to assess the development and process of implementation of interventions.

> 'Evaluation can be viewed as a structured process that creates and synthesises information intended to reduce the level of uncertainty ….. It is intended to answer questions .., the results of which are then incorporated into the information bases.' [89(page 3)]

Based on definitions of programs[89], this research defines an 'intervention' as a strategic set of activities or strategies informed by the analysis of determinants aimed at bringing about change.

3.1.2. Theoretical foundations of action research

Action research is a worldwide movement, in health, education, business, psychology and sociology, that cannot be traced to one single individual or theory[86]. Action research has evolved from multiple theorists and movements including the pedagogical theory of Freire which focused on learners being involved in the process of developing new knowledge[90]. Lewin also contributed to action research methodology arguing that learning is based on action[90]. Phenomenology where the focus is on experience as the basis for knowledge, and approaches to community development with a focus on empowering the oppressed, also contributed to the development of action research methodology as it is known today[90]. These influences are described in more detail below. Action research is consistent with a capacity building approach to public health nutrition practice promoted by Baillie et.al. in that it is a continual process with a focus on sustainability[43].

Education and learning theories have been significant in the development of action research methodology[87]. It is acknowledged that 'participatory forms of inquiry aimed at solving

practical problems have existed forever in human cultures'[86(page 3)]. However, in the 1940s, Lewin, a psychologist, provided one of the earliest descriptions of action research. His field theory recognised that to in order to achieve a change in behaviour the whole situation surrounding that behaviour must be taken into consideration. Lewin was interested in how the process of action (experiments) and the subsequent generation of theory could influence change [86, 91]. Thus the earliest form of action research evolved.

Education has also influenced the development of action research methodology. Freire's (1972) influence on action research was driven through his analysis of learning. Freire theorised that learning was passive whereby learners do not question. He argued that marginalised groups in society must learn to understand the systems and structures in society that have forced them into their situations and that 'linking knowing and learning through an ongoing cycle of action and reflection, leads to the development of a critical awareness about the world participants live in' [87(page 6)]. Thus by acknowledging and attempting to understand the causes of situations, and involving disempowered groups in the development of strategies to address them, provides the potential to change their circumstances [87]. Critics of Freire provided a feminist influence to action research methodology arguing that his initial theory grouped all marginalised people into the one category[87, 90]. The feminist movement argued that men and women have different experiences and ability to contribute to the process. This influenced action research methodology so that it acknowledges the diversity of participants during all parts of the research process[87].

Action research methodology is also influenced by critical social theory and phenomenology. Critical theory is concerned with the critique of historical and structure influences on society and how they can be transformed to liberate[92]. Phenomenology is the investigation of the lived experience and how this informs knowledge[90, 93]. Applying these approaches in the action research process ensure that it examines the underlying factors or social structures of the situation and the experience of participants[87]. The other key influence on action research methodology has been the evolution of primary health care and the role of community participation[87, 90]. After a history of medical or expert initiated health interventions, the health sector began to acknowledge the importance of individuals and communities in taking responsibility for and improving their health. The term community development was born. In

public health and health promotion, action research is well supported and community development embraced as a key element for effective health promotion activities and evaluation[94].

Action research has been described as containing three elements. 'An action strand which is about making change: making useful and noticeable difference….a knowledge strand which is about enriching our collective wisdom about how and why things and people work. [and] A learning strand which is about developing individual and collective practice, enhancing our capability to do the same or different.'[95(page xv)]. Action research thus provides an effective methodological framework on which to base an intervention evaluation.

3.1.2.1. Insider evaluation

Involvement of the researcher and participants as active members of the research and evaluation process is central to action research and has been described as insider evaluation[2, 96]. This is a key feature that distinguishes action research from other qualitative methodologies. Insider research and evaluation allows for research and intervention design to be altered during the process and is focused on learning to influence practice[2]. This is in contrast to 'researcher reflexivity' employed by other qualitative methodologies which acknowledges the role researchers play in how the data is shaped and describes the process of critically analyzing the research process and making biases clear[90]. Having the key researcher lead the research and evaluation process, through insider evaluation, facilitates greater potential for in-depth analysis of the process and outcomes and promotion of research findings[96]. Insider research has been criticised for its lack of objectivity and credibility due to the potential bias imparted on data collection and analysis by the researcher[2, 96]. However it is argued that the insider action research processes can limit the potential for bias and enhance validity through planning and identification of potential sources of subjectivity and through recognising the ultimate aim of the action research[2]. The underlying premise of action research challenges the positivist view of knowledge or quantitative research paradigm where 'objective data' is deemed credible. Insider action research is built on the premise that knowledge is 'socially constructed' and that data obtained from within the action research

process is used to question, confront and ultimately change practice[2]. Action research has the potential to have strong validity due to the researcher's embedded understanding of the issues under investigation[2].

3.1.2.2. Mixed-methods action research

Evaluation utilises a multitude of strategies and methods from which to gather information however action research approaches are described as highly appropriate for evaluation[89, 96]. Action research has in-built evaluation in its methodological framework and provides a robust qualitative methodology to inform methods of evaluation. Evaluation recognises and utilises the 'evaluator's own experiences, values, beliefs, and expectation'[89(page 9)] and allows for professional judgment in the analysis of results. This foundation is similar to action research which is the only research methodology where the research subjects are active participants in the planning, implementing and analysis of the research process and the researcher(s) are involved as active participants the process. Using action research as the method of data collection and analysis in intervention evaluation allows for the unique perspective of the participants and researchers to be built upon and incorporated into the evaluation process[96]. The research process is informed by feedback from participants through a continuous cycle of planning (think), action (act) and reflection (look)[93] (Figure 3.1).

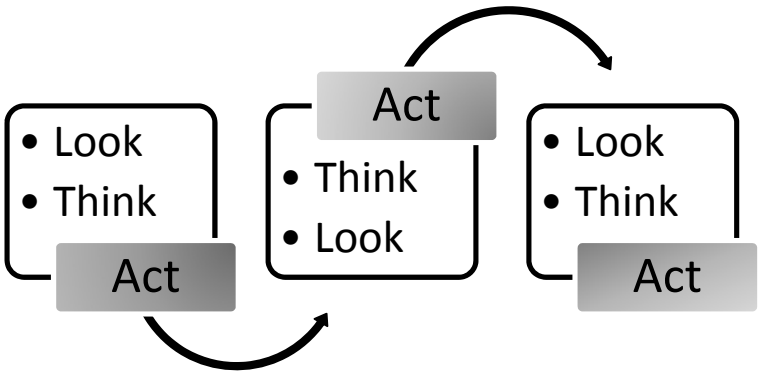


Figure 3.1 Action research methodological process spiral[97].

3.1.3. Relevance to the research

Action research methodology embedded into an evaluation framework provides an effective foundation from which to evaluate a mentoring circle intervention for public health nutrition workforce development. This is due to the unique ability of action research to involve participants and researcher in the research process and continually review and modify the process. No other methodology allows for this to occur as part of the research process. Action research also provides an effective theoretical basis for a mixed approach of qualitative and quantitative methods. Action research as a research method has a built in step of influencing change. Evaluation provides a structured framework to guide the inquiry and focus the research questions. The phenomenological foundations to action research allowed for a focus on identification of the experience of participants and the researcher in the project. Together they provided an effective platform from which to base workforce development recommendations for action. The details of the methodologies will now be described.

> 'Action research is a potentially suitable tool for ….. inquiry into the quality of mentoring programs. First, it is a model specifically designed to examine human endeavours like education. Second, because action research focuses specifically on practice it is eminently suited to address research into the development and knowledge of the quality of mentoring programs'[98(page 156)].

Action research methodology allowed for the views and experiences of the public health nutrition workforce to assist in shaping the design of the mentoring intervention and assessing the quality and effect of the intervention on practice. It allowed for the creation of a balance of power between researcher and participants which was essential especially for the mentoring intervention. This methodological approach also provided the opportunity to develop and review the study design during its implementation and allowed the main researcher, the PhD candidate, to be implicitly involved in all phases of the study. The potential for the research process to design future recommendations for policy and practice for public health nutrition workforce development was also essential.

3.1.4. Approaches to action research methodology

A number of different terms have been used to describe action research. Cooperative inquiry/mutual collaboration, participatory (action) research, critical/technical action research, action inquiry, action learning and action science are the key approaches described in the literature under the umbrella term of 'action research'[88, 92]. Some of these constructs have more developed theoretical underpinnings and practice guidelines than others. It is important to highlight the different terminologies and subtle differences in approaches that are grouped under this single methodological approach.

Table 3.1 attempts to differentiate between three key approaches to action research based on its key attributes, common settings, methods and outcomes. The use of the term 'participatory' in action research implies research with a disempowered community whereas in other forms of action research the participants will have some form of power. In all forms of action research the aim is to produce an outcome to improve the situation for the participants of the research, however the focus and nature to this outcome varies between approaches. Participatory research aims to influence political, economic or social policy while cooperative and action inquiry endeavours to change process, systems or practice. While quantitative methods are not discounted as part of action research, the predominant paradigm is centered on qualitative methods. However the tools and methods used to collect data vary among approaches.

Table 3.1. Comparisons of some different key action research methodology approaches [86, 88, 92, 93]

Approach	Attributes	Settings	Methods	Outcomes
Participatory research	Shared ownership of research project; Community based analysis of issues; Orientation to community action; Lived experience of people; Equity focused	Disempowered, poor, marginalised communities Researcher embedded in society	Case focused e.g. community meetings and events, storytelling, plays, song, art	Social, economic and political development, social change Empowerment of the people Equity
Co-operative inquiry	All involved in research project are 'researchers' and 'participants' Consensus Self determination of research participants Critical subjectivity	Organisations, workplaces, communities Problem defined in situation	Action and reflection process (i) agree on research question and methods of data collection (ii) apply ideas in everyday practice (iii) immerse in project (iv) review	Practical Improved process, policy Descriptive knowledge generation Dependent on individuals involved
Action Science	Builds on creating solutions to practical problems Integrates practical problem-solving with theory-building Critical reflection	Organisations Communities of practice Problem defined in advance	Phenomenological Interpretive (e.g. accounts and recordings of practice, histories)	Improved practice and effectiveness Change Predictive knowledge generation

The subtleties of difference between the three main approaches to action research are important to consider in the context of this research. Participatory action research focuses on marginalised and disempowered communities and its attempt to influence social policy does not provide the appropriate basis for research on the public health nutrition workforce. The public health nutrition workforce requirement for higher education for employment in these roles, income associated and organisational context suggests that participatory action research does not provide a useful approach for research in this target group. However cooperative inquiry's ability to involve the target group in the formulation of the research process and influence policy, and action sciences focus on interpretation of experiences to affect change, renders them appropriate for use to answer the research question of this study.

The key features being[86, 88, 93]:

- The issue being addressed through the research was defined in advance is current and relevant to the participants and key researcher. The participants applied innovative practice and were responsible for providing data.

- The data analysis was performed by the researcher and participants to increase validity and reduce the number of interpretations.
- The intervention aimed to improve practice and to inform and create change.

Action research methodology has been criticised for its lack of objectivity and transferability[95]. The reliance on qualitative methods and involvement of the researcher in the process of data collection and analysis are key reasons for this appraisal[97]. Advocates for action research argue that it is impossible to research the natural settings using a positivist paradigm and that action research offers an approach to manage the lack of stability in real world settings and the addressed the need to inform practice[97]. Evaluation is described as lacking rigor and quality. Evaluation however can provide a useful framework in which to report research findings particularly in work that requires transformation into practice.

3.1.5. Approaches to Evaluation

Evaluation constitutes a range of formats which are influenced by the reason for the evaluation, focus, timing and approach[96]. Evaluation aims to answer key questions around the appropriateness, effectiveness, efficiencies, impact and sustainability of interventions. Design evaluation, or intervention logic, is used to clarify and document the components of an intervention and plan for its evaluation[96]. Formative evaluation aims to provide information to inform the development of an intervention[94, 96]. Process evaluation is used to examine how an intervention is implemented and refine it[96] and measures the reach, satisfaction, implementation and performance[94]. Impact and outcome evaluation measure the worth of an intervention[94, 96]. Impact evaluation measures whether a intervention has achieved its objectives (short term) and outcome evaluation measures whether a intervention has met its goals (long term) [94] (Table 3.2). There is however disagreement in this terminology in the literature with others proposing that outcome evaluation measures short term and impact evaluation measure longer term results[89]. For the purpose of this research impact evaluation will refer to shorter term outcomes or whether the intervention has met its objectives and outcome evaluation will measure the longer term outcomes and whether the intervention has met its goal. This format was chosen based on the context of this research being in Australia

and the focus of health promotion impacts being on intermediate effects and outcomes more longer effects in program evaluation[99]. This research study focused on formative, process, impact and outcome evaluation approaches, using action research to evaluate, and used these findings to inform action for change.

Table 3.2. Comparisons of different forms of intervention evaluation[88, 94, 96].

Type	Orientation	Purpose
Design Evaluation	Description of intervention logic	Clarify purpose of intervention and evaluation
Formative Evaluation	Measures the development of the intervention	Inform the development of the intervention
Process Evaluation	Measures the activities of the intervention	Improvement in intervention delivery and quality
Impact Evaluation	Measures whether intervention has achieved its objectives	Decide on interventions worth
Outcome Evaluation	Measures whether intervention has achieved its goal	Decide on interventions impact and effect

3.2. Methodological Framework for Evaluation

This research used a mixed methodology study design in the context of an action research evaluation process. The action research process involved initial investigation and planning, gathering information, action, analysing data and reflection, communication, revised action and final reflection which is typical of an action research process[100]. The methodology of the project consisted of three key phases which are illustrated in Figure 3.2 below, the outcomes of which were grouped under three forms of evaluation.

<table>
<tr><td>Research Planning →

Literature review

Focus research questions

Consultation with advanced level public health nutritionists

Focus and frame research questions

Frame and plan intervention/mentoring intervention</td><td>Gathering Data →

Collect pre-intervention information from participants

Conduct group mentoring intervention

Observe and reflect

Collect post-intervention information from participants</td><td>Analysing Data →

Analysis of data

Qualitative (experience and impact of intervention)

Quantitative (demographic and competence assessment)</td><td>Communicating →

Mentoring intervention continues/ongoing intervention

Feedback data to ongoing intervention participants

Observe and reflect</td><td>Action →

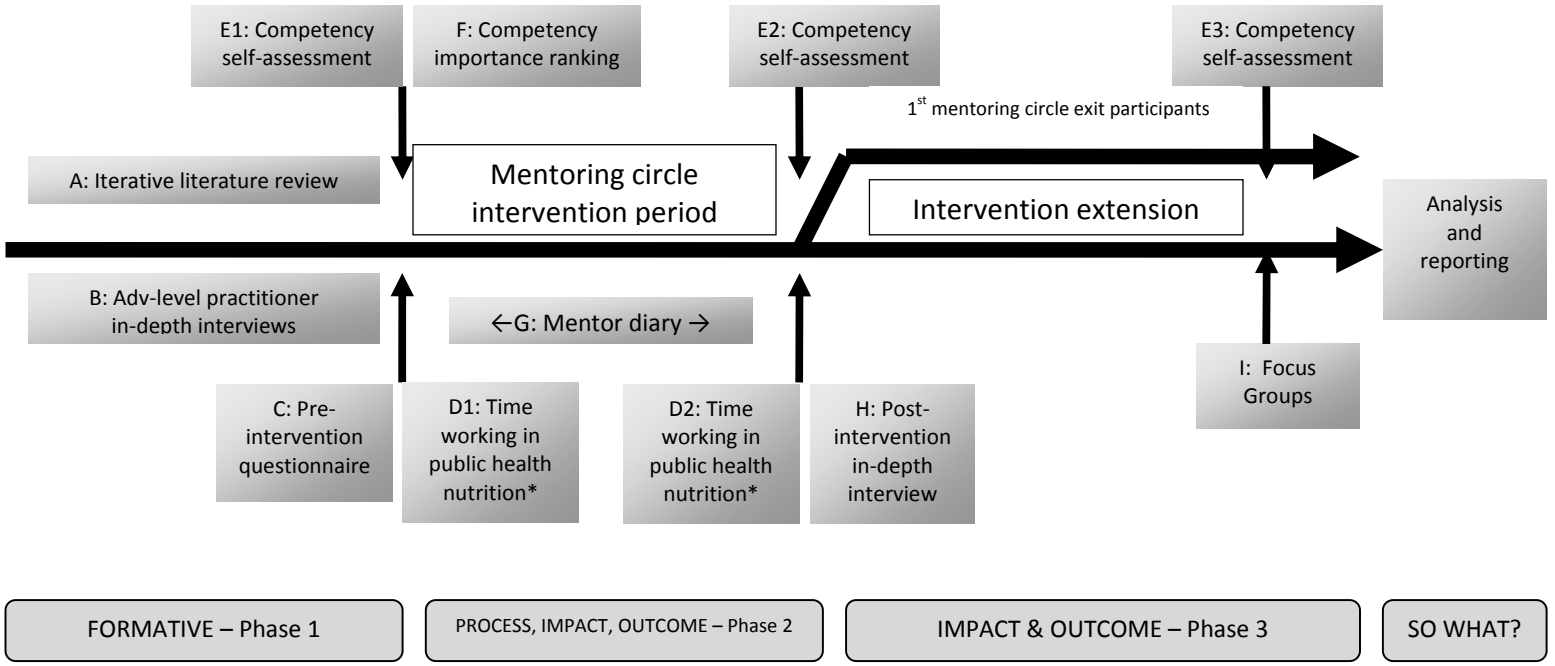
Collect post intervention evaluation data (experience and impact of intervention)

Develop conceptual framework for mentoring</td></tr>
<tr><td>← Phase 1 →
The case for an educational solution to public health nutrition workforce development</td><td colspan="2">← Phase 2 →
The outcomes and experiences of mentoring for recently graduated dietitians working in community and public health nutrition</td><td colspan="2">← Phase 3 →
Evaluation of impact of mentoring and a conceptual framework of mentoring for public health nutrition workforce development</td></tr>
<tr><td>Formative Evaluation</td><td colspan="2">Process & Impact Evaluation</td><td colspan="2">Impact & Outcome Evaluation
Evaluation to Action</td></tr>
<tr><td>Chapter 4</td><td colspan="2">Chapter 7 & 8</td><td colspan="2">Chapter 8 , 9 & 10</td></tr>
</table>

Figure 3.2. Temporal sequence of the research

Model adapted from Action Research Model of Stringer[100] and Intervention Logic Model of McDavid and Hawthorn[89]

Figure 3.3 provides the temporal sequence and evaluation data points for the evaluation.



*Time working in public health nutrition within work role - proxy for workforce capacity

Figure 3.3. Overview of temporal sequence of the study and evaluation data collection points.

Phase 1 explored the potential role of mentoring in public health nutrition workforce development and identified the key elements of effective mentoring in public health nutrition. This was undertaken through an iterative literature review process and by engaging advanced-level public health nutritionists in Australia in in-depth qualitative interviews. These results (reflections and input from the literature) informed the first action (phase 2), a group mentoring intervention or mentoring circle for dietitians working in public health and community nutrition.

Phase 2 involved a mentoring circle for three separate small groups of public health and community nutritionists working in Victoria conducted over six months. It aimed to explore the experience of participating in mentoring and determine the effectiveness of mentoring in developing public health nutrition workforce capacity. Demographic information (for example, qualifications, work roles, level of experience, time dedicated to public health nutrition in current work role etc.) was collected using a structured questionnaire. Post intervention in-depth qualitative interviews were conducted with all participants and the mentor kept a reflective observational diary. Public health nutrition competence was assessed using a quantitative questionnaire tool pre- and post-intervention. At the end of the intervention a subset of participants requested to continue with the mentoring intervention so phase 3 was initiated.

Phase 3 entailed a review of the group mentoring intervention and continuation with one mentoring circle, for an additional nine months extension, with a subset of the original intervention participants. It aimed to evaluate the function of mentoring as an element of public health nutrition workforce development through qualitative focus groups. Public health nutrition competence assessment was repeated using the same quantitative tool, at the end of the nine-month period and the mentor continued to keep a reflective observational diary. In line with action research methodology the final step aimed to bring together all the information gathered from phases 1 to 3 and propose recommendations for mentoring as a workforce development strategy to inform policy and practice.

3.3. Summary

A mixed method action research methodology within an evaluation framework provided an approach to guide this research project. The ability of action research to involve the target population in creating solutions to the problem of workforce development enabled continuous monitoring and review of the methodology. The intervention evaluation framework facilitated the direction and nature of inquiry. The following chapter describes the evaluation methods in detail and includes a discussion of their performance and limitations.

Chapter 4

Evaluation Methods

4.0. Preamble

The purpose of this chapter is to detail the methods used to collect and analyse data across the spectrum of evaluation. Details on the methods used for formative, process, impact and outcome evaluation are described.

The methods are presented sequentially in line with the action research process. The chapter is divided into two key sections; (A) formative evaluation and (B) process, impact and outcome evaluation. Formative evaluation involved an iterative literature review and interviews with advanced-level public health nutritionist to explore and define the role and models of mentoring most appropriate for public health nutrition workforce development. As part of the action research process, this data was used to formulate a mentoring intervention (discussed in Chapter 6). In the second section of the chapter, the methods used to recruit participants to the mentoring intervention and the key forms of data collection and analysis to inform process, impact and outcome evaluation of this intervention described. An overview of the study design, of which ethics approval was obtained from the Monash University Standing Committee on Ethics in Research Involving Humans (CF07/3535 – 2006000593), is shown in Figure 3.3. The subheadings of this chapter refer to the specific method (A through to I) shown in Figure 3.3. The results of these investigations are presented in subsequent chapters.

A. FORMATIVE EVALUATION

The formative evaluation phase of the research project involved a literature review and qualitative investigation of advanced-level public health nutritionists in Australia. The purpose of this phase was to: (i) define and summarise mentoring and models of mentoring in the context of public health nutrition; and (ii) identify the outcomes and potential effectiveness of mentoring for practice improvement. Investigation into the perspectives of advanced-level public health nutritionists also aimed to identify the appropriateness of mentoring as a strategy for workforce development in public health nutrition based on reflection of their practice experience.

4.1. Method A: Iterative Literature Review

4.1.1. Process of literature review

The first step of the research involved reviewing the literature on mentoring relevant to the context of improving practice and developing competence. An iterative literature review process was used to define mentoring, identify the process of mentoring and examine its effectiveness or outcomes. This involved repeated searching for literature to generate the evidence following different key words and search terms identified by the literature. Literature was extracted, reviewed and data synthesised continuously through the process. The iterative process, like a narrative literature review, was not exhaustive or systematic but rather an explorative mechanism to inform and develop relevant knowledge.

The process involved searching Health (PubMed, Medline) and education (ERIC) databases for articles published between 1990 and 2009 using a combination of the terms 'mentor*', 'competence*', 'public health nutrition*', 'dietitian*', 'health promotion', 'workforce', 'capacity building' and 'population health'. Education (ERIC) and health (PubMed, Medline) databases were chosen due to the research questions, applicability and relevance of this study. This process allowed for the definition of mentoring to be refined and a picture of the role of mentoring in public health practice to evolve.

Manuscripts were initially excluded if they described a supervisory or preceptor relationship (as defined in Chapter 2) or if they were an opinion piece or letter. Systematic and narrative review papers with more than twenty references were initially selected for appraisal. Individual manuscripts were read and summarised and definitions of mentoring, mentoring models and benfits/outcomes of mentoring were extracted as they emerged from the literature. As further literature was reviewed, additional detail from these summaries was added to the original summary, which aimed to include conflicting findings. To strengthen and add depth to the data, additional manuscripts on mentoring in public health nutrition, dietetics, public health and/or health promotion and innovative models of mentoring were included for the purposes of the review. As part of the iterative process, as each of these manuscripts was

reviewed, additional pieces of information were included in the data extraction summary as relevant to the research question. The aim of the review was to develop a deeper knowledge of the relevant attributes of mentoring specific to the field of public health nutrition using available and relevant evidence.

4.1.2. Performance of literature review

The non-exhaustive and non-systematic nature of the literature review process had several limitations. Key papers on mentoring and public health nutrition may have been missed from the limited databases searched. Equal weight was given to manuscripts rather than prejudiced by notions of data quality that favours positivist paradigms. A decision to limit the databases used for searching was made due to the plethora of literature on mentoring (for example, 13,900,000 citations on 'mentoring' google.com, 24 November 2009). A systematic review was not chosen for this research due to the lack of experimental studies and variable quality of review papers. Much of the literature on mentoring is descriptive, and few experimental studies exist. Not using expert consultation to identify other key studies was also a potential limitation in that other key review papers may have been missed.

4.2. Method B: Qualitative Interviews with Advanced-Level Practitioners

Qualitative interviews with advanced-level public health nutrition practitioners were conducted to explore their experience and role of mentoring during their professional development.

4.2.1. Sampling

Advanced-level public health nutritionists, defined as,

> 'senior government-level public health nutrition practitioners and academic public health nutritionists from Australian Universities with programs in professional nutrition practice' [50(page 608)]

were recruited from a web based search of the eight Australian state and territory government health departments and the ten Universities with programs in public health nutrition[28]. Stratified purposive sampling was used to cover a range of different work positions and experiences within academic and practical settings[90]. Twenty-one potential advanced-level public health nutritionists were identified and contacted by email and phone and invited to be involved in the study.

4.2.2. Data Collection

In-depth interviews were chosen to investigate the views of the advanced-level public health nutritionists as they provide the opportunity to understand and analyse situations and experiences through conversation[90]. An interview schedule was drafted based on (i) questions related specifically to the role of mentoring in workforce development and (ii) influenced by previous investigation with this group by Hughes (2003)[12]. The interview was based on a set of open-ended questions to invite participation in conversation. The draft questions were

piloted and refined by one of the PhD candidate's supervisors, an advanced-level public health nutritionist working in academia (Table 4.1). The interview schedule was used to guide the interview but not to standardise the process. The schedule was used as a focus of discussions and conversation rather than as structured questions as recommended for qualitative inquiry[90]. The interview schedule was provided to each advanced-level public health nutritionist prior to the interview to allow for them to reflect and give considered responses.

The PhD candidate conducted the interviews. Potential inherent bias in this approach was acknowledged. This was minimised through the use of open-ended questions and limited use of probing. Probing was used only as required to elaborate and clarify responses not to ask leading questions[90]. Active listening was utilised throughout the interviews. For example, responses to verbal cues were addressed through the interview (i.e. if there was silence after a question had been answered, after short pause the researcher rephrased the question) and positive reinforcement of responses provided throughout the interviews[90].

Table 4.1. Advanced-level public health nutritionist interview schedule.

Questions	Inquiry Logic
What has been your career path to get to your current role? What were the events or experiences that contributed most to your own competence development?	Influences on career development
Can you identify any mentor or role model relationships that have impacted on your career development? Can you describe these experiences? Based on your experience what are the attributes of a good mentor? What are the attributes of a good mentor-mentee relationship?	Definitions of mentoring for public health nutrition
How effective do you think a mentoring program specific to public health and community nutrition would be at increasing competencies? Why do you think this? What are the important attributes, structures, elements that need to be considered for the design of a mentoring program? If you have played a role as a mentor can you describe your role and the relationship? What did you enjoy about this role? What were the barriers you encountered? What characteristics would be required as a mentor in public health and community nutrition?	Role of mentoring in public health nutrition

Interview data was collected between August and November 2006. Face-to-face interviews were conducted where possible in Melbourne, Victoria and phone interviews were conducted, for convenience and due to resource limitations, for advanced-level public health nutritionists generally in other states. Interviews lasted approximately one hour. Data was collected until saturation of themes was achieved and the researcher was satisfied that that data was rich enough and covered adequate dimensions of the topic being investigated. Interviews were transcribed from written notes recorded during the interview in full and sent to the participants to allow opportunity to clarify and verify discussions recorded. Fifteen transcripts were edited by the participants for grammatical errors to improve readability and aid interpretation.

4.2.3. Data Analysis

Interview transcripts were analysed manually using a content analysis approach[90]. This involved initial open-coding without use or reference to pre-established codes and a code list was created[101]. Codes were then grouped into categories and key themes were then extracted from the categories[101, 102]. Four interview transcripts (one face-to-face, three telephone) were chosen for separate, independent analysis by the PhD candidate's main supervisor, with a background in nursing, education and qualitative research, to verify analytical coding. Of these one was from a male and the remainder from female participants from practice and academic backgrounds. The analysis included assessment of difference in the nature and degree of data obtained from face-to-face versus phone interviews. This analysis verified codes and categories and clarified detail of themes. Themes were then summarised and interpreted and narrative scripts selected to represent the range of views and provide the best illustration of the themes.

4.2.4. Performance of advanced-level public health nutritionist interviews

Eighteen (3 male, 15 female) advanced-level public health nutritionists were interviewed for this phase of the research. Data was collected by face-to-face (n = 4) and phone (n=14) interview. Both face-to-face and telephone interview techniques were determined to obtain the same degree of data as has been found elsewhere[103].

All states of Australia were represented by the advanced-level public health nutritionists (Victoria=5, New South Wales=4, Northern Territory=2, Tasmania=2, Queensland=2, South Australia=1, Western Australia=1, Australian Capital Territory=1). The advanced-level public health nutritionists had on average 21 years of practice experience in public health nutrition. Forty-four percent had Master of Public Health, 33 percent had doctorates and 83 percent remained members of the DAA (Table 4.2). The demographic data of these advanced level public health nutritionists were similar to those interviewed previously[12].

Table 4.2. Advanced-level public health nutritionist demographics.

	Academic n = 6	*Practitioner n = 12*	*Total n = 18*
Gender	Male =3 Female = 4	Male = 0 Female = 11	Male = 3 Female = 15
Total number of tertiary qualifications including dietetics and nutrition entry-level qualification (mean ± std dev)	4 ± 1	3 ± 1	4 ± 1
Mean years of experience in community and public health nutrition practice (mean ± std dev)	24.6 ± 10.4	19.5 ± 6.5	20.9 ± 8.4
Number with doctorate level qualifications	5	1	6
Number with Master of Public Health	2	6	8
Number of members of the Dietitians Association of Australia	5	10	15

The limitations of purposive sampling in qualitative research were acknowledged in that these findings, unlike those found in a quantitative studies purposive sample, could not be generalised to the wider public health nutritionist population[90]. This was not the intent of the research design and as described above it appears this sample was representative of this population of public health nutritionists from other studies[12]. The potential for inherent bias in having the PhD candidate conduct the interviews was minimised as described above however acknowledged as influencing the data obtained. Having the researcher involved from the inside is an important process in action research methodology to help inform and guide the research process[97].

4.3. Action Based on this Research

The results of the iterative literature review and interviews with advanced-level public health nutritionists are described in the Chapter 5. These results were used to inform an evidence based framework for a mentoring intervention. The format and educational underpinnings of the mentoring intervention is described in detail in Chapter 6. The methods used to recruit participants to the mentoring intervention and the data collected from participants of the mentoring and their analyses are described below.

B. PROCESS, IMPACT AND OUTCOME EVALUATION

4.4. Recruitment and Sampling of Participants

4.4.1. Setting

The setting of the intervention was in the health sector within the state of Victoria, Australia. Victoria was chosen as the location for the intervention for opportunistic and pragmatic reasons. The location of the PhD candidate and the previous workforce development investment by the Victorian government through a range of initiatives between 2003 and 2007 also rendered it an appropriate setting for the intervention.

Previous Victorian workforce development initiatives involved projects supporting community dietitians to work in public health nutrition. This work demonstrated that additional resources and mentoring to undertake public health nutrition action increased the capacity of the dietitians to support relevant communities address a nutrition issue[85, 104]. In addition, a public health nutrition practice manual was drafted and then reviewed and promoted as a tool to guide to guide practice through a statewide one-day training program[105]. Despite these efforts there remained a need to develop the capacity of the Victorian public health nutrition workforce. As part of this investment it was identified that practical experience and support to consolidate knowledge and build skills were important in the way forward for workforce development in Victoria[85, 104, 105].

4.4.2. The mentor

The one mentor was used in this study. In line with insider research and evaluation, the mentor was the PhD candidate in this study and a dietitian with 10 years experience working in public health and community nutrition and post-graduate qualifications in public health and education. The mentor was generally known to participants through involvement in key

public health nutrition activities in Victoria, including her work role as community nutrition placement coordinator at one of the Universities who train dietitians and her volunteer roles associated with DAA.

4.4.3. The mentees

Potential participants were defined as recently graduated (≤5 years) dietitians, employed in Victoria with a component of their current work role in public health or community nutrition. This purposive, criterion sampling was utilised to provide comprehensive and rich data appropriate to answer the research questions[90].

Participants were recruited through verbal advertisement at a public health nutrition training day conducted in two urban and four regional locations across the state during June 2007[105]. Potential participants were also recruited through the DAA public health and community nutrition interest group using an email advertisement (Appendix 1). Expectations of mentoring, including commitment to regular group mentoring for a period of approximately six months and completing relevant documentation, were clearly outlined in the advertisements. Involvement in the mentoring did not make participation in the research compulsory and this was clearly described in the explanatory statement and advertising materials. Signed consent was obtained from participants who volunteered to be part of the research.

4.4.3. Cost of mentoring intervention

The cost of the mentoring intervention was estimated based on the participation time of the mentor and mentees and calculation of cost of other elements required to run the mentoring circles, such as room hire and resources. The amount of hours the mentor and mentees dedicated to the mentoring intervention were approximated and the cost calculated based on

salary rates (not including oncosts) of mentor (academic level B, step 1 $43.40 per hour) and mentees (Victorian state employed dietitian grade 2, year 4 $32.50 per hour).

4.4.4. Performance of mentoring intervention

Initially 39 dietitians expressed interest in being involved in the mentoring intervention. Thirty-two (32) newly graduated dietitians working in public health and community nutrition volunteered to participate in the mentoring and consented to be part of the research study. The seven dietitians that initially expressed interest in participating stated that changes in work circumstances or lack of time to participate were reasons for them not commencing the mentoring intervention. Participants working in metropolitan Victoria, self selected to one of two face-to-face mentoring circles, conducted in two different locations across the wider Melbourne areas (Melbourne – central business district and Clayton – south eastern suburb). Participants who worked in a rural or regional area were allocated to the electronic (video-link) mentoring circle for logistical and resource reasons and also to provide a comparison of electronic communication compared to face-to-face.

All 32 participants (mean years of experience 1.6 years) completed the six-month mentoring intervention (Phase 2) (Table 4.3). The majority of participants completing the intervention were female (n=30, 94%) and were Victorian trained and employed by the Victorian government funded community health (63%) or rural health services (29%). Their work roles involved a mix of direct care dietetics with individuals and community nutrition or health promotion as was defined by their position descriptions. The eight rural dietitians came from seven separate rural locations across Victoria. Thirteen percent of the participants were employed through other sources of funding in organisations including local government, hospitals and Aboriginal community controlled health organisations whose key work role was solely public health and community nutrition. There was no significant difference in the Effective Full Time (EFT) or time in hours dedicated to public health nutrition activities within their work roles between the Melbourne, Clayton and rural group before (Kruskal

Wallis test, χ^2=3.06, p=0.22) or after (Kruskal Wallis test, χ^2=3.93, p=0.14) the six month mentoring intervention.

At baseline, all participants were members of DAA, were Accredited Practising Dietitians (APDs) and entered with only their entry level dietetic qualification. One participant completed a Master of Public Health during the intervention. The majority (n= 26, 81%) of the participants had entered a career in community or public health nutrition directly upon graduation and most (n=20, 63%) were working within their first place of employment. The participants attended on average 4.5 sessions out of the possible 6 (75%) over the six month intervention and there was on average 8 participants present at each session (Table 4.3). In general participants did not know one another unless they had attended University with a fellow participant.

Table 4.3. Demographic characteristics of first mentoring intervention participants derived from baseline questionnaire.

	Melbourne *n=13*	*Clayton* *n=11*	*Rural* *n=8*	*Total* *n = 32*
Gender	Male = 1 Female = 12	Male = 1 Female = 10	Male = 0 Female = 8	Male = 2 Female = 30
Entry-level Dietetic Qualification (D=Deakin University; F=Flinders University; M=Monash University; N=University of Newcastle; O= University of Otago,New Zealand; S=Sydney University)	5=D, 1=F, 6=M, 1=O	4=D, 5=M, 2=S	3=D, 4=M, 1=N	12=D, 1=F, 15=M, 1=N, 1=O, 2=S
Years of experience (mean ± std dev)	2.3 ± 1.2	1.0 ± 0.8	1.4 ± 1.0	1.6 ± 1.1
Mean time dedicated to public health nutrition within work role EFT± std dev (hours ± std dev)	0.5 ± 0.4 (18.75 ± 15)	0.4 ± 0.4 (15 ± 15)	0.2 ± 0.2 (7.5 ± 7.5)	0.4 ± 0.3 (15 ± 11.25)
Number with doctorate level qualifications	0	0	0	0
Number with Master of Public Health	0	0	0	0
Number of members of the DAA	13	11	8	32
Number who participated in DAA provisional APD program	13	11	8	32
Number of sessions attended out of possible 6 (mean ± std dev) [range]	4.3 ± 0.9 [3 - 6]	5.3 ± 1.0 [3 - 6]	3.9 ± 0.6 [3 - 5]	4.5 ± 1.0 [3 - 6]
Number of participants at each session (mean ± std dev) [range]	9.3 ± 2.0 [8 - 13]	9.7 ± 1.2 [8 - 11]	5.0 ± 1.4 [3 - 7]	8.0 ± 2.6 [3 - 13]

At the completion of the six month intervention 12 participants expressed interest in continuing mentoring. All 12 dietitians completed the additional nine month mentoring intervention (Phase 3) (Figure 3.3) (Table 4.4). Eight of these were from the Melbourne based group, 4 from the Clayton based group. The rural participants did not request to continue with the rural mentoring circle. The participants were generally female (92%) and were employed by the Victorian government funded community health (67%) services the remainder (33%) were employed through by local government, hospitals and Aboriginal community controlled health organisations whose key work role was solely public health nutrition. Two additional participants enrolled in Master of Public Health while participating in the additional mentoring intervention. On average participants attended 3 of a possible 5 sessions over the nine month period and there was on average 8 participants present at each session.

Table 4.4. Demographic characteristics of second mentoring intervention participants.

	Total *n = 12*
Gender	Male = 1 Female = 11
Entry-level Dietetic Qualification (D=Deakin University; F=Flinders University; M=Monash University)	5=D, 1=F, 6=M
Years of experience (mean ± std dev)#	2.0 ± 1.4
Time dedicated to public health nutrition within work role EFT ± std dev (hours ± std dev)	 0.6 ± 0.4 (22.5 ±15)
Number with doctorate level qualifications	0
Number with Master of Public Health	1*
Number of members of the DAA	12
Number who participated in DAA provisional APD program	12
Number of sessions attended out of possible 5 (mean ± std dev) [range]	3.3 ± 1.2 [1 - 5]
Number of participants at each session (mean ± std dev) [range]	7.8 ± 1.3 [7 - 12]

based on baseline data
*Two additional participants enrolled in Master of Public Health during the second phase of the mentoring intervention

The sample characteristics of the participants were similar in the first and second mentoring intervention except that those that elected to continue with the mentoring had a significantly greater amount of time working in public health nutrition within their work role (Mann Whitney U test, Z=-2.621, p=0.001). The greater focus on public health nutrition within the work roles of the participants who elected to continue with mentoring is likely to be the main reason for them requesting to continue. The need for professional development and support for public health nutritionists has been previously identified[10].

The purposeful sample was a limiting factor in this study. The attrition rate in the intervention was low with only seven practitioners initially expressing interest and then not following through with the intervention. It is estimated that this sample represents a large proportion of the novice public health nutrition workforce in Victoria described in Chapter 2. The 32 participants involved in the intervention are estimated to represent approximately 80 percent of the novice practitioners working in public health nutrition in Victoria[8]. They may represent a highly motivated sub group of newly graduated dietitians working in public health nutrition in Victoria due to the fact that they have sought out and committed to a professional development opportunity. While this may be viewed as a limitation, in the context of workforce development interventions, it would be reasonable to assume that this volunteer sample is representative of a workforce requesting professional development and thus the findings generalisable.

Transferability relates to the applicability of the findings to other situations[106]. The findings of the study were confined to a defined group of novice public health nutritionists in Victoria, Australia. These findings are transferable to other novice public health nutritionists groups in Australia due to their similar characteristics[11, 18] but would not necessarily translate internationally. The public health nutrition workforce composition differs between countries[19, 20, 39, 40] and thus this sample may not represent novice public health nutrition workforces internationally. The effect and feasibility of mentoring circles on mid-career or advanced-level public health nutritionists is also not known. Extrapolation of these findings to other groups within the public health nutrition workforce should be undertaken with caution.

The transferability of the findings regarding the mentor in this intervention is also important to consider. The characteristics of effective mentors are well described in the literature[3, 34, 38, 107, 108] and are consistent with the findings of this study. These attributes are explicit and the literature suggests that mentoring effectiveness is dependent on the presence of these aspects[38]. It is acknowledged that not everyone possesses the skills and personal qualities to be an effective mentor[109]. Therefore the transferability of these findings to other mentoring interventions are dependent on the presence of these attributes in the mentor.

4.5. Method C: Pre Intervention Questionnaire

4.5.1. Pre intervention (baseline) questionnaire method

At baseline the participants completed a pre-intervention questionnaire indicating their experience to date, place of employment, including roles and responsibilities, and list previous experiences with mentoring (Appendix 2). This provided demographic information. The participants were also asked questions about their expectations of the intervention and the mentor.

4.5.2. Performance of pre-intervention questionnaire

All participants completed the pre-intervention questionnaire with adequate depth of response to allow the summary demographics to be compiled (Table 4.3 and 4.4) and details of expectations of the mentoring and the mentor to be determined.

4.6. Method D1-D2: Time Working in Public Health Nutrition

4.6.1. Time working in public health nutrition method

As part of the baseline questionnaire participants were asked to estimate the amount of time they spent within their existing work role dedicated to public health nutrition activities, in contrast to the proportion of their job roles spent on direct care of individuals and small groups, as defined by their job descriptions. This estimate served as a proxy measure of capacity. This question was asked of participants again at the conclusion of the six month intervention to enable estimation in change to capacity for public health nutrition.

4.6.2. Performance of time estimates

All participants were able to provide an estimate of the amount of time as a fraction of Effective Full Time (EFT) equivalent or hours per week that they spent working on public health nutrition within their work role at baseline and at the completion of the six month mentoring circle. The total EFT working in public health nutrition of the group was 12.8EFT.

There are limitations of using time allocation based on organisational mandates or job description as a proxy measure of public health nutrition practice capacity. This time estimate may not necessarily reflect current practice. It is more likely that the participants over estimated the time spent in this practice area as this workforce has previously reported being drawn to direct care service provision[8]. However this estimate does recognise organisational mandates and allocation for nutrition expertise on addressing population health issues using preventative approaches and in Victoria is discussed as a measure of public health nutrition capacity of the workforce.

4.7. Method E1 - E3: Competence Self-Assessment

4.7.1. Competence self-assessment method

Attempts to measure the public health nutrition competence of the workforce have been undertaken on American public health nutritionists in 1990[110] and Canadian public health nutritionists in 1991[111]. While these tools showed good reliability they were not deemed appropriate for use in this study. This was due to the significant movements in the field, the emergence of an international definition of public health nutrition and agreement on core public health nutrition competencies since that time[29].

In the absence of a valid and reliable tool to assess post-graduate competence in public health nutrition a competence self-assessment tool was developed based on twenty three public health nutrition core competence areas. The competence areas chosen were formulated based on those identified as core competencies through a previous Delphi process to improve the content validity of the instrument[29]. These 39 core competencies were adapted to reflect the work roles and experience of the participants and edited for ease of use as an assessment tool as follows. Fourteen competencies were excluded from use in the tool as they either did not reflect the work role of participants, were entry level competencies obtained as part of dietetic qualification or could be represented through another competence area in the context of the participants work practice (Table 4.5).

Table 4.5. Competence areas removed from Hughes core set[29] and reasons for removal.

Competence:	• Assess the evidence and impact of health and health care interventions, programs and services and apply these assessment to practice • Provision of preventive nutrition programs
Reason for Exclusion:	*In the context of the work of the participants, it could be incorporated as part of "Design, plan, implement, monitor and evaluate nutrition strategies and programs for promoting health and well-being of the population that reduce inequalities"*
Competence:	• Provide nutrition information/intelligence to various target groups
Reason for Exclusion:	*Wanted to move group towards socio-environmental approaches to nutrition problems*
Competence:	• Strategic planning • Negotiation skills • Systems thinking skills • Team building • Computing and technology utilisation/information technology • Leadership: motivation, dedication, vision)
Reason for Exclusion:	*Due to the low level of experience and work roles of participants does not involve management/leadership*
Competence:	• Food composition • Food guidance and goals • Lifespan nutrition
Reason for Exclusion:	*Dietetic qualifications of participants – these are entry level competencies for entry into dietetics*
Competence:	• Able and willing to consult and refer to others when extra competencies are required
Reason for Exclusion:	*Not relevant to mentoring intervention context*
Competence:	• Values and participates in peer review
Reason for Exclusion:	*Due to the low level of experience and work roles of participants*

The participants were newly graduated with limited experience and thus management and leadership competencies were not deemed relevant to their context. Due to their limited experience in working in population based prevention, the competence areas related to practice and decisions on intervention for practice were minimised to reduce confusion and improve confidence. Competencies that were not felt to be able to be developed within the aim of the mentoring intervention were also excluded. In addition four competence areas were merged into two statements due to their similarity and to improve ease of reading and use. For example, "interpersonal communication" and "written communication" were merged into the one statement "Interpersonal and written communication" (Table 4.6).

Table 4.6. Competencies for public health nutrition for competence assessment tool.

Core Competence Areas
ANALYTICAL
1. Food and Nutrition monitoring and surveillance*
2. Needs assessment- assessing population needs using various methods
3. Applied research, research and development. The ability to appraise, plan and manage research, interpret research findings and apply in practice
4. Analysing the determinants of nutrition issues using a range of information sources
SOCIO-CULTURAL & POLITICAL
5. Knowledge and understanding of the psychological, social and cultural factors which influence food and dietary choices
6. Policy processes: policy development skills, influence policy development, evaluate policy impacts, organizational politics
7. Building community capacity: community engagement, collaboration, partnership, coalition building and community dimensions of practice skills
8. Advocacy at government, organization, profession levels
9. Awareness, knowledge and skills that enable a system, agency, or professional to work effectively in cross-cultural situations
PUBLIC HEALTH SERVICES
10. Design, plan, implement, monitor and evaluate nutrition strategies and programs for promoting health and well-being of the population that reduce inequalities
11. Principles and practice of health education, health promotion theory, behaviour change and health promotion policy and programs, public health methods
12. Knowledge of food and nutrition systems and community food needs
13. Building capacity of the health workforce through training, up-skilling and mentoring
14. Service and program prioritisation based on identified needs, their potential impact, as defined by objective measurable criteria
COMMUNICATION
15. Interpersonal and written communication*
16. Grantsmanship-submission writing to access resources to enable intervention and service delivery
NUTRITION SCIENCE
17. Assessment of food, nutrient and dietary intakes and status in populations
18. Nutritional requirements of populations
19. Population nutrition intervention strategy options and selection
PROFESSIONAL
20. Professional accountability and social responsibility
21. Ethics of public health nutrition practice
22. Commitment to continual competency development and lifelong learning
23. Reflective practice to enhance performance

adapted from Hughes 2003[29]

* Merged two similar statements into one statement

Competency standards are traditionally used as an assessment tool to measure performance by an examiner[53, 112]. The fact that the intervention was a mentoring program and thus the relationship was built on trust and was voluntary, assessment of competence by the mentor would have contradicted the intended purpose of the mentoring. The use of an external assessor was not deemed practical or appropriate as this was not common practice in this setting.

Self-assessment of competence is generally not considered as reliable and valid[112]. However, self-assessment of competence reflects participant's awareness of and reflection on competence and is used as the mechanism for performance review and professional development in dietetics[113, 114]. Self-assessment has been used as a measure of competence or preparedness for practice in medicine[115] and nutrition and dietetics [116] and there is some evidence in public health nutrition that self-assessment of competence can be valid[111]. Self-assessment is relied upon for monitoring and to improve practice and evidence is emerging around ways to improve self-monitoring in practice[117]. The purpose of the tool was to provide an indication of the perceived impact of mentoring on competence development.

A five-point Likert scale was used to rate participants self-assessed level of confidence in each of the 23 competency areas (1 = not confident to 5 = confident). A Likert scale provides a quantitative value of the amount of an element by a responder who expresses their opinion on a continuum for a number of statements[118]. It has been suggested that the minimum number of items for the continuum should be five[118] and thus this was chosen for the development of this tool.

All participants completed a self-assessment of their public health nutrition competence using this tool at baseline (Appendix 3). At the conclusion of the six month mentoring intervention participants were asked to repeat the competence self-assessment and were able to view their pre-intervention ranking on the scale for each of the competency area. This was undertaken, informed by reflection, to provide a picture of the self-perceived change in competence across the different areas. Twelve months after the completion of the six month intervention, all participants were asked to repeat the competence self-assessment tool. This provided a mechanism to measure any difference in competence between participants who had continued

with the extension phase of the mentoring intervention those who had chosen to exit after six months. A 12 month time period was chosen to allow adequate time in the participants' careers to measure change but also not too long to have lost contact with participants.

4.7.2. Performance of competence self-assessment

All 32 participants (100% response rate) completed the competence self-assessment pre (E1) and post (E2) participation in six month mentoring intervention. Of the 12 participants who completed the extension nine months, 11 participants completed the competence self-assessment 12 months after the end of the first phase of the intervention (E3) (92% response rate). Sixteen of the 20 participants who exited the initial six month intervention completed the competence self-assessment also at this time (E3) (80% response rate).

The limitations of the competence self-assessment are acknowledged. The ability of the competence self-assessment as an accurate measure of true change in competence was limited. The self reported nature of this data is a limiting factor. It is widely accepted that self-assessment of competence is not accurate[112].

Respondent bias is common for a likert scale and one of the limitations of this method of data collection[118]. Participants may have inaccurately rated their competence due to a lack of understanding of the competence area or poor self-assessment of their ability in the area. This bias was minimised by using the change in confidence from baseline to after the mentoring intervention rather than the raw pre- or post- score alone.

The validity, or 'the degree to which a scale measures what it is supposed to measure'[106(page 17)], of the instrument was enhanced by using content in the scale previously identified through expert consensus by Hughes (2003)[29].

4.8. Method F: Competence Importance Ranking

4.8.1. Method of competence importance ranking

To assist in interpretation of the competence self-assessment data participants were also asked to rank the competency areas in order of importance as relevant to their practice. At baseline the participants ranked the importance of each of the public health nutrition competency areas listed in the competence self-assessment tool described above from 1 (most important) to 23 (not important) (Appendix 4). Ranking 'forces people to differentiate among the responses'[118(page53)] and provided an additional piece of data on the value or importance of each of the competency areas to the participants.

4.8.2. Performance of competence importance ranking

Twenty seven participants completed the competence importance ranking (84% response rate). Respondent burden was the most likely reason for the lower response rate compared to the self-assessment. While ranking and rating are often well correlated, ratings are preferred for statistical analysis[118]. The importance ranking may provide a sense of the roles the participants viewed as important to conduct their role effectively however due to the limited analysis available for ranking it should be interpreted with caution.

4.9. Method G: Mentor's Observations and Reflections Diary

4.9.1. Method of mentor observation and reflections

Throughout the intervention a mentor administered diary cataloged the observations and reflections from each of the mentoring circle sessions and notes on correspondence with participants. The reflection documentation was based on the reflective practice cycle described by Gibbs[119] and was therefore a structured reflective account. The reflection described what happened during the session (observations), how it went, what sense can be made of the situation, what could have been and should be done differently next time. The reflection incorporated two forms of qualitative methods, observation and research notes, and were used to supplement and assist in interpretation of other data[90, 92]. Written observations of interactions between participants and/or mentor were recorded to contextualise and verify data from other qualitative and quantitative methods.

4.9.2. Performance of mentor observation and reflections

The mentor's reflections were recorded for each group session (6 sessions x 3 groups) with a total of 18 descriptive reflection pieces, of approximately 300 words each, for the first mentoring intervention. Five additional descriptive reflection pieces, of similar length, were recorded by the mentor for the extension phase of the mentoring intervention (5 sessions x 1 group).

Qualitative data acknowledges and values the bias potentially introduced by the researcher[120]. The researcher in this study may have introduced bias. The involvement of the researcher as the mentor and thus a participant in the research was purposeful based on an action research paradigm[86]. The benefits of having the researcher implicitly involved were many. The researcher was known to many participants and had an established position and respect within public health nutrition in Victoria. The insider researcher's ability to guide and review the research process immediately from within strengthened the ability of the intervention to be

responsive. The role of the researcher in shaping the ideas of participants was acknowledged as beneficial to both their development but also the depth of the data obtained. While attempts were made through the data analysis progress to improve the rigour of the findings, the potential bias introduced by the researcher needs to be taken into consideration when interpreting the findings.

4.10. Method H: Post Intervention Participant Interviews

4.10.1. Method of participant interviews

At the completion of the six month intervention all participants (n=32) took part in an individual in-depth interview. In-depth interviews were chosen to provide interpretation to the participants experience and new knowledge while reducing the influence of fellow mentoring intervention participants[90]. To reduce acquiescence bias related to the participants evaluating the mentor, an independent research assistant undertook the interviews to allow the participants the opportunity to speak freely about the mentoring circle without in the absence of the mentor.

Interview questions were developed around four domains of inquiry formulated based on the evaluation framework to gather process, impact and outcome evaluation data as defined by Hawe[94] (Table 4.7).

Table 4.7. Framework for evaluation.

Evaluation	Question
Process	What was the quality of the intervention? Are participants satisfied? Did it meet expectations? What was the experience of participating in the intervention?
Impact	As a result of the intervention, did the competence and confidence of participants increase? Did they experience increased professional support?
Outcome	Was there practice improvement/reorientation of practice? Did the participant's capacity for public health nutrition action increase?

The domains of inquiry included: (i) work role; (ii) experience of participating in the mentoring; (iii) capacity to undertake public health nutrition action; and (iv) competence development (Table 4.8).

Table 4.8. Mentoring circle participants interview schedule and line of inquiry.

Question	Inquiry Logic / Evaluation
What is your current position and organisation? Has this position changed since you commenced the mentoring program?	Capacity*
Did the mentoring program meet your expectations and needs? If yes, how? If not, why not?	Experience - Quality of the program
What have been your key achievements in your workplace or personally while involved in the mentoring program?	Capacity* & competence development
What do you believe have been the strengths and weaknesses of the mentoring program?	Experience - Quality of the program
What qualities have been important to you in your mentor? Where there any gaps in the knowledge, skills, experience and mentoring qualities of the mentor?	Experience - Quality of the program
Have you had any other mentor-type relationships during your involvement with the mentoring program? Please describe. *Prompt: What other supports or systems have helped improved your competence during the mentoring program?*	Competence development
Can you describe your competence development during the mentoring program? What aspects of the mentoring program allowed for competence development?	Competence development
Can you describe your experience of the developing your learning plan and reflecting on your learning?	Experience - Quality of the program
Do you think this was an effective measure of your competence? How could it be improved?	Competence development

*Capacity in the context of research refers to improvement and/or reorientation of practice.

Interviews were conducted between April and June 2008. Face-to-face interviews were conducted when possible and phone interviews were conducted due to logistics and financial resource limitations, for example for participants located in a rural area (Table 4.9). All participants gave permission to have their interviews audio recorded, written notes were also taken by the interviewer. Interviews lasted approximately thirty minutes. Interview recordings were transcribed verbatim and compared with interviewer notes for verification and to aid interpretation[90].

Table 4.9. Telephone versus phone interviews.

	Telephone	Face-to-Face
Melbourne based group	3 (23%)	10 (77%)
Clayton based group	4 (36%)	7 (64%)
Rural based group	3 (38%)	5 (62%)
TOTAL	10	21

4.10.2. Performance of participant interviews

All 32 participants completed the in-depth interview. Twenty two interviews were conducted face-to-face and 10 were performed by telephone (Table 4.9). There was minimal difference observed in the degree of data obtained from face-to-face or telephone interview. The only notable difference was that some of the telephone interviews were a little shorter in duration than the face-to-face interviews. The similarity between the ability of the two techniques to obtain the same degree of data is reported in the literature[103].

There were some limitations in the in-depth interviews. While the results from the participant in-depth interviews were consistent, the depth of the data obtained through these interviews may have been limited by having an inexperienced researcher collect the data. The need to have an independent researcher, rather than the mentor, conduct the interviews to ensure the participants could freely answer the questions regarding the quality of the mentor was important (acquiescence bias). This issue outweighed the limitations of having a less experienced, independent researcher who was not immersed in the intervention, undertake the interview. However, the lack of depth to conversations was acknowledged as a limitation of this method.

4.11. Method I: Focus Groups

4.11.1. Description of focus group method

At the conclusion of the mentoring intervention extension (phase 3), the participants were invited to attend one of two focus groups held on the same day to evaluate the mentoring circle. It was anticipated that two group discussions would yield enough data to adequately cover the dimensions of the topics under investigation due to the criterion sampling technique and knowledge of the breadth and depth of opinions of the participants. Focus group methodology was chosen to build on the relationships developed and interaction between participants and allowed for focused discussion around participants' experiences[90]. When conducted appropriately and analysed thoroughly, focus groups have the potential to provide good quality evidence[121].

The focus group discussions aimed to build on the in-depth individual responses gained from the individual interviews undertaken in phase 2, with a particular emphasis on filling gaps in understanding as identified through the contact summary sheets[101], and to gain new understanding around the recommended role for mentoring as part of workforce development. The mentor acted as the moderator during the focus groups to facilitate discussions and promote interaction through conversation[90]. The mentor's previous experience in working with the group was deemed advantageous to elicit detailed discussions[90]. An independent research assistant (the same person who conducted in the interviews in phase 2) supported the focus groups by documenting notes from discussions of what was said during the focus group.

The purpose of the focus groups was to evaluate the mentoring extension, validate the interview data and gather data on recommendations for practice and policy. The focus groups were designed to evaluate the intervention based on the forms of evaluation described in Table 4.7. They also aimed to elicit the participant's opinions of the role of mentoring in workforce development and identify key elements of an educational framework. Focus group questions (Table 4.10) were used to gain participants' varied opinions. Generally a range of perspectives and opinions were sought, however elements of a nominal group process[122] were

used in the later stages of the focus group process to build consensus and agreement on the elements for the framework.

Participants were provided with a summary of the analysis from the interviews from phase 2 of the research prior to taking part in the focus groups. All participants gave permission to have the focus group audio-recorded and written notes were also taken. Each focus group went for approximately 70 minutes. Focus group recordings were transcribed verbatim and compared with written notes for verification and to aid interpretation.

Table 4.10. Focus group questions

Question	Inquiry Logic	Evaluation
1. Referring to the data obtained from the interviews with participants in the first stage of the program, is this representative of the story, process or experience of participating in the program? What (if anything) has the additional time in the program provided you?	Experience - Quality of the program Impact on practice	Process Impact
2. Do you see mentoring as part of a solution to workforce development in public health and community nutrition? If so, what would a model look like?	Capacity building - Recommendations for Policy and Practice	Outcome
3. Can you describe your dream vision for public health and community nutrition in Victoria? What would it look like? In your view how we can make this vision happen?	Capacity building - Recommendations for Policy and Practice	Outcome

4.11.2. Performance of focus groups

Nine of the 12 mentoring circle extension participants attended the focus groups (5 in focus group 1, and 4 in focus group 2). Gathering data from only those who had committed to mentoring for the extended period of time may have positively skewed the feedback obtained. However, in the context of evaluating the intervention this was not viewed as a bias rather as useful data on the process, impact and outcome of longer term professional development.

4.12. Qualitative Data Analysis

4.12.1. Open-ended questions, reflections, interviews, focus groups

All qualitative data derived from baseline open-ended questionnaire questions, in-depth interviews, mentor diary/reflections and focus groups were analysed using similar methods. This qualitative data was managed using NVivo8 (*QSR International, 2008*). Data from the open-ended questionnaire questions, in-depth interviews, mentor diary and focus groups were initially analysed separately and later pooled. Each in-depth interview was condensed into a contact summary sheet as described by Miles and Huberman[101]. This was important to allow quick reference to specific pieces of data and to identify gaps in data that could be explored and developed through focus groups.

A thematic analysis approach as described by Liamputtong[90, 106] was used to analyse all forms of qualitative data. Initially open-coding was undertaken manually without use or reference to pre-established codes and a code list was created for each of the sets of data[123]. The separate data code sets were then condensed into the one list of codes (column I, Table 4.11). The sets of data were then analysed separately using NVivo8 and coded with pre-existing codes developed based on the research questions[101] (column III, Table 4.11). Both analyses codes were then compared and consolidated into categories (column II, Table 4.11). Table 4.11 lists the codes identified through the different analysis processes and the categories emerged.

Table 4.11. Codes identified through different analysis processes and categories developed formed from codes.

I: Codes emerged from manual analysis	II: Categories	III: Codes used for NVivo analysis
- Group effective for learning through sharing information - Size and make-up of group - Increased confidence - Increased competence - Qualities of mentor - Environment - Safe, secure, supportive - Focus on competence development - Electronic communication between sessions not utilis - ed - Time - Commitment - Networks developed - Increased passion for work in public health nutrition - Greater capacity in organisation for public health nutrition - Advocacy for the role of dietitians in public health nutrition - Competence in becoming mentor - Isolated positions - Varying degrees of time for work in public health and community nutrition - Drawing on each other's experiences - Access to one-on-one mentoring in addition to group - Reflective practice important - Learning plan - effective framework for learning - Learning plan - needs to be flexible - Workplaces often don't offer support/supervision - Limited other forms of support - Workplace support to attend important - Learning on the job by experience - Advanced level competencies - Role of DAA APD program	Mentoring circle structure Mentoring circle function Learning environment Competence development Confidence Capacity for action Organisation development Other supports/structures Role of mentoring in workforce development	Education - Methods of assessment - On the job learning - Pedagogy Experience - Group - Individual - Negative - Positive Framework for mentoring - Qualities of mentor - Structure Impacts -Competence - Confidence - Individual - Organisational Outcome - Capacity Policy - Dietitians - Government - Organisation

The key categories were then summarised and interpreted into themes. Narrative scripts or indicative quotes were selected to represent the range of participants and provide the best illustration of the themes and findings. To assist in further illustrating the themes that emerged from the data a selection of individual participant's stories were also reported based on case study methodology[124]. Three participants were chosen as cases to represent the

different groups and characteristics and extend the description of participants' experience in the mentoring circle intervention and outline its potential impact. The first participant was chosen from the Melbourne based mentoring circle as she was not known to the mentor prior to commencing the mentoring circle. The second participant was known to the mentor and she participated in the Clayton circle. The third participant was from a rural area and participated in the rural mentoring circle. She also knew the mentor prior to commencement. The short stories were drafted based on data collected from interviews and focus groups and were fleshed out through review of the three selected participants' learning plans. The stories were then emailed to the participants for verification. All three participants responded with only minor grammatical corrections to their short story.

Researcher triangulation was conducted for the qualitative methods. Independent review of the codes, categories and themes was conducted by the research assistant who conducted the interviews and focus groups who verified the codes and categories. The PhD candidate supervisors also separately analysed the interview and focus group data and verified the themes. Focus group participants were sent a summary of the analysis of interview transcripts prior to their participation in the focus groups. Eight participants responded to the opportunity to provide feedback and verified the analysis, with two participants making minor suggestions for change related to reducing emphasis or strength of some of the findings. Focus group participants were also sent a summary of the analysis from the focus groups and verified the themes and explanations without modification. The themes were then grouped under process, impact and outcome evaluation questions (Table 4.12).

Table 4.12. Categories to themes and level of evaluation.

Categories	Themes	Evaluation
Mentoring circle structure		
	Learning environment	
Mentoring circle function		
	Structure and function of mentoring circle	} Process
Learning environment		
	Barriers and enablers to participation	
Competence development		
Confidence	Competence development	
		} Impact
Capacity for action	Networks and professional support	
Organisation development		
	Capacity for public health nutrition action	} Outcome
Other supports/structures		
Role of mentoring in workforce development		

Focus group data was also examined for disagreement between participants, through reflection by the facilitator after the focus group, to deepen the understanding of the issues[121]. In addition, a list of questions were used to assist analysis of 'interactions and to uncover meanings'[121(page133)] (Table 4.13). This involved reviewing the focus group transcripts in relation to the questions listed in Table 4.13 and identifying any additional codes and interpreting the discussions. Analysis of the focus group discussions were also sent to participants for verification. Only three participants responded, however all three indicated they agreed with interpretation and analysis.

Table 4.13. Key questions used to assist analysis of group interaction. Adapted from Willis et. al.[121(page 133)]

Aspect of interaction for analysis
What topics/opinions produced consensus?
What statements seemed to evoke conflict?
What were the contradictions in the discussion?
What common experiences were expressed?
Did the collective interaction generate new insights or precipitate an exchange of information among participants?
Was a particular member or viewpoint silenced?
How closely did the group adhere to the issues presented for discussion?
How did the group participants respond to the ideas of others?
How did the group resolved disagreements?
How were non-verbal signs and behaviours used to contribute to the discussion?

4.12.2. Strategies used to enhance trustworthiness of qualitative data

Credibility refers to whether the results of studies are 'truthful' or 'believable'[106]. The use of multiple methods to collect data about the participants' experience of the mentoring intervention strengthened the credibility of the study findings. Triangulation of methods collected at baseline, during or at the conclusion of the intervention, provided a more thorough view of the concept being researched to improve rigor in the qualitative methodologies and to strengthen the ability to interpret the findings[90]. Rigor was included in the assessment of data through an analysis of any difference in the degree of data obtained from face-to-face versus phone interviews and rural versus metropolitan participants was conducted as part of the analysis to assist explanation of findings. In addition the PhD candidate and her two supervisors undertook independent analysis of the interview and focus group transcripts. Participants also supported the analysis of interview and focus group data. Triangulation of the analysis provided a mechanism to assist in validating the findings[90]. The ability of the findings to be explained by theory or other evidence further strengthened the credibility[106].

4.13. Quantitative Analysis

4.13.1. Competence self-assessment, ranking and questionnaire

Data from competence self-assessment, competence ranking and questionnaire were analysed using Microsoft Excel (*Microsoft Office, 2003*) and SPSS (*version 16 for Windows, 2008*). Basic descriptive statistics were used to analyse the competence importance ranking. The competence self-assessment data using the five-point Likert scale was ordinal and thus non-parametric analysis was used to compare baseline and post-intervention self-ratings[118]. A p value of less than 0.05 was considered statistically significant. In addition to technically correct median and interquartile range, means and standard deviations were also reported to provide additional illustration of the data distributions to aid interpretation.

4.13.2. Statistical analysis used to assess change in self-reported competence

Table 4.14 summarises the different approaches used to analyse self reported competence data at three different time points (E1, E2, E3 – Figure 4.1).

Table 4.14. Summary of statistical analyses

Comparison	Test Used	Interpretation
Association between sum total competence and: i. Years of experience ii. EFT (hours per week) working in public health nutrition	Spearman's rank order correlation	r and p values. A relationship exists between variables when r>0.7 and p ≤0.05. ∴ if r>0.7 and p ≤0.05 those with more year of experience and time working in public health nutrition would have greater self reported competence
Association between change in sum of competence and: i. attendance	Spearman's rank order correlation	r and p values. A relationship exists between variables when r>0.7 and p ≤0.05. ∴ if r>0.7 and p ≤0.05 those who attended mentoring more regularly had greater self reported change in competence after participation in mentoring
Degree of difference in EFT(hours per week) working in public health nutrition between 3 groups/mentoring circles (Melbourne, Clayton, rural)	Kruskal-Wallis test	χ^2 and p value. If p≥0.05 there is no significant different in the amount of time working in public health nutrition between the different mentoring groups
Degree of difference in EFT (hours per week) working in public health nutrition between 2 groups/mentoring circles – those who continued with mentoring intervention for additional nine-months and those who did not	Mann Whitney U test	Z score and p value. If p value ≤0.05 there is significant differences in the EFT (hours per week) between the group that exited after six months of mentoring and those that continued for an additional nine months of mentoring
Change in sum of competence items rating pre- vs post- sixmonth mentoring interevention	Wilcoxon t test	Z-score and p value. If p value ≤0.05 mentoring had a significant effect on total sum of competencies
Change in Individual competence items (1-23) rating pre- vs post- six month mentoring intervention	Wilcoxon t test	Z-score and p value. If p value ≤0.05 for each individual competency area mentoring had a significant effect on each competency.
Change in sum of competence pre- and post-extension nine month mentoring intervention for those who continued and those that exited	Mann Whitney U test	Z score and p value. If p value ≤0.05 there is significant differences in the sum of competence for those who continued with the extension phase for an additional nine months and those that exited after six months
Change in Individual competency items (1-23) rating pre- and post- extension nine month mentoring intervention for those who continued and those that exited	Mann Whitney U test	Z score and p value. If p value ≤0.05 there is significant differences in the individual competency areas for those who continued with the extension phase for an additional nine months and those that exited after six months

4.14. Summary

This chapter provided a detailed description of the methods used in this evaluative study design shown in Figure 3.3. This chapter provides a basis and justification of the approach to the work and describes, in sequence, the results of implementation of the methods described above. The next chapter outlines the results of the formative evaluation from the iterative literature review an in-depth interviews with advanced-level practitioners.

Chapter 5

Formative Evaluation - The case for a workforce development intervention involving mentoring

5.0. Preamble

This chapter describes the results of the iterative literature review of mentoring in public health nutrition workforce development and the qualitative investigation of the role of mentoring in the development of competence of advanced-level public health nutritionists in Australia. The research question this chapter aims to answer surrounds the nature and role of mentoring in public health nutrition workforce development.

The purpose of this chapter is to provide the rationale and justification for group mentoring as a workforce development intervention in public health nutrition, using the literature and expert opinion. An iterative literature review together with in-depth, qualitative interviews with advanced-level public health nutritionists was used. The purpose of this methodology was to define mentoring and the potential role of mentoring in the field of public health nutrition. It also aimed to identify whether mentoring is supported as an effective strategy for workforce development in public health nutrition and provide rationale and justification for the mentoring circle intervention described in Chapter 6.

The contents of this chapter include the results of the literature review, including definitions of mentoring and other supportive learning relationships, benefits, outcomes and challenges of the mentoring relationship and models, frameworks and modes of mentoring. Strengths and deficits in the published methodologies are also highlighted. It also includes the results of qualitative interviews with advanced-level public health nutritionists on the role of mentoring in public health nutrition workforce development (Table 5.1). These results are discussed using the literature.

Table 5.1. Summary of results presented in chapter.

Mentoring from the literature	▪ Definitions of mentoring and other supportive relationships ▪ The mentoring relationship, its benefits, outcomes and challenges ▪ Models, frameworks and modes of mentoring ▪ Summary of mentoring and lessons for public health nutrition workforce development
Perspectives and experiences of advanced-level public health nutritionists	▪ Career pathways of advanced-level public health nutritionists ▪ Influences on public health nutrition competence development ▪ The role of mentoring ▪ Characteristics of the mentoring relationship ▪ Lessons for the development of mentoring for public health nutrition workforce development

5.1. Mentoring from the Literature

5.1.1. Definitions of mentoring and other supportive relationships

Mentoring was first described in Homer's *Odyssey*. 'Mentor' was given the role of teacher and advisor by Ulyssess to rear his son, Telemachus, in his absence while fighting the Trojan war[34, 125, 126]. Mentor was a guardian, teacher and adviser with a significant amount of influence and personal responsibility. Despite some doubt on the effectiveness of this relationship, it was generally considered valuable in the growth and development of the young Telemachus[34].

Today, many definitions of mentoring exist and the definition of mentoring in the literature is both complex and ambiguous. Mentoring is often used synonymously with supervision and/or preceptoring, however, there is evidence to suggest significant key differences in the relationships[126]. Preceptoring is a formalised relationship that provides support and socialisation to the workplace. It is characterised by short duration, support with clinical skills refinement and development and orientation to the workplace environment[126]. Clinical supervision focuses on the development and monitoring of professional skills and is driven by the requirement to ensure safe and professional practice[126, 127]. Supervision often involves performance management or assessment to monitor the quality of professional performance[107, 127]. Mentoring in contrast is a voluntary, longer term relationship driven by the needs of the mentee and is a deep, supportive, reciprocal relationship, often external to a workplace environment, that facilitates personal and professional growth and development[3, 127].

> 'Mentoring concerns the building of a dynamic relationship that embraces shared, encouraging and supportive elements based on mutual attraction and common values'. [126(page 124)]

5.1.2. The mentoring relationship, its, benefits, outcomes and challenges

The mentoring relationship has been defined by key characteristics. One of the most widely quoted definition of mentoring is that of Darling who describes the parameters of mentoring as model envisioner, energiser, investor, supporter, career counselor, standard prodder, teacher, coach, feedback giver, challenger, eye opener, door opener, idea bouncer and problem solver[34, 128]. Mentoring supports the development of new knowledge, skills and attitudes (competencies) and provides a sounding board for ideas[125]. The mentor is a role model who promotes independence, encourages and motivates and is responsible for guiding their mentee or protégé through professional circles[125]. The mentee also has a key role in determining the direction of the relationship and identifying outcomes[3]. The mentoring relationship is based on reciprocity, trust and confidentiality whereby objectivity is maintained and equality promoted[125]. Mentoring is a potentially powerful and emotionally intense relationship[3] (Box 5.1).

Box 5.1. Five elements of the mentoring relationship. Adapted from Berk et.al.[129]

A mentoring relationship:

1. focuses on achievement or acquisition of knowledge;
2. consists of three components: (i) emotional and psychological support, (ii) direct assistance with career and professional development, and (iii) role modeling;
3. is reciprocal where both mentor and mentee derive emotional or tangible benefits;
4. is personal in nature, involving direct interaction;
5. emphasises the mentor's greater experience, influence, and achievement within a particular organisation.

The role of the mentor is to support the design of professional development plans, through active listening and asking questions. The mentee must commit to mentoring and driving their own professional development, accept feedback and take responsibility for their learning and development as described in Table 5.2. Mentoring relationships have also been defined as having four key phases: initiation (establishment), cultivation (development), separation (change), redefining (evaluation) and that for the relationship to work there must be attraction (inspire), action (invest) and affect (support)[34].

> ‘We find ourselves attracted to a potential mentor either by our admiration for the other person or a desire to emulate that person in some way..... The person who is to become influential in our lives invests time and energy on our behalf through teaching, guiding, or helping us in our development. ... these behaviours demonstrate action. .... We want our mentor to have positive feelings towards us; we need to sense the person’s respect, encouragement, and support.’[128 (page 42)]

Table 5.2. The role of the mentor and mentee in the relationship[3, 34, 125, 126].

Role of the Mentor	Role of the Mentee
▪ Listen and assist identification of strengths and areas for development ▪ Specific skill teaching or coaching and support risk taking in learning ▪ Encourage the exploration of ideas ▪ Asking question ▪ Shift mental context or ideals of thinking	▪ Commitment to mentor and mentoring program ▪ Commitment to professional development plan ▪ Believe in an take on new challenges ▪ Seek and accept feedback ▪ Accept responsibility for their own growth and development

The literature describes few reported tangible outcomes of mentoring[129]. Most of the literature on mentoring is opinion or discussion pieces[126]. The challenges of evaluating the quality and outcomes of mentoring programs have been discussed[98]. These issues include the difficulty in achieving consensus in definitions of quality between stakeholders, the conflict between qualitative and quantitative paradigms of measurement and the challenge of measuring changes in attitudes and values[98]. Much of the information in the literature describes the process of mentoring and constitutes self-reported participant satisfaction. However, a number of narrative reviews have reported that there is evidence to suggest that mentoring enables learning and the development of skills, supports the achievement of professional goals and career directions and instills confidence[34, 38, 108, 126]. There is some evidence to suggest that mentoring in the public health field creates opportunities for networking and access to resources, improves career satisfaction, increases professional and interpersonal skills and confidence and develops reflection for both the mentee and mentor[76-78, 130]. No specific data was found that provides evidence of the effect on building public health capacity.

The mentoring relationship may not always be positive or have benefits. One of the most significant reasons that mentoring relationships fail is due to the time commitment required by the mentor[34, 108, 125]. In addition if there are unrealistic expectations, inflexibility, lack of commitment and focus, or poor communication in the relationship, it will not be successful and may be potentially destructive[34, 108, 125]. Mentors that do not balance the mentoring relationship with other commitments and are not available to their mentees are not viewed positively. Similarly mentees who fail to take leadership and responsibility for their development are problematic. A large geographical distance between mentor and mentee may also cause problems[108].

> 'There is a fine line between mentor and tormentor'. [34(page 4)]

5.1.3. Models, frameworks and modes of mentoring

A range of different models and frameworks for mentoring have been proposed. Both formal and informal mentoring has been acknowledged in the literature. The classic mentoring, or informal relationship is based on a natural and mutual agreement with shared interests and a strong sense of interpersonal connectedness[126]. While informal mentoring has been described as challenging to define and evaluate, these relationships have been reported as being retrospective, spontaneous, unconscious and unstructured[126].

> 'It is natural for friendships to develop during these relationships because of mutual attraction, shared interest and deep personal connection. They may even evolve into lasting, lifelong friendships extending over long periods of time'.[126(page 129)]

Formal mentoring arose from the interest in being able to replicate informal mentoring and involves a structured approach to creating and maintaining the relationship which is often facilitated by an organisation or workplace[3]. Formal mentoring may be influenced by other external drivers, for example the organisations of the mentee or mentor. Formal mentoring often involves matching players in the relationship, defining the duration and articulating the

intended outcomes[34, 126]. Formal mentoring is often compulsory and may be part of policy within an organisation[38]. There is some evidence to suggest formal mentoring has greater benefit than informal mentoring[34], however this is most likely to be due to the fact that outcomes may be easier to measure in formal arrangements due the documentation required. The role of the organisations of both the mentor and mentee is often more clearly involved in a formal mentoring relationship[34].

The most commonly reported form for a mentoring relationship is a one-to-one relationship between an experienced mentor and more junior mentee. Group mentoring or mentoring circles, whereby a small group of mentees are supported and learn from one more experienced mentor and each other, and peer-mentoring, where a group of equals share experiences and learn from one another, have been identified[108]. These models have been proposed as an effective alternative to address the issues of poor access to mentors and a lack of time[109]. Where a gap exists in the level of experience of the mentor and mentee models, a half-generation has been recommended as a reasonable gap to allow for adequate transfer of experience but also empathy and understanding of the mentees circumstances[125]. This is in contrast to the historical evolution of the concept where a number of generations existed[3].

The role of multiple mentors or the 'multiple mentor experience model' in shaping professional and career development has also been acknowledged[108, 131]. In addition, the evolution of formal mentoring programs has initiated involvement of the organisations of the mentor and mentee, whereby the organisation plays a role in directing the focus and desired outcomes of the relationship[34]. The relationships are then referred to as mentoring triads, instead of dyads[34]. Organisations can positively influence mentoring relationships by promoting a culture of trust and openness, managing conflicts and expectations and promoting a consistent approach[34]. Together with group mentoring, mentoring triads are recommended as a more sustainable way forward to reduce burden on mentors and promote a culture of mentoring within organisations[34, 109].

Mentoring has evolved from a predominately face-to-face relationship to one that can utilise multiple communication methods. Electronic mentoring involves support being provided via computer mediated mediums including videoconference, email, chat rooms, instant messaging

and discussion boards[132, 133]. Electronic mediums have been used effectively in mentoring relationships[133-135] and are promoted as a mechanism to enable relationships to exist despite geographical, logistical or time barriers[134, 135]. Adaptation of elements of the mentoring relationship to electronic environments must be considered carefully to ensure effectiveness[132, 136]. Generally it is considered that mentoring relationship exist for six months or longer regardless of the medium of communication[34].

5.1.4. Summary of mentoring and lessons for public health nutrition workforce development

Mentoring is a long-term, supportive, trusting relationship which enables personal and professional growth. Despite limited good quality evidence on its effectiveness, participants in programs have reported mentoring as an effective tool for development of new skills and building confidence. The skills and qualities of the mentor together with the commitment of mentee are essential elements for an effective relationship and without these the relationship can fail to achieve its desired intent. Mentoring was traditionally an informal one-to-one, face-to-face relationship, however formal mentoring involving peers, groups and multiple mentors and different mediums for communication have evolved.

Mentoring has the potential to address the determinants of public health nutrition workforce capacity. Mentoring offers a potential model for practice improvement as it has the potential to improve, modify and challenge work practices, increase networks and build competence. Group-type mentoring models may be more efficient in public health nutrition due to the small size of the workforce and to reduce commitment of time. Mentoring is a potentially effective solution to practice improvement and needs to be considered as part of a strategy to workforce development in public health nutrition.

5.2. Perspectives and Experiences of Advanced-Level Public Health Nutritionists

5.2.1. Results of qualitative interviews with advanced-level public health nutritionists

Analysis of the data revealed four key themes.

1. The attributes and career pathways of the participants were consistent with previous findings in this group, and suggest that the current advanced-level practitioners in Australia are the first generation of designated public health nutrition workforce. Dissatisfaction with clinical practice was a key reason for choosing a career in public health.
2. Experiential learning, postgraduate education and mentoring from both peers and senior colleagues were the most significant contributors and influences on competence development.
3. The advanced-level public health nutritionists supported mentoring as an important role in public health nutrition workforce development.
4. The characteristics and models important for mentoring relationships in public health nutrition were articulated and included the reciprocal, trusting and inspiring nature of the relationship.

5.2.1.1. Career pathways of advanced-level public health nutritionists

In response to being asked about their career path leading to their current role most of the participants reported that their careers commenced in clinical practice and then moved into public health nutrition. This has been reported previously as most likely a reflection of the health-care system and professional issues in Australia[12, 50]. The lack of career structure in clinical practice and the frustration with the inability to make long term, significant changes to people's diets were cited as contributing to a career choice in public health. This is consistent

with other work that described the dissatisfaction with clinical dietetics and a need to be effectual as drivers to a career in public health nutrition[12].

The data suggests that the current advanced-level public health nutritionists in Australia are among the first group of nutritionists to be part of a formal workforce system in Australia. They have been pioneers, breaking new ground in moving away from the traditional clinical dietitian role to public health and community nutrition. Being the first workforce limited their opportunities for professional development, further education and mentoring relationships from more senior professionals in the field.

> 'Initially there weren't any real role models – there wasn't anyone'. [Nutritionist 15]

> 'I think I would have benefited from a coursework masters of public health but there wasn't that in our day'. [Nutritionist 7]

They sought challenging career roles and moved early into advanced level responsibility.

> 'I gained confidence in other position by being trusted to do the job and working in a position where I had to hit the ground running and finding out that you could do it'. [Nutritionist 4]

The evolution of this workforce is likely to be in relation to nutrition and health policy shifts towards prevention. The Declaration of the Alma Ata in 1978 and subsequent Ottawa Charter in 1986 were key movements in public health history that saw the shift from individuals to populations and from treatment to prevention[13]. These key movements coincide with the emergence and development of this public health nutrition workforce. Their willingness to challenge themselves in leadership roles is less well explained and may be the result of personality traits or practitioner characteristics. Their lack of satisfaction with clinical dietetics may also help explain their motivation to take on demanding roles.

5.2.1.2. Influences on public health nutrition competence development

The data indicates that experience, training and learning informally from others (both peers and more senior colleagues) have been the influential events and experiences that contributed most to the advanced-level nutritionists' competence. Learning on the job was instrumental in shaping competence. Although training or postgraduate qualifications were deemed important, not all of the nutritionists had access to these types of programs. Being constantly challenged by work roles appeared to develop the nutritionists' competence. Public health working environments, such as those seen when working in Indigenous health, provided rapid orientation to the importance of working to address the broader determinants of health.

> '…being allowed to develop my style and then being thrown in the deep end in a sole community nutrition role'. [Nutritionist 5]

> 'I could never have come into my current role before seeing how hard healthy choices can be for some people…..Seeing health inequalities and great despair made me realise the difference I needed to make…..You have to see disadvantage, you can't read it'. [Nutritionist 2]

The results support the role of experiential or 'on-the-job' learning as a significant contributor to competence development in public health. The learning undertaken by the participants involved reflective practice and recognised the role that both personal and social experience have in shaping learning. These characteristics of learning are described by experiential learning theory[137]. This theory argues that it is not experiential learning on its own that contributes to the attainment of new skills but a range of other opportunities that are available in the experiential learning environment[137].

> 'I was the first nutritionist …. and I was required to start things up from scratch …where I learnt a lot about my own capacity to start new initiatives in unknown territory in an environment that was completely different to my own'. [Nutritionist 1]

Half of the advanced-level nutritionists, representing both practice and academic settings reported mentoring like relationships as contributing to their competence development. Although often working alone, most could still identify positive mentoring relationships, focused on trust, support and learning, during their career development.

> 'I had some strong mentors…. They were instrumental for me in developing my competence.' [Nutritionist 5]

> 'Hearing them [mentors] talk about their work was inspiring. I learnt a lot from them talking about their experiences'. [Nutritionist 11]

All of the participants could identify a mentor or role model relationship that impacted on their career development when specifically asked to reflect on this. The participants indicated that mentoring had a positive impact on professional and personal development in public health and community nutrition and that these workplace environments support ongoing mentoring type relationships. The significance of mentoring in the development of public health nutritionists' careers was illustrated in the fact that many felt an obligation to be involved in mentoring.

> 'I feel a responsibility now to provide that back to people what I was so lucky to have given to me'. [Nutritionist 7]

These data support previous findings that mentors, workplace experiences and postgraduate education were the significant experiences that contributed most to competence development[12]. The recognition of the value of mentoring in developing competence by this group, who are responsible for shaping the upcoming workforce, provides a pathway to foster mentoring within public health nutrition and potentially enhance sustainability of mentoring initiatives.

5.2.1.3. The role of mentoring

When asked whether a mentoring program specific to public health and community nutrition would increase competence there was general agreement that mentoring provides leadership and advice in the knowledge, skills and attitudes required to perform public health. It also provides a sounding board for managing politics and the frustrations in waiting to see long term outcomes that are key roles in public health. The participants indicated that the isolating work of public health would be supported well with mentoring.

> 'It is important. It [a mentoring program for public health nutrition] humanises much of the learning and if done well helps people to learn from other people'. [Nutritionist 6]

However, they acknowledged that a mentoring program specific to public health and community nutrition is only part of the solution to the workforce issues in Australia. They argued that workforce development requires further education in public health as well as increased workforce capacity and clear career paths. A few of the advanced-level practitioners felt that there were already adequate mentoring like arrangements in place in Australia as part of state government organisational structures or professional networks.

> 'Mentoring is not the only solution there needs to be a package but mentoring is a significant part of this package…..You need personal interaction to guide you in understanding the political context of public health nutrition – you can't learn this from a textbook!'. [Nutritionist 5]

Workforce development in public health nutrition has been proposed to include strategic investment in human resource infrastructure, a supportive organisational and policy environment and access to and use of evidence based public health nutrition interventions[4, 32]. This investigation further supports an integrated, multidimensional approach to public health nutrition workforce development that includes mentoring.

5.2.1.3. Characteristics of the mentoring relationship

Reflecting on their experiences of mentoring, both as a mentor and mentee, the important characteristics of mentoring were identified by the advanced-level nutritionists. They described the reciprocal, trusting and inspiring nature of the relationship. Mentors need to be experienced and have the appropriate skills to teach others.

> '[Mentors] inspire you in a way that is life changing or career changing or significantly changes the way you are forever going to be. Mentoring is profound. They look at a situation and work with it to a whole new way of being'. [Nutritionist 2]

> 'Someone who is very good at what they do, very knowledgeable, and very willing to share. They need to be tolerant and have patience for people who know less and be good time managers to make space for people so they feel like they are not impinging'. [Nutritionist 8]

The nutritionists reported that mentoring relationships contributed to their problem solving skills. Mentors were viewed as coaches that guided, rather than told, and enlightened awareness of future career prospects. The importance of measuring outcomes of the mentoring relationship was acknowledged.

> 'They [mentors] make you find the solution rather than giving it to you. This is how they approach their own work… [Mentors need to be] problem solvers and not necessarily have clear answers but part of the relationship is about working together to find the best way forward'. [Nutritionist 13]

> 'When you are mentoring someone it is warm and fuzzy. You need to practice getting outcomes and product to develop competence'. [Nutritionist 12]

The participants also acknowledged the challenging nature of the relationship including time barriers, geographical distance, and a lack of commitment from mentees, poor mentor skills and a lack of clearly articulated outcomes for the relationship. These attributes of mentors and the mentoring relationship described by the advanced-level nutritionists were consistent with the literature[34]. Further research is needed to determine if mentoring is more effective in developing specific competencies.

When asked about mentoring relationships and their impact on the advanced-level nutritionists career development, a range of mentoring models including, informal and formal, one-to-one, group and peer mentoring were experienced. Much of the mentoring relationships were informal and grew from relationships existing with supervisors and colleagues. Individuals from other professional groups were used as mentors in public health nutrition which is not surprising given the multidisciplinary and multisectorial nature of public health nutrition practice[138].

> 'I haven't had one person as my mentor but more developing a team of people with different skills that contributed and helped build my competence….we talked about what we are going to do and how we will do it. Formally we would sit around a table where all issues were discussed and that spilled over into informal mentoring where you would go to people for their help'. [Nutritionist 9]

Informal mentoring relationships are acknowledged in the literature as contributing to professional development and offering greater potential for outcomes, however there is an emphasis on recommending structured and formalised mentoring programs[34]. This study identified the important role of informal mentoring relationships in public health nutrition. There is risk in assuming that the characteristics described by the participants as important for mentoring in public health nutrition can be easily replicated in a formal mentoring program. The nurturing environments and sharing culture described by the participants may be unique to public health practice. There is evidence to suggest that this willingness to support peers and junior colleagues is not present in treatment focused health settings[139].

The range of experiences of mentoring aligns with the multiple mentor experience model[131]. This model recognises that mentees access several experienced, supportive persons from which to seek guidance and advice, and recognises the function of role models, coaches and supervisors as well as mentors in contributing to the mentees development[131]. This model recommends that organisations, peers and academics have a role in mentoring the public health nutrition workforce[131]. This multiple mentor model that increases competence in public health nutrition must centre on reciprocity, trust, and inspiration in the development of new skills and in career planning. These characteristics are unique to mentoring and support the descriptions and outcomes of mentoring from the wider health professional literature[34]. Other relationships, such as supervision, which includes assessment or performance management, are recognised in developing skills[54]. However, the measurement of performance aspect of this relationship impacts on trust, the development of attitudes and career aspirations, important for public health workforce development.

There is a wealth of knowledge on the operational aspects mentoring relationships available to be drawn from other disciplines when planning mentoring programs for public health nutrition. Formality, training of mentors and organisational support are significant factors identified as important for success in mentoring relationships[34]. This study suggests that while formalised, clearly articulated outcomes for the mentoring partnership are important, informal mentoring relationships can develop competence. Informal mentoring relationships appear to be a unique and important aspect of workforce development in public health nutrition as they create strong, long lasting networks essential for the challenging nature of this work. The advanced-level practitioners explained that organisational support is important to allow adequate time and resources for mentoring. Given the fundamentally political nature of public health nutrition practice, the conflict between personal and professional development and organisational development must be recognised. The advanced-level practitioners recommended that a mentoring approach for public health nutrition practice improvement needs to consider this.

> ‘There is a risk in formalising it that you create a bureaucracy around something that was working well so that it is not effective’. [Nutritionist 13]

> ‘Organisational support is only required when work time is required to develop the mentoring relationship. Public health and community nutrition may require personal and professional development in your own time. Organisational support may not be there because they are not on the same political side’. [Nutritionist 5]

5.2.2. Lessons for the development of mentoring for public health nutrition workforce development

This study of advanced level public health nutritionists provided evidence to support mentoring in developing competence in public health nutrition. It found that the advanced public health nutritionists were the first designated workforce in Australia and that dissatisfaction with clinical practice was a key reason for choosing a career in public health. Experiential learning, postgraduate education and mentoring from both peers and senior colleagues were the most significant contributors to competence development. They supported mentoring as part of a multi-strategy approach strategy for public health nutrition workforce development and articulated the characteristics and models that may be appropriate for mentoring relationships in public health nutrition. Replicating the characteristics of informal mentoring relationships and group mentoring are important attributes to consider.

5.3. Emerging Evidence for Action

The evidence found from the review of the literature together with the data obtained from the advanced-level public health nutritionists provides evidence to support mentoring as an educational strategy for public health nutrition workforce development. Table 5.3 describes the key attributes and elements of mentoring for public health nutrition workforce development that emerged from the literature review and interviews with advanced-level public health nutritionists. It is clear that together with training, education and practical experience, mentoring has the potential to facilitate competence development in public health nutrition and therefore has considerable potential as a workforce development strategy.

Table 5.3. Elements of mentoring for public health nutrition workforce development derived from literature and interviews with advanced-level public health nutritionists.

- Trusting and supportive relationship
- Instills confidence
- Creates networks
- Promotes learning and development
- Free from performance management and assessment
- Longer term (≥6 months)
- Group focused to promote multiple mentoring more experienced mentor and peers)
- Informal in nature
- Ensure measures of effectiveness and outcomes
- Mentor should be:
  - inspiring, trusting
  - appropriately skilled in public health nutrition
  - experienced (half a generation - approximately ten years more experienced than the mentees)
  - support learning and competence development in public health nutrition

These results were used to inform the design and delivery of a workforce development mentoring circle intervention for dietitians working in public health and community nutrition in Victoria. The design of the intervention was based on findings from this phase of the research and is discussed in the following chapter.

5.4. Summary

The chapter used the literature and in-depth qualitative interviews with advanced-level public health nutritionists and identified mentoring as part of a multi-strategy approach to public health nutrition workforce development. Mentoring in public health nutrition is defined as a trusting and supportive informal relationship which promotes learning and development. Longer term (≥6 months), group-type mentoring has the potential to facilitate learning from a more experienced mentor as well as initiate peer mentoring a reduce reliance on a large number of mentors. Mentors in public health nutrition should be inspiring, trusting and appropriately skilled and experienced to be able to effectively support competence development in public health nutrition.

This chapter provides evidence to support the development of mentoring as a workforce development strategy and describes the elements of mentoring important in this context. The next chapter uses the results from this chapter to describe, in detail, the mentoring intervention used as the basis for this research.

Chapter 6

The Mentoring Intervention

6.0. Preamble

This chapter describes the mentoring educational intervention used for this research study. It outlines the educational theory and logic model underpinning the selection of the mentoring intervention and describes the involvement of participants in the intervention. The theoretical underpinnings and the format of the mentoring intervention are also described. The purpose of this chapter is to describe, in detail, the format and structure of the mentoring and outline the rationale behind the intervention.

6.1. A Synopsis of the Intervention

The intervention involved a mentoring circle whereby one mentor worked with a group of mentees. Mentoring circles combine mentoring with learning circles, whereby colleagues come together to support each other learn[109]. Recently graduated dietitians or novice public health nutritionists were chosen as the target for the intervention. Participants were required to complete a written learning plan based on the development of advanced-level competence and attended the mentoring circle every six weeks, for two hours, over a six month period. Each session was structured similarly commencing with sharing an update of participants work and personal life issues, followed by written reflective practice and then facilitated group discussion (focused on activities identified in learning plan) using an appreciate inquiry framework. Appreciative inquiry focuses on developing solutions through positive interactions. The aim of the intervention was to enhance the public health nutrition practice of participants to align with core competence expectations and public health nutrition functions.

The mentoring circle intervention was developed based on the literature and findings from phase 1 of the research as described in Chapter 5. The format and structure to the mentoring circles was designed by the researcher and proposed as the framework to the participants of the intervention. Participants were initially invited to provide input into the plan for the structure of the sessions and were asked at each session if they wished to review or modify the format of the discussions. The structure and format remained the same for the duration of the intervention.

6.2. Summary of Results from Formative Evaluation to Inform Intervention Design

The literature review and qualitative interviews with advanced-level public health nutritionists identified mentoring as part of the solution to public health nutrition workforce development. Key elements of mentoring for public health nutrition were identified (Table 5.3). While this formative evaluation provided guidance on the format for the mentoring intervention the educational theory and detailed structure for a program were not clear. More specifically, the literature did not describe the theory of learning underpinning mentoring programs or details on the structure and format of mentoring sessions. While the literature assumed reflective practice as a key component of effective mentoring, details of how reflective practice was facilitated through mentoring was not clearly described. Details on the operation and tools for mentoring were also limited. These gaps were addressed through additional analysis of the educational literature to help inform and guide the specific details of the intervention. Relevant educational theory was selected to underpin the intervention and innovative learning strategies and tools identified and selected to support the intervention. These will now be described.

6.3. Educational Foundations to Mentoring

6.3.1. Experiential learning and reflective practice

The educational intervention was developed based on the theory of adult learning involving experiential learning with reflection on practice. Adult learning is defined as the process of gaining knowledge and skills [66]. Adult learning assumes: (i) the learning is of relevance and the learner needs to why they need to learn it; (ii) the learning is self-directed and the learner must break any dependency; (iii) the learning builds on previous experiences; (iv) the learning is timely in that the learner is ready to accept it; (v) the learning is focused on tasks; and there is (vi) internal motivation to grow and develop. This theory acknowledges that there are individual differences among learners, including cognitive, personality, prior knowledge and learning styles[66].

The intervention also acknowledged the role on-the-job experience plays in professional development. It incorporated experience with facilitated reflective practice which was proposed to offer the potential to accelerate professional development[66]. In this intervention reflective practice was defined as,

> 'being mindful of self, either within or after experience, as if a window through which the practitioner can view and focus self within the context of a particular experience, in order to confront, understand and move toward resolving contradiction between one's vision and actual practice.'[119(page 3)]

The intervention assumed that reflective practice is central to the processes of experiential learning and mentoring. A range of different models have been proposed to facilitate the process of reflection. Reflective practice supports an ongoing process of learning and development and should be central to any solution to building competence[30]. Gibbs reflective cycle (1988) is a six stage process of documenting feelings and putting them into action which was used as the reflective practice framework for the intervention (Figure 6.1)[119]. Gibbs cycle

was chosen as the model to facilitate and support reflection in the intervention as it was congruent with experiential learning theory in that it recognises the role of experience in shaping learning[69]. The mentoring intervention was designed to support learning through practical experience in the workplace. These underlying principles were fundamental to the framework of the mentoring intervention.

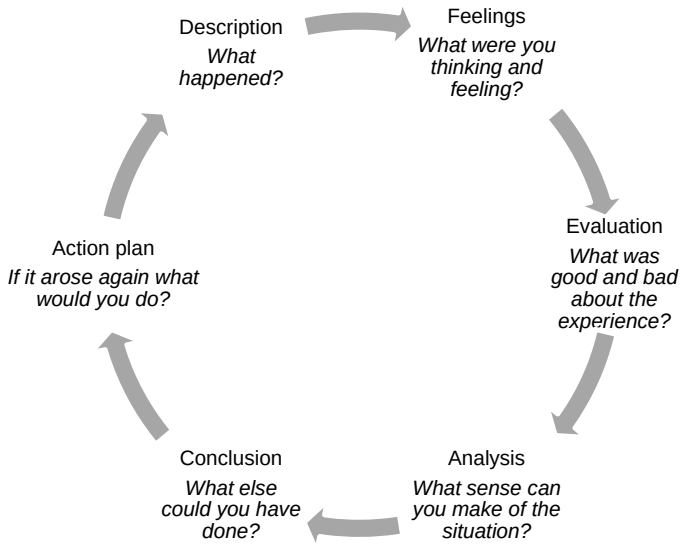


Figure 6.1. Gibbs's reflective cycle from Johns[119(page 17)]

6.3.2. Educational framework – a mentoring circle

The educational model, developed based on the findings from phase one of the research project, was a mentoring circle. Mentoring circles 'involve one mentor working with a group of mentees or groups of people mentoring each other'[109(page 126)] and in this project had the aim of developing skills in public health nutrition practice. Mentoring circles combine the parameters of mentoring, including support, guidance, advice, feedback, challenges[3] with those of learning circles whereby a community of colleagues come together to support each other learn[140]. The foundations of the intervention were informal and voluntary.

The mentoring intervention involved development of a learning plan for professional and personal development in public health nutrition. The learning plan aimed to focus development and structure learning based on public health nutrition core competency areas previously identified[29]. It involved identification of a relevant public health nutrition issue to progress while experiencing this issue in practice and then, using the process of learning defined by Knowles[66],

1. Determine what learning is needed to achieve goals or competence;
2. Create a strategy or activity and the resources to achieve the learning goal;
3. Implement the learning strategy/activity and use the learning resources; and
4. Assess the attainment of the learning goal and the process of reaching it.

Participants were supported in developing learning objectives based on Bloom's taxonomy, verbs used to organise and classify learning[141], and learning activities (Table 6.1).

The learning plan aimed to be similar to a portfolio approach to professional development which have been used to assess the development of population health competencies[142] and for professional development and credentialing in dietetics[114]. The strengths of this form of structuring learning lies in the ability to place the responsibility for learning onto the practitioner, make the connection between theory and practice, promote critical thinking thus support professional development[142, 143]. In order for this type of structured learning to be successful efforts to provide regular feedback, explain a structure for reflection and self-assessment, guidance and support to write learning goals and facilitating links to learning opportunities must be provided[114, 142, 143]. In addition the assessment of reflection must be considered to ensure it is an accurate representation of the events or practice experience[144]. The learning plan was used to structure discussions during the mentoring circles.

Table 6.1: Format of learning plans prepared by participants.

Competency: *From core set of public health nutrition competencies previously identified[29]*	
Learning Objectives: *Using Blooms Taxonomy[141]*	
Activities: *Actions, tasks, learning*	Reflection: *Based on Gibbs reflective practice cycle[119]*

6.3.3. Educational framework – Appreciative Inquiry

Discussions during the mentoring circle were facilitated by the mentor who used an appreciate inquiry framework to guide communication[145]. Appreciative inquiry utilises unconditional positive questions to focus discussions through a process of 'appreciation of what is, envisioning what could be, designing what should be and sustaining what will be'[145]. Appreciative inquiry is a relatively new concept that evolved from action research. Its premise is to focus on positive aspects of a situation or the things that have enabled success[145]. While it has most commonly been used as a framework for communities and organisations to realise their potential and develop strategies and plans for the future[145], it has recently been applied to individual encounters in behavior change counseling[146] and mentoring relationships[147].

Appreciative inquiry is used as a mode of action research that can create positive change and this was also acknowledged when choosing this theory to guide discussions[86]. This framework was used to focus discussion on solutions rather than problems that cannot be solved and ensured a positive environment for learning. Questions rather than answers were used to stimulate deeper thinking and solution generation (Box 6.1).

Box 6.1. Appreciative inquiry examples of questions posed to participants[145].

- Why are you asking that? Where are you going with that question?
- What do *you* think?
- Tell me more about ……
- How did you reach that conclusion?
- What was the best thing that happened?
- What have you learnt from that?
- What is the worst thing that could happen?
- Is it true? How do you know that it's true and what is your evidence?

6.4. Logic Model for the Intervention

The importance of planning interventions is well documented[96]. Logic models provide a mechanism to provide a diagrammatic representation of the components of an intervention and are useful for planning and guiding evaluation of an intervention[148]. They articulate assumptions about how strategies of interventions will address the determinants of issues and what change or outcomes are expected[148]. In the context of workforce development in public health nutrition, the mentoring intervention was a strategy designed to address practice improvement and learning systems identified as a determinant of workforce capacity in Chapter 1 and 2. The indicators for success would be a change in confidence, competence, professional support and reorientation of practice.

Figure 6.2 depicts the program logic for the mentoring circle intervention. The intervention aimed to enhance the public health nutrition capacity of dietitian's working in community and public health nutrition in Victoria. In this context, time dedicated to public health nutrition action and reorientation of practice towards prevention were used as measures of capacity.

The objectives of the six month mentoring circle intervention were to:

i) Increase self assessed public health nutrition competence score (sum of 23 competency areas) of participants by 10 percent;
ii) Increase the confidence of participants.
iii) Increase and strengthen the professional supports of participants.

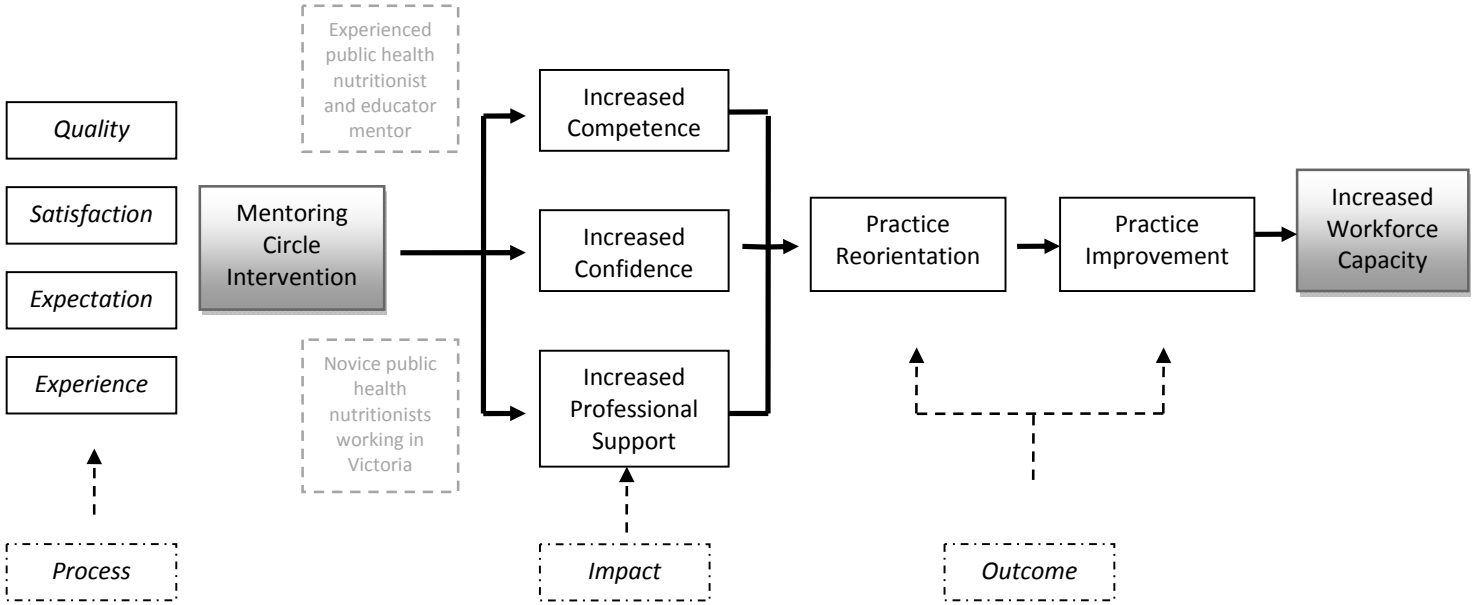


Figure 6.2. Logic model for mentoring circle intervention.

6.5. Participation in the Mentoring Circle

6.5.1. Orientation and format of mentoring circles

Participants attended an initial introduction to the mentoring intervention in August 2007. This one hour session explained the aims of the research project and the framework for the mentoring. The roles and expectations of mentor and participants and the process of reflective practice were emphasised (Appendix 5). During this introductory session participants were orientated to the development of the learning plan for use during the intervention. The aim of the session was to set the direction for the learning, outline expectations and group rules and commence developing relationships with participants. Participants drafted their learning plans (based on template set out in Table 6.1) out of session and sent them to the mentor for feedback prior to the commencement of the first session.

The mentoring circles involved a two-hour group session or mentoring circle every six weeks which was conducted over a six month period for all three groups. A total of five sessions between September 2007 and March 2008 were scheduled for each group (Table 6.2). Face-to-face communication which included video-conferencing for the rural group, was used as the basis for the interactions between participants and mentor. In addition all participants had regular access to email at their workplaces and this form of communication was utlised in between sessions mainly to communicate notice of sessions or to distribute information or materials discussion during the circles.

Table 6.2. Mentoring circle sessions and times.

Session	Date	Group	Summary of Discussion Topics of Session*
	5.9.07	Clayton face-to-face group	
1	5.9.07	Video-conference rural group	• Participants shared issues and the learning plan they identified for the mentoring circle
	7.9.07	Melbourne city face-to-face group	
	17.10.07	Clayton face-to-face group	• Policy development, community development
2	17.10.07	Video-conference rural group	• Reorientation of practice
	19.10.07	Melbourne city face-to-face group	• Policy development, advocacy, program evaluation
	28.11.07	Clayton face-to-face group	• Policy development, community development, food security
3	28.11.07	Video-conference rural group	• Program planning, reflective practice, advocacy
	30.11.07	Melbourne city face-to-face group	• Sustainability, supervision/workplace support
	30.1.08	Clayton face-to-face group	• Program prioritization, reorientation of practice
4	30.1.08	Video-conference rural group	• Program prioritization, funding of services
	8.2.08	Melbourne city face-to-face group	• Program planning – strength based approach, career structure
	12.3.08	Clayton face-to-face group	• School projects for obesity prevention, career paths
5	12.3.08	Video-conference rural group	• Advocacy, capacity building, strategic planning
	14.3.08	Melbourne city face-to-face group	• Strategic planning, advocacy

* Discussion in addition to group sharing of personal and work life as well as time for documentation of reflections.

6.5.2. Reflective practice

Each two-hour session was structured similarly involving written reflective practice and whole group discussions. Each session commenced with a round table discussion of participants describing a story from current work and their personal life for a total of approximately thirty minutes. This ice-breaker activity was chosen to allow participants to get to know one another on a personal level and also commence an understanding the different work roles and environments. It also aimed to build relationships between participants and the mentor to develop trust and a sense of understanding for the participants circumstances. The round table ice-breaker was followed by written reflective practice and then whole group discussions. Reflection templates were provided to participants to trigger and facilitate the process of reflection. This template was developed based on Gibbs reflective cycle[119] and prompted answers to;

This (name activity) shows my growth because ..

If I could do this (identify what it is) again, I would change ..

This (activity) gave me new insights because ..

As a result of .. , I have learned how to ..

Participants spent approximately fifteen to twenty-minutes of silent time documenting reflections on work activities in their learning plans. The purpose of written facilitated reflective practice was to record development or progression against the learning plan (Table 6.3).

Table 6.3. Two examples of learning plans prepared by participants

Participant NP

<table>
<tr><td colspan="2">Competency: Policy processes: policy development skills, influence policy development, evaluate policy impacts, organizational politics.</td></tr>
<tr><td colspan="2">Learning Objectives:
1. To describe the process of policy development in the context of childhood settings.
2. To analyse the factors contributing to and/or preventing the development of policy in childhood settings.
3. To develop a policy in partnership with early childhood settings.</td></tr>
<tr><td>Activities:
- Review the literature on public health policy development
- Engage relevant partners in the development of a local nutrition policy</td><td>Reflection:

I planned a stakeholder consultation workshop to discuss the development of a child nutrition policy. I was disappointed this activity didn't work as I had hoped. Despite promoting the workshop to all relevant stakeholders response was poor and people were difficult to engage. I think it would have been more appropriate to set up one on one consultation with everyone and collate this info later as people would have then felt the issue was more relevant to their area and juggling schedules and meetings times would have been easier. Once I realised this I did try to change and adjust the plan to do this however with the timeline being short at this point consultation was not as broad as I would have liked to ensure the decision made would be supported. In the end a bit of an executive decision was made on minimal consultation by me and my managers to meet the timeline which according to the literature on policy development is not the most effective approach. In the future I will know that this process will take more time to do extensively and plan more appropriately based on this.</td></tr>
</table>

Participant SC

<table>
<tr><td colspan="2">Competency:
Building community capacity: Community engagement, collaboration, partnership, coalition building and community dimensions of practice skills.
Design, plan, implement, monitor and evaluate nutrition strategies and programs for promoting health and well-being of the population that reduce inequalities.</td></tr>
<tr><td colspan="2">Learning Objectives:
1. To develop, document and apply the program planning cycle into a chosen nutrition intervention.
2. To demonstrate building community capacity with partners relevant to the project.</td></tr>
<tr><td>Activities:
- Take a lead role in a community nutrition project
- Contact relevant agencies to introduce myself and my role in the project
- Become more activity involve in other relevant health promotion activities across the region
- Discuss health promotion vision of organisation with CEO</td><td>Reflection:

It was the first meeting I had held around the project. I have never chaired a project meeting like this before so was nervous and unsure of what to expect and tried to be as prepares as I could be. I was not ready for the politics that was evident between organisations however the experience in itself was quite good and the meeting ran smoothly. I got lots of positive feedback from those attending however I felt a lack of support from my own organisation. I realised afterwards that I should have invited emergency food relief agencies to the meeting. Next meeting I will be even more prepared and have a running sheet to give me more confidence to discuss issues.

By doing this project I have learnt that documentation of a project plan is essential. You need to set realistic objectives and better still get input into these from all your partners. I have learnt how long it takes to build community capacity and underestimated the organisational and political barriers to working to address population nutrition issues. From the very beginning it is important to question the framework for sustainability. I feel proud that I have been part of putting nutrition back on the agenda of my organisation. I have enjoyed this experience and am keen to work in this field in the future.</td></tr>
</table>

The reflective practice was followed by open group discussions, on a range of topics, for the remainder of the two-hour time. Participants were invited to raise issues or questions they had encountered in their community or public health nutrition practice, for example reorientation of work practices towards a population based prevention approach and nutrition issue prioritisation and program planning (Table 6.2). The mentor ensured that all participants had time to discuss an issue at least once throughout the mentoring circle with the aim of demonstrating listening and genuine concern for the participants' development.

In between mentoring circle sessions participants were invited to access the mentor for individual one-on-one mentoring, either via phone, email or face-to-face meeting on an as needs basis. This aimed to support individual practice, promote communication and

relationship development and ensure issues arising in practice were dealt with in a timely manner.

6.5.3. Estimated total time and cost for mentoring intervention

The mentoring intervention required a time commitment from both the mentor and participants. The estimated time for participation in the mentoring circles is estimated in Table 6.4. This does not represent an in-depth cost analysis. The purpose of this estimation is to attempt to describe the cost of delivering the mentoring circle intervention which includes the time of the mentor and participants and resources required to conduct the sessions. It does not include the research undertaken to formulate the intervention. Based on these estimations the cost for running six month mentoring circles for 32 participants was $14,562 or $455 per person.

Table 6.4. Estimation of time commitment and cost for conducting the six month mentoring circle for 32 participants.

		Cost
Planning, Preparation, Recruitment	5 hours^	217.00
Attendance at mentoring circles - mentor	2 hours x 3 groups x 5 sessions	1302.00
Attendance at mentoring circles - participants	2 hours x 5 sessions x 32#	10,400.00
One-to-one mentoring support	approximately 5 hours mentor & some participants	379.50
Videoconference	5 x 2 hour conferences for 5-7 sites @$200 each	1000.00
Room hire	2 rooms x 2 hours x 5 sessions @$60 per hr	1200.00
Resources- workbook/learning plan template	10 pages @20cents per page for 32	64.00
Total Cost ($)		$14,562.50

Based on Victorian grade 2, year 4 Dietitian @$32.50 per hour (excluding oncosts)

^ Based on Academic level B, step 1 @$43.40 per hour (excluding oncosts)

6.6. Action after Mentoring Circle Intervention

At the completion of the six month mentoring intervention, the participants were asked their recommendations for the way forward. While most of the participants reported having gained what they had hoped from the mentoring circle and elected to finish and exit, a small subset (n=12) of the participants requested to continue mentoring as they felt they had more to gain from longer term involvement in mentoring. A new mentoring circle formed and this formed the basis of phase three of the project.

Twelve metropolitan based participants attended the extension mentoring circle from April to December 2008 (Table 6.5). At the first session participants were asked how frequently they would like to meet and how they would like the mentoring circle structured. Participants elected to meet face-to-face in a central Melbourne location every eight weeks as this coincided with the regular DAA public health and community nutrition interest group meeting and meant only traveling into Melbourne on one occasion for two events. They requested that the format and structure of the sessions remain the same as the initial mentoring circle (i.e. two hours structured around getting to know one another, written reflective practice and whole group discussions) but they have an opportunity to revise their chosen nutrition issue and learning plans. This in itself is a positive reflection on the merits of the intervention. They also requested that the focus of the mentoring be on the development of their competence in public health nutrition rather than discussing strategies for increasing their capacity to undertake public health nutrition action by reorienting their practice.

Table 6.5. Details of mentoring extension conducted in central Melbourne

Session No.	Date	Summary of Discussion Topics of Session*
1	18.4.08	Program evaluation, intervention research
2	20.6.08	Program evaluation methods, advocacy, politics of public health nutrition
3	8.8.08	Politics of public health nutrition practice, advocacy
4	17.10.08	Community development, infrastructure for public health nutrition practice in Victoria
5	5.12.08	Reflective practice

* Discussion in addition to group sharing of personal and work life as well as time for documentation of reflections.

While this mentoring circle followed the same format and structure of the initial mentoring circles it focused on discussing and reflecting on the participants' public health practice and developing strategies to address issues or barriers they had encountered in their practice. Meetings were less frequent (2 week difference) and participants had greater ownership of and confidence in their learning plans having had the benefit experiencing writing them before. This mentoring circle had the same aim of enhancing the public health nutrition practice of participants.

6.7. Summary

This chapter described the educational foundations to the mentoring intervention and the operation, format and structure to the intervention. The intervention was based on adult learning, experiential learning theory and reflective practice. A mentoring circle format was chosen to allow one mentor to support and guide a number of novice public health nutritionists working in Victoria and promote peer learning. Learning plans based on the public health nutrition competency areas were used to structure and document learning. Appreciative inquiry was chosen as the framework from which to facilitate group learning to ensure positive, solution oriented discussions. The mentoring circle aimed to facilitate practice improvement of participants through developing confidence, increasing competence, providing professional support and assisting reorientation of practice.

This chapter provided an outline of the mentoring circle intervention. The next three chapters detail the results of the process, impact and outcome evaluation of the intervention, commencing with the results from the process evaluation.

Chapter 7

Process Evaluation - The experiences of mentoring for recently graduated dietitians working in community and public health nutrition

7.0. Preamble

This chapter describes the process evaluation of the mentoring intervention. It reports on the research questions that aimed to identify the key elements of effective mentoring in public health nutrition and appraise the function of mentoring as an element of public health nutrition workforce development.

The purpose of this chapter is to report on and discuss the process evaluation data extracted from the pre- intervention questionnaire, participant interviews, mentor reflections and focus groups in order to obtain a picture of the overall quality of the mentoring intervention. A particular focus on the experience of the dietitians participating in the intervention was taken. Detailed personal reflections of the mentor are written in the first person and documented in italics to reflect the source of the discussion and highlight disclosure.

The chapter reports on and discusses the results of the data analysis and is structured under four key process evaluation headings; quality; satisfaction; experience and expectations (Table 7.1).

Table 7.1. Summary of process evaluation results presented in chapter

Quality ▪ The environment ▪ The mentor ▪ The structure for learning ▪ Reflective practice
Satisfaction ▪ Group aspects – size ▪ Group aspects – frequency of contact and duration ▪ Group aspects – composition ▪ Group aspects – mentor personal gains
Expectations
Experience

7.1. Overview of Process Evaluation

As described in Chapter 3, the process evaluation aimed to determine:

- The quality of the intervention components;
- Participant overall satisfaction;
- Whether the intervention meet expectations; and
- The experience of participating in the intervention.

Analysis of the qualitative data collected from participants' pre-intervention questionnaire, in-depth interviews, focus groups and mentor reflections revealed four key themes with subthemes related to the process evaluation of the mentoring intervention (Table 7.2).

Table 7.2. Analysis for process evaluation of mentoring intervention

Key Themes	Sub Themes	Descriptors	Evaluation Question Answered
Learning environment	▪ Safe ▪ Supportive ▪ Challenging	▪ Qualities of mentor - Experienced, knowledgeable, passionate - Approachable, available, accessible - Trust, respect, equality - Friendly, warm, positive - Ability to effectively facilitate a group ▪ Face to face, confidential environment	} Quality
Structure and function of the mentoring circle	▪ Group aspects ▪ Advanced-level competency areas	▪ Group size and frequency of contact generally appropriate but perhaps too big for in depth discussion of issues and for everyone to have a say ▪ Duration longer term preferred ▪ Background and mix of participants need to ensure common, agreed goal	} Satisfaction
		▪ Group dynamics always and issue and challenging to manage	} Experience
		▪ Learning plan based on current practice and advanced-level competency areas were new, initially daunting but guided learning ▪ Time out for reflective practice was an important component	} Quality
Barriers and enablers to participation and learning	▪ Workplace / Organisational ▪ Individual	▪ Mentoring met expectations in regards to process and outcomes	} Expectations
		▪ Lack of organisational capacity – isolated/sole positions, demand for direct care, changing work roles, limited expertise in workplace ▪ Workplace support and recognition ▪ Individual views, personal issues, workplace changes impacted capacity	} Experience

7.2. Process Evaluation - Quality

7.2.1. The environment

The group setting was reported by participants to be secure and comfortable which enabled learning. The small group made up of community dietitians with similar roles and levels of experience created a safe environment for learning. The informal and confidential nature of the learning space was valued.

> 'being in a relatively small group and being, you know involved with other people who have similar sort of, amount of experience, since graduation, in public health nutrition was a real [strength], because it was, you know a comfortable environment to share .. issues and to learn from each other.' [LR, interview]

Just as the environment for teaching has been identified as important for learning[149, 150], the environment for mentoring relationships has been identified as important for mentoring effectiveness[109]. Effective learning environments have been described as safe, challenging, supportive and encouraging[151]. Characteristics of effective mentoring environments have been described as needing to involve leadership, patience, caring, loyalty and trust[152]. The format of the mentoring circle sessions, while providing some structure for facilitation, clearly promoted informal sharing and learning. Orientation to the mentoring circle which involved outlining expectations and group rules was also important in establishing this effective environment for learning. The small group nature of the mentoring intervention promoted cooperation among participants, one of the key principles of effective teaching[150]. Small group discussions, when set up and facilitated effectively, promote independence and self monitoring[149]. The results suggest that this was the case for the mentoring circle. The format and structure of the circles established trust and participants being from similar backgrounds and levels of experience promoted a safe environment for sharing and exposing learning deficits.

The face-to-face nature of the learning environment (even via electronic video-link) was viewed as important and few utilised electronic (email) communication to the group even though this facility was available. The confidentiality of the group was also reported to be important for learning. The lack of confidentiality in electronic discussions was reported as a reason for not using this facility for communication. Electronic communication was utlised only for sharing resources and learning materials.

> 'I really liked the videoconferencing….. [be]cause we could see each other.' [LW, interview]

> 'You do want to feel you can have safe discussion and you're going to be supported. The confidentiality is really important because some of the issues, particularly that I was bringing up around our management structure and budgeting stuff is quite confidential information …. I think just having that trust, trusting relationship is probably really important as well.' [MT, interview]

> 'I feel more comfortable to say particular things that I wouldn't actually write and just emailing and not knowing where emails go I wouldn't put half of the things I say into an email.' [BG, focus group]

These findings have shown that participants highly valued the face-to-face interactions even via video-link. The benefits of face-to-face teaching and learning are well described[150] however catering for the diverse needs of learners has enhanced the need for flexible modes of delivery. Much effort and attention has been placed into translating the principles of effective teaching from a face-to-face setting into online or electronic mediums[132, 136]. Some studies have reported that electronic mentoring, via email or chat rooms discussions can be just as effective as compared to face-to-face interactions[133]. In this study videoconference was used to replicate face-to-face interactions. The results showed little difference in the responses obtained from those who were mentored via videoconference compared to in person. Email communication as a means for discussion, problem solving and learning was not utlised to its entire capacity during the intervention. This may be due to the lack of incentive for

participation in this electronic form of communication[136], poor facilitation by the mentor[132] or may be due concerns about confidentiality as identified by participants. These results suggest that face-to-face mentoring may be more appropriate for confidential discussions however the role of electronic mediums in transferring learning material also has a role.

7.2.2. The mentor

Prior to commencing the intervention when asked 'what qualities are important for you in a mentor and in a mentoring relationship?' participants reported qualities that were analogous to those described by the participants at the completion of the intervention. Prior to the commencement of the mentoring the most commonly reported qualities wanted in a mentor by participants included being friendly, fun and approachable which facilitated the ability to build a rapport with and having sound knowledge, skill and experience in public health nutrition practice. Also at the commencement of the intervention participants reported wanting a mentor that offered guidance, practical advice, support and encouragement in a non-judgmental, trusting way and who was also accessible, available and patient.

> 'The freedom to be completely honest and transparent about difficulties I'm facing….First hand experience of the mentor. I want to learn from someone who's been there.' [TG, pre intervention questionnaire]

> 'Mentor (needs) to have experience in public health nutrition. Feeling comfortable and confident to discuss professional issues (is important). (The) mentor needs to be easily accessible and contactable, supportive and non-judgmental.' [ST, pre intervention questionnaire]

> 'Mentor must have relevant professional experience and act as a role model. Be trustworthy, enthusiastic and committed. Be able to guide reflection and discuss issues openly without bias. The mentoring sessions must have focus.' [MT, pre intervention questionnaire]

Upon reflecting on the role I played, I felt that my self-disclosure was an important aspect of developing trust with the participants. I recall many times where I explained not having an answer to the problem posed by the group. I think highlighting the mistakes I had made in my career journey to date was important in building rapport.

At the completion of the intervention participants described the mentoring relationship. The relationship to the mentor was reported as strong and supportive to their development. They articulated a range of important qualities of the mentor. In referring to the role of the mentor in the intervention, the participants reported the importance of having a mentor who is experienced, particularly in the areas they are working, and has a good knowledge of and passion for public health and community nutrition. The mentor must be approachable, available and accessible to mentees and support a culture of trust and respect in the relationship. Many of the participants explained the importance of being able to utilise the mentor in a one-to-one relationship in addition to the group setting as they often had individual specific work or personal matters they wanted to discuss or could not wait for the next mentoring circle to discuss an issue. The ability to provide effective feedback was also reported by participants as important. They reported the feedback was important as it challenged their thinking but also encouraged them to continue in their public health nutrition practice. A friendly, warm and positive personality is important to be approachable and build confidence. The mentor is also a role model. The mentor must have the ability to effectively facilitate a group, inspire and support creative thinking and learning through an equal relationship. They must also facilitate reflective practice. These qualities were consistently reported by all participants.

> ‘She’s lots of fun and that’s what makes it realistic as well, because …. you know, she has that way of doing positive criticism, where it makes you think about it, it’s not just her telling you, this is the way it should be done or you’re doing it wrong. ..She has a way of sort of saying things positively but with a negative spin on it, or making you question all the time which is really good. It makes you think outside of the square’. [SC, interview]

> ‘to be contactable and willing to point you in the right direction and also not to provide you will all the answers all the time, obviously give you direction but not tell you the answers to facilitate your learning a bit more.’ [AB, interview]

The qualities of the mentor and the mentoring relationship described by the participants are consistent with those reported in the literature[3, 34, 38, 107, 108]. The reciprocal learning relationship that supports personal and professional growth met participants’ expectations. The nurturing, challenging and available mentor was also deemed as important. These qualities are important in any learning relationship[54] however, these results demonstrate the importance of trust, feedback and challenge in the relationship which may be compromised if the relationship was built upon other frameworks such as supervision. The ability of participants to speak freely, honestly and openly without fear of judgment or assessment on their competence was instrumental in building a foundation for development. The traits of effective mentors have been previously identified[125, 153]. This study highlights the personal qualities and experience of a mentor for novices in public health nutrition. It is acknowledged however that not everyone is capable of being an effective mentor[109] and this must be taken into consideration in formal mentoring.

The intervention itself is the first step to building a culture of effective mentoring in the field. The participants’ exposure to the structure and function of the intervention and the qualities and abilities of the mentor provide a role model to foster a culture of mentoring for professional development within the profession. Evidence suggests that those exposed to mentoring early in their careers will function as mentors as they develop[154]. The participants’ previous exposure to mentors, for example via the DAA APD program, may have influenced their perceived need for certain mentor qualities either due to positive or negative previous mentoring experiences. However the participants’ ability to clearly articulate the fundamental qualities of a mentor, that supported this interventions success, will help inform future mentoring endeavours in public health nutrition.

Many of the skills and personal qualities that the participants described as being effective in the mentoring relationship came naturally to me. In particular, interpersonal qualities of positivism, friendliness, approachability and equality are inherent attributes. The experiences I had gained through my career were particularly relevant to the participants as I had undergone a similar journey. I felt my commitment to the mentees was significant in that I made myself highly available to them. I was challenged only in using appreciative inquiry to guide discussions.

The approach to mentoring by the mentor may be able to be replicated to others with similar personal attributes and practical experiences. While training may improve skills in solution focused discussions, facilitating reflective practice and running a group session, it is unlikely that the intrinsic personal skills can be learnt or developed. The availability and time commitment given by the mentor may not be something all mentors are willing to adopt. This is supported by the literature which reports time as being a significant factor to why mentoring relationship are unsuccessful[38].

7.2.3. The structure for learning

The framework for professional development used in the mentoring circles was the advanced-level public health nutrition competencies imbedded into a learning plan. These were viewed by participants as generally effective in supporting advanced-level practice and as a measure of competence and achievements. The advanced-level public health nutrition competencies were new to participants when they entered the intervention and as a result were challenging to work. This was the case particularly for the participants who were new to health promotion or community nutrition practice who explained that the terminology was new and descriptors of practice were complicated and unclear to them.

Participants ranked the competencies in order of importance from 1 (most important) to 5 (least important) (Table 7.3). They rated competency area ‘design, plan, implement, monitor and evaluate nutrition strategies and programs for promoting health and well-being of the

population that reduce inequalities' (mean ranking ±SD, 5.5±5.0) as the most important area for their practice. 'Food and nutrition monitoring and surveillance' was rated as the least important area (mean ranking ±SD, 18.1 ± 5.5).

When divided into groups for work role (community health, rural health, public health nutrition), those working in public health nutrition and community health rated 'design, plan, implement, monitor and evaluate nutrition strategies and programs' as the most important (mean ranking ±SD, 2.0±0.7 and 5.7±5.6, respectively). Rural participants rated 'building community capacity' (mean ranking ±SD 7.7±6.6) and 'knowledge and understanding of the psychological, social and cultural factors which influence food and dietary choices' (mean ranking ±SD, 7.6±4.6) and 'service and program prioritisation' (mean ranking ±SD, 7.6±4.0) as important. Community health participants rated 'applied research and development' (mean ranking ±SD, 17.3±6.8) and 'assessment of food, nutrient and dietary intakes and status in populations' (mean ranking ±SD, 17.3±6.1) as least important. The participants working in public health nutrition and rural health ranked 'food and nutrition monitoring and surveillance' as least important (mean ranking ±SD, 23.6±1.5 and 19.7±2.2, respectively).

Table 7.3. Importance ranking of competency areas.

	Ranking (mean±SD) n=26
Design, plan, implement, monitor and evaluate nutrition strategies and programs for promoting health and well-being of the population, that reduce inequalities	5.5 ± 5.0
Principles and practice of health education, health promotion theory, behaviour change and health promotion policy and programs, public health methods	7.6 ± 6.0
Building community capacity: community engagement, collaboration, partnership, coalition building and community dimensions of practice skills	8.0 ± 6.1
Knowledge and understanding of the psychological, social and cultural factors which influence food and dietary choices	8.2 ± 6.3
Needs assessment- assessing population needs using various methods	9.3 ± 5.4
Analysing the determinants of nutrition issues using a range of information sources	10.0 ± 5.3
Commitment to continual competence development and lifelong learning	10.2 ± 5.5
Knowledge of food and nutrition systems and community food needs	10.2 ± 5.7
Service and program prioritisation based on identified needs, their potential impact, as defined by objective measurable criteria	10.3 ± 6.2
Interpersonal and written communication	10.4 ± 6.4
Reflective practice to enhance performance	11.6 ± 5.7
Building capacity of the health workforce through training, up-skilling and mentoring	11.6 ± 6.8
Population nutrition intervention strategy options and selection	12.4 ± 6.8
Professional accountability and social responsibility	12.5 ± 6.3
Advocacy at government, organization, profession levels	13.7 ± 6.1
Awareness, knowledge and skills that enable a system, agency, or professional to work effectively in cross-cultural situations	14.1 ± 7.6
Grantsmanship-submission writing to access resources to enable intervention and service delivery	16.0 ± 5.9
Assessment of food, nutrient and dietary intakes and status in populations	16.0 ± 6.2
Applied research, research and development. The ability to appraise, plan and manage research, interpret research findings and apply in practice	16.4 ± 7.5
Ethics of public health nutrition practice	16.6 ± 5.1
Policy processes: policy development skills, influence policy development, evaluate policy impacts, organizational politics	16.8 ± 6.2
Nutritional requirements of populations	17.4 ± 5.1
Food and nutrition monitoring and surveillance	18.1 ± 5.5

These rankings are not surprising given that the predominant core functions of the public health nutrition workforce in Australia have been identified as planning, implementation and evaluation of nutrition projects and capacity building functions[155]. The lack of importance placed on research and nutrition monitoring by these novice practitioners, particularly those working in community health, is also expected given their relative lack of experience and current work function. This however may warrant exploration for investment in the scheme of workforce development to bridge the gap in public health nutrition intelligence. The role of evidence to support practice is acknowledged as a key determinant of public health nutrition workforce capacity[4].

The participants reported that the advanced-level public health nutrition competencies provided a useful, although initially daunting, framework and structure for learning and development of competence. The learning plan, based on the competencies was reported by participants and the mentor to be an effective tool to structure learning and competence development and teach and facilitate reflective practice.

> 'I think that kind of structured plan or program is a good way to go and that's why probably I was successful …because I have all those, you know, I was relating it to the [mentoring] program, I was working through and knocked all the bits and pieces on the head, the objectives on the head as I went through….my word.' [DT, interview]

Participants who continued in the extension mentoring circle for an additional nine months reported greater ease in using the competencies. They explained that by being involved in the mentoring for a longer period they became more familiar with the competencies and development of a learning plan and thus were more proficient in defining learning needs and developing professional development plans. This was the case for professional development planning for the additional nine months of the intervention and external to the intervention in the development of work related plans. Familiarisation with the process and format of the mentoring circle supported advancement of participants.

> ‘I think having that learning plan that we had to set out around those competencies I think was really helpful ‘cause it gave you some clear direction of what activities you were going to do and you sort of had a plan to follow rather than just making it up as you go along or letting things fall by the wayside you actually had a set plan to follow which made you sort of follow through on that and make sure that you got those things done. So that definitely helped sort of making sure you got those competencies.’ [NP, interview]

The focus group participants reported the use of the advanced-level competencies in the development of a learning plan became easier as they had been involved for longer. Familiarity with the terminology, experience in writing a learning plan and understanding what was achievable in time frames made the task less demanding for the participants. Participants also reported understanding the expectations of the mentoring circle, how they would measure their progress and what was achievable in the time frames.

> ‘Personally the goals I picked were better than the first ones. I think I made more progress on the goals in the second part of the program than I did in the first part of the program, probably only from being in the first bit first and having a look at the goals and trying to get there and sort of not picking things that were quite right at the time, whereas the second time around I thought if I want to make progress with these I better make them relevant and I probably had a better system of working through the goals to try and find activities that would help get closer to reaching them.’ [AS, focus group]

Participants explained that their choice of competencies to advance during the mentoring circle was important. The competencies needed to link to the chosen public health nutrition issue which needed to fit well with the context of what was happening in the workplace. The mentor reflected that greater orientation to the advanced-level competencies and how to write a learning plan may have improved the experience of participants.

This study was the first application of the advanced-level public health nutrition core competencies derived from earlier research[29]. While the results indicate that familiarity with the terminology and competencies was a hurdle for participants, the competencies were generally viewed as an effective framework to guide professional development and experiential learning. Competencies are considered an effective tool to measure learning outcomes and professional competence in public health[27, 53]. Familiarity and experience in using the competencies to guide learning improved with increased exposure and use. This study provides preliminary information to support the advancement of the use of public health nutrition core competencies to support credentialing and professional development within the field.

The importance of structuring and setting the direction for learning is acknowledged in the literature as being a component of successful teaching[150]. The use of learning objectives directed at practice improvement around chosen competency areas appeared to be an effective means to structure and measure the progression of learning in this study. Learning plans can be an effective tool to identify learning needs and commit to development[66].

7.2.4. Reflective practice

Participants reported valuing the time out to undertake reflective practice but described that it was a challenging task. The mentor commented that the appreciative inquiry framework facilitated reflection among participants however in the context of the mentoring circle was unable to effectively address structural determinants of workforce capacity (Box 7.1). The participants acknowledged that they undertook reflective practice as part of their day to day work and as part of their professional development but that the opportunity to have time out specifically to reflect and to document this reflection was valuable.

> ‘I think reflection is pretty powerful in that sense of building up your capacities. I think that’s another thing in this program that sitting back

> and actually being able to be reflective you've learnt a lot about yourself and where your strengths are.' [GL, interview]
>
> 'I think I'm someone who's quite good at reflective practice. I think I'm quite good at evaluating what I do and what's going well, what's not going well, but I've never done it in that sort of formal way before. I think I feel that I can stand back objectively and look at things and, you know, come to where I need to improve. I found that framework a little bit challenging but maybe it's just 'cause I wasn't used to it……. I think probably, to fully reflect you need to write things down, so from that point of view it was good, and then you go back and look any time and see what's changes, or even what priorities have changed for you.' [AK, interview]

Appreciative inquiry was used as a tool in the intervention to promote reflective practice. It has been used as a vehicle to promote learning[156] and in other mentoring programs[147]. The results indicate that the use of appreciative inquiry to facilitate reflection was generally effective. It transformed the participants' thoughts and feelings on situations however it was not able to offer solutions to determinants of workforce capacity such as the size and structure of the workforce. The use of 'high gain' questions are known to promote reflection and deeper thinking and facilitate solutions[145]. The results also highlight that while appreciative inquiry can focus on transforming individual views and thoughts it may overemphasize the positive and give a distorted view of the true situation[157].

This study demonstrated that appreciate inquiry is a potentially useful tool to promote reflective practice, transform learning and change thinking and provided the mentor with a framework to guide meaningful and solution oriented discussions. The skill of the mentor in being able to formulate effective questions is important to consider in this context and further adds to the list of skills and qualities required of mentors. Training for mentors so they are able to facilitate reflective practice using appreciative inquiry may be required. Training of mentors is encouraged in the literature[38]. These findings suggest that an appreciative inquiry framework should be considered for future mentoring in public health nutrition.

Box 7.1. Excerpts from mentor's reflections to illustrate the process of appreciative inquiry.

Wednesday 17 October 2007, face-to-face Clayton group

*'Today I used appreciative inquiry for the first time with a participant issue around the development of policy…... She explained the project she was involved in around childhood nutrition policy and that she was concerned about her lack of skills in policy and the time that it would take to get people on board. I used questions such as '***what is the end point that you hope to reach?***' and '***why do you think the approach you have chosen will work'***, which I felt really made her think outside the square and lifted her mood and thinking around the issue. I felt others learnt from this discussion as well, in that we identified some of the key phases of public health policy development and barriers that maybe encountered. Policy development seemed a new concept and intervention to many participants'*

Friday 30 November 2007, face-to-face Clayton group

*Today we discussed food security projects that participants were involved in. One participant was concerned about a community kitchen that she was involved in and the dwindling numbers. She explained the many and varied potential reasons behind this. Again I used appreciative inquiry to try and shine a positive light on this issue. I asked 'wh***at is the worst that could happen?***' She replied 'it could stop running' and I then said 'what would happen then?' and it was like a light bulb went off for her. We then discussed that it didn't matter if the group stopped and that if the participants really wanted it they would mobilise themselves to keep it going. We also had some deep discussion around supervision and performance management. Many participants reported the lack of skills in their managers and supervisors in relation to supporting them in their public health nutrition endeavours. Together we brainstormed and discussed other ways that they could be supported external to their organisation in building these skills. The input from other group participants was greater than mine. It is nice to know that I don't have to be the one with all the solutions sometimes!'*

Friday 20 June 2008, face-to-face extension phase group

*This discussion today focused on the importance of evidence based practice and I felt a real sense of commitment from the group towards this. Some then asked questions about funding provisions and how this often does not match evidence based practice, for example, why has Stephanie Alexander's kitchen garden been given millions to role out…what evidence is there of its effectiveness versus other strategies. I don't think some group members had considered politics as playing a role in public health nutrition. The issue of why isn't there a public health nutrition workforce to support work in Victoria was raised. It was the first time in the mentoring group sessions that I felt I didn't have an answer for people. Tried to focus the discussion more positively asking '***what would the workforce look like if you could design it***', however this wasn't effective as the participants were not in positions where they felt they could make any change in this area. I felt a useless for the first time to my mentees! It was frustrating for me to not be able to tell them there was a light at the end of the tunnel. Changing their views on the situation was not going to fix the underpinning problems of workforce.*

Note: Use of AI in high gain questions (in bold) were used to promote positive thinking and solutions.

Mentoring has been acknowledged as a vehicle for promoting reflection[38]. These results provide evidence to support the use of a learning plan to promote reflective practice and demonstrate the willingness of participants to undertake structured and formalised reflective practice. The participants acknowledged the importance of the time and structure to be able to reflect and valued the opportunity to do this with support from the mentor. The learning plan used in this study could be considered part of a portfolio.

> 'A portfolio captures learning from experience….acts as a tool for reflective thinking, illustrates critical analytical skills and evidence of self-directed learning and provides a collection of detailed evidence of a person's competence.' [158(page 595)]

These results are consistent with the literature on portfolios in post-graduate education that explain that when effectively implemented portfolios are a practical tool that enhance learning[143, 159, 160]. While the learning plan based on practice experience used in this study could be considered part of a portfolio of practice, additional structure and evidence would need to be included to strengthen its use as a tool to support professional development.

Portfolios that support experiential learning may also be used as a method of assessing competence. If used for assessment purposes portfolios should be assessed against qualitative criteria[161] and triangulated with other forms of assessment[143]. Reliability can be enhanced through standardisation, criteria for assessment and a large pool of raters however these factors reduce validity[161]. The use of qualitative criteria of credibility, (internal validity) and dependability (reliability) will strengthen the portfolios assessment.

> 'The following 3 strategies are important for reaching credibility: *triangulation* (combining different information sources); *prolonged engagement* (sufficient time investment …), and *member checking* (testing the data with the members of the group from which they were collected). The strategies for realising dependability… involve establishing an *audit trail* (i.e. documentation of the assessment process to enable external

checks) and carrying out a *dependability audit* (i.e. quality assessment procedures with an external auditor).'[161(page 216)]

It is recommended that assessment of a portfolio be separate from the mentoring relationship[161]. The conflict between mentoring and assessment must be taken into consideration. Introduction of assessment as part of the mentoring relationship may change the dynamics of the relationship[34, 54]. The assessment of public health nutrition competence is an area that warrants further research.

7.3. Process Evaluation - Satisfaction

7.3.1. Group aspects – size

Overall participants were satisfied with the intervention. Participants generally reported that the group size and frequency of contact was appropriate. The group size was felt by some of the participants to be too large for everyone to have their issues discussed in detail. Participants reported that other groups they attend that are larger and more diverse are not conducive to sharing or learning as they feel unable to talk in that daunting environment. Others described the group size as providing an opportunity to hear a variety of experiences. During the mentoring circles there were some problems with group dynamics and this was identified by the mentor and participants. Participants with personalities that dominated the discussion was the main factor influencing group dynamics, however one participant disrupted the group by discussing individual client related issues rather than issues related to public health nutrition practice. Participants acknowledged that this will always be an issue when working in a group setting and the mentor felt that these issues were swiftly dealt with during the sessions through guided facilitation.

The average group size of 8 participants throughout the intervention is supported by the literature as an effective number for small group learning. The education literature recommends an optimal group size of between five and 10 however it is acknowledged that this is not an absolute rule and that effective sizes can vary depending on the participants, context and objectives[151]. While the findings from participants may suggest that group size of 5 to 6 may be more appropriate this would implications for access to mentoring increasing the need for more groups.

The issues of personalities and behaviours as were observed in this intervention are recognised as an issue in all small group work however strategies to overcome these issues are well documented[162]. Personalities wanting to dominant the discussion was the main issue in the group setting and is commonly reported as an issue in managing small groups[149]. It was also evident that one participant did not understand the purpose of the intervention. Interestingly

this participant did not attend the initial orientation session and thus did not take part in discussions around group rules and expectations of the mentoring circles. This result emphasises the importance of setting the direction for learning[150]. The similar backgrounds of participants may have also contributed to the dynamics. The findings indicate that the mentor in this intervention appeared to manage these group dynamics effectively but did not stop them from regularly occurring during the first six month stage. While the group learning appeared to be enjoyed by the majority of participants some did not learn in this environment. This may be the result of previous poor group learning experiences or personal learning styles[162].

7.3.2. Group aspects – frequency of contact and duration

The frequency of mentoring circle meetings, every six to eight weeks, were generally felt to be adequate but some participants reported wanting more frequent contact.

> 'I would have got more out of it if I was doing it in between times as well so.. I don't know. I really don't know what would have helped me get more out of it. Having more regular contact?.' [KH, interview]

The majority of participants also suggested that mentoring in public health nutrition may need to be longer term as work in public health nutrition is a long term investment and outcomes take a long time to be seen. Participants of the extension nine month mentoring circle felt that this time (total 16 months) was more appropriate to see progress and outcomes.

Mentoring is a traditionally longer term relationship compared with other supervisory frameworks[54]. The literature advocates for longer term mentoring relationships describing the need for adequate time to progress through four phases, initiation, development, separation and evaluation[34]. These results show that a minimum of six months is required to support public health practice and that there is potential benefit in extended mentoring relationships beyond six months in the field of public health nutrition. The nature of public health nutrition

practice is that outcomes take longer to achieve in comparison to other nutrition service models[6]. This intervention based on mentoring of experiential learning demonstrated the need for a minimum of a six month relationship. While it is not expected that significant public health gains will be achieved in this time period the data suggests that participants felt it was adequate time to sufficiently support their practice. The role of mentoring in supporting personal development may also take a longer period of time and this may an important factor to consider for public health nutrition. The relative inexperience of the practitioners in this study together with the advocacy required in their work provides further explanation for the need for a longer term relationship.

7.3.3. Group aspects – composition

The group make up was felt to be appropriate by most of the participants being made up of the right mix of dietitians with similar levels of experience and work roles. However, participants reported that there were some mismatches within the groups. Dietitians who have a full-time public health or community nutrition roles did not feel that the group discussions fully met their expectations as much of the dialogue was focused on how dietitians who have a client role as well as a health promotion role spent time talking about how they more effectively make time for public health and community nutrition work. The participants reported that some group members wanted to talk about how they could find time to do more public health nutrition and others wanted to focus on improving their public health nutrition practice.

> 'The issues that I faced in my workplace …were very different and couldn't actually be translated…. I didn't feel like there was a whole lot of help in the room because it was such a different workplace to where most people work.' [EB, interview]

This issue was resolved in the additional nine month intervention with participants reporting that it was primarily important that the group had the same goal. They explained that it was beneficial to have participants from different work areas (i.e. community and public health) to

share knowledge and experience and as long as the group had an agreed common goal, for example to develop public health nutrition skills, all would benefit.

It is evident from these results that the makeup and format of the mentoring circle intervention was an important factor in its perceived success. The participants were self-directed in their learning and the makeup and format of the sessions allowed them to meet their learning needs[66]. The results demonstrate that participants had different learning needs - to improve practice and/or reorient practice. While the intervention attempted to meet both these needs some participants felt their needs were not met due to a lack of dedicated discussion time in their interest or practice area. This result, on the importance of the group makeup and format, supports the need to integrate adult learning principles into post-graduate mentoring relationships. In particular, agreeing to common learning goals and also recognising that post-graduate learners come to learning with previous experience. This includes a foundation of what they need to know and why they need to know it, prior experiences, a readiness and motivation to learn and an opportunity to apply learning in practice[66].

This intervention involved only one professional group however the benefits of interprofessional learning in health are well established[163, 164] and have been showed to be viewed positively in mentoring circles[109]. Interprofessional learning for public health professional development strategies are viewed positively and have been found to build capacity, through increasing networks and access to resources, providing practical advice and enhancing professional relationships and teamwork[22]. Further research involving the impact of interprofessional mentoring circles for public health nutrition workforce development warrant exploration.

7.3.4. Group aspects – mentor personal gains

My reflections throughout the intervention were positive, indicating satisfaction. Upon reflecting on my own growth and development during the mentoring circles I certainly gained skills in asking effective questions to facilitate deep thinking and reflection. I also valued the development of an intricate knowledge of the issues faced in the participants' workplaces and the work they were undertaking in public health nutrition, the relationships gained from the intervention and opportunities for collaboration and involvement with on the ground public health nutrition activities. While mentoring was rewarding the workload demand on managing 32 mentees was not sustainable beyond the six month intervention. This was due to workload not psycho-social burden. The ability to manage the 12 participants who continued for the additional nine months of mentoring was manageable.

The literature describes significant gains by mentors as a result of mentoring relationships and the reciprocal nature of the relationship[34]. More specifically mentors gain personal fulfillment, confidence and enthusiasm and learn through the relationship[38, 127]. 'mentors learn more from pupils than they teach them'[125(page 117)]. The satisfaction of participants with the mentor may be explained by their similar characteristics, needs and expectations. While the results of this study show that in general both mentor and participants were satisfied with the intervention it must be acknowledged that mentoring relationships are not always positive[34, 38]. Inappropriate mentors, personality mismatches between mentors and mentees and lack of commitment from mentees are some of the reasons mentoring relations are viewed negatively[38].

The sustainability of the mentoring intervention, where one mentor supports 32 mentees is questionable given the workload burden. The data shows that despite positive outcomes and experience for the mentor the cost on time was significant. No data was found on the number of individuals one mentor can realistically support. This study provides some direction on the feasibility and sustainability of group type mentoring between one mentor an approximately 12 mentees.

7.4. Process Evaluation - Expectations

Prior to commencement of the mentoring circles participants described their expectations of the intervention. They reported wanting increased confidence in undertaking public health nutrition and health promotion programs and support and guidance to work in this field. They also wanted increased knowledge and skills in the area of public health nutrition. In response to the questions as to whether the intervention met their expectations all participants reported that the mentoring circles fulfilled their needs.

> 'Definitely, it sort of exceeded [my expectations]… being a new graduate in a health promotion role, a public health position and a lot of sole work, you don't know, you've got no one to compare it against or you've got no one to sort of consult with….. I think that this mentoring program, in one way, it made me realise that my nerves and my confidence was the same for even people who have worked five years in clinical and had moved over to community or public health, and so that was good, that reassured me.' [SC, interview]

The participants reported that the mentoring circle provided an effective means for learning. They reported that prior to the mentoring circle they had only experience of one-to-one mentoring. Some participants felt that the group setting was even more effective for public health nutrition than one-to-one mentoring due to the ability to network, share practice experiences and explore ideas in detail. The participants explained that sharing of issues, brainstorming ideas and strategies by drawing on each others' experience and problem solving together increased participants' confidence and ability to deal with challenges in their work roles. These findings met the participants' expectations in that prior to the mentoring the participants reported wanting to develop their networks and share experiences with others working in similar roles.

> 'My satisfaction was the contact that I had with other community health dietitians who were of a similar experience to myself and had similar

> issues come up… the problem solving of each of the particular issues or discussion between all of us was probably, I felt, the most beneficial.' [AY, interview]

These results provide evidence that the group or peer mentoring provided additional benefit to one-to-one mentoring. The mentoring circle format facilitated input from the mentor and peers. These findings support the theory of mentoring circles in increasing access to mentoring, reducing time demands of the mentor and creating varied and summative input from all group members[109]. The mentoring circle may be viewed as a community of practice[60]. Communities of practice are groups with a common interest who come together to learn through regular interactions. They are characterised by a shared set of skills, engagement in discussions together, and currency of practice[60]. The results indicate that as a collective, the participants drew on each others' experiences and opinions to guide their practice, which me their expectations. While the group form of mentoring was not familiar to participants it met their expectations of the intervention.

7.5. Process Evaluation - Experience

The organisations that employed the participants were generally reported to be supportive of their participation in the mentoring circles. Participants explained that their organisations were generally supportive of developing capacity for public health nutrition action even though participants reported consistently feeling pulled towards prioritising client work in the community and rural health services. Organisational support, for professional development and working in public health nutrition, was reported to be stronger from participants who worked in rural areas. There were a few organisations that were not supportive of their dietitians attending the intervention or being involved in public health nutrition, however some participants reported finding the time to participate in the mentoring circles challenging.

> 'You always feel like you are under so much pressure to get things done and say yes to more things… you're so busy, I just really struggled to actually, you know I had the time booked aside in my diary but things would come up or something would go wrong.' [AP, interview]

> 'I'd like to say that I really worked hard at my goals that I set for the program, but I found I didn't have time to choose many specific activities to work towards those goals….. I think perhaps I was a little ambitious… I set out a lot of activities to get to those goals and I didn't achieve all of the activities that I'd planned, mostly through time limitations I think, just in my workload.' [AS, interview]

> 'I sort of did it in my own time in the end. I took time in lieu or whatever.' [GL, interview]

The importance of having workplace support for participating in mentoring as a professional development activity was highlighted, particularly in the focus group discussions. Participants reported feeling encouraged if their workplace viewed mentoring as a valid activity for learning and supported their involvement in the intervention for their development. They

reported frustrations in working in constantly changing work environments. There were a range of impacts on the participants' ability to contribute to the intervention and develop professionally that were related to the organisations in which they worked. Many of the participants experienced change in positions and/or organisations and/or role and responsibilities during the period of the intervention. The competing priorities of client or direct care work for some of the participants were a barrier to gaining from the intervention.

The lack of capacity for public health nutrition in Victoria due to a focus on direct care dietetics counseling or education services has been previously identified[11]. The continued lack of a mandate for community dietitians to be involved in public health nutrition action will continue to limit the capacity of the Victorian workforce and draw community dietitians towards meeting direct care needs and targets as demonstrated by these results.

Participants also reported individual personal or workplace issues also impacted on their ability to get the most out of mentoring. This included personal views towards a future career in public health, personal issues, travel and workplace changes. Personal commitment to the mentoring circles was viewed as an enabler.

> 'It was tricky because of that change in jobs and a lot of things going on in my personal life at the time, like getting married, but from that perspective it could have been better if I was a bit more settled and had the same problem throughout the length of the program.' [NW, interview]

> '.. I'd done a bit of medicine before I did dietetics, so I had a bit an awareness of public health generally so I knew I wanted to work in the area and then when I did dietetics ….. I knew that I wanted to work in public health and or community nutrition. I've always had a focus that way, you know I've directed my reading that way. When I was doing private practice I was always thinking about public health nutrition. [KCu, interview]

Lack of time is the most common reasons mentoring relationships fail[38] and this perceived lack of time for public health nutrition practice in the workplace may have been a barrier for some participants. These results highlight the importance of the intervention to embrace the needs of adult learners and be flexible to accommodate the various personal and workplace issues associated with professional development.

7.6. Summary

This chapter provides evidence that the participants were satisfied with the quality of the structure, function and environment of the mentoring circles. The safe and supportive environment provided through the mentoring circle was an effective strategy for supporting learning in public health nutrition. The participants reported one of the key affordances was the skill base of the mentor, and clearly defined the important characteristics of an effective mentor for public health nutrition. The learning plan, based on experiential learning, and the advanced-level public health nutrition competencies, reflective practice framework and appreciative inquiry focused discussions, were generally considered effective to guide learning. The intervention met participants' expectations in terms of the process and their individual outcomes. The process evaluation of the participants' experience of participating in the mentoring circle identified personal and workplace barriers and enablers to participation and achieving outcomes.

This chapter provides useful information from which to inform future mentoring activities in public health nutrition. The next chapter outlines the results from the impact evaluation to determine the effect of the mentoring circle intervention on competence, confidence and networks in public health nutrition.

Chapter 8

Impact Evaluation - Mentoring for practice improvement in public health nutrition

8.0. Preamble

This chapter describes the results of the impact evaluation of the mentoring circle intervention. It provides evidence of the effect of the intervention on competence development using mix methodologies. The purpose of this chapter is to explain the impact of mentoring on public health nutrition workforce development and to discuss these findings in the context of the literature.

The chapter consists of results from quantitative data of self-assessment of competence during the course of the mentoring intervention. Qualitative data from interviews, mentor reflections and focus groups have been analysed and reported as themes relevant to competence, confidence and support. Short case examples from participants are used to describe stories relevant to these themes. The results are supported with discussion from the literature throughout the chapter.

The impact of the effect of the intervention on competence development, confidence and professional supports are the focus of the discussions to follow. Table 8.1 summarises the information presented in this chapter.

Table 8.1. Summary of impact evaluation results presented in chapter

Competence and Confidence	Change in self reported competence after six months of mentoring Change in self reported competence after extension of nine months of mentoring Discussion on self reported competence Qualitative story on competence and confidence - Competence and confidence - Professional development is an individual responsibility - Mentoring as part of the solution
Professional support/networks	Increased professional support - Mentors The participants

8.1. Overview of Impact Evaluation

The impact evaluation attempts to determine the effect of mentoring on public health nutrition workforce development, and specifically the effect on the competence and confidence of participants and access to and use of professional support.

The aim or goal (outcome) of the six-month mentoring intervention was to enhance the public health nutrition capacity of dietitians working in community and public health nutrition in Victoria.

The objectives (impact) of the six-month mentoring intervention were to:

iv) Increase self assessed public health nutrition competence score (sum of 23 competency areas) of participants by 10 percent.
v) Increase the confidence of participants.
vi) Increase and strengthen the professional supports of participants.

The results of this impact evaluation or whether the intervention addressed its objectives will now be described.

8.2. Impact Evaluation – Competence, Confidence and Support

8.2.1. Change in self reported competence after six months of mentoring

Analysis of the data obtained from the competence self-assessment tool revealed no correlation between initial self-assessed sum competence score (E1 – Figure 3.3) and years of experience (r=0.103, p=0.58) or amount of hours of work in public health nutrition (r= -0.056, p=0.76). This indicates that those with more experience did not perceive themselves as more competent. This may be explained by the relative inexperience of the whole group with small difference in years of experience of between none and 3.5 years of practice in the field. There was also no difference in the self-assessed sum of competence score between Melbourne, Clayton and rural groups pre intervention (E1, Figure 3.3) (Kruskal Wallis test, χ^2=1.34, p=0.512) or post six month intervention (E2, Figure) (Kruskal Wallis test, χ^2=1.00, p=0.61) indicating that the self perceived public health nutrition competence of participants was equal across groups.

There was also no correlation found between change in total competence score from commencement to completion of the intervention and attendance (r= -0.16, p=0.38). The pre-post change in sum of competence from participation in the six-month mentoring intervention was significant with sum of total 23 competencies increasing significantly by 15% (Table 8.2) (Wilcoxon t test, Z= -4.83, p=0.000). This provided evidence that the intervention significantly increased participants' self-rated competence. There was no difference in the change in competence score (E1 to E2) between Melbourne, Clayton and rural groups (Kruskal Wallis test, χ^2=0.025, p=0.99).

Table 8.2. Change in sum of total competencies from pre- and post- six month mentoring intervention.

	Mean Sum of 23 Competencies Score	Mean Sum of 23 Competencies Score
	Pre-Intervention (E1)	Post-Intervention (E2)
Median, IQR	70.5, 26	80.8, 22
(mean ± SD)	(69.1 ± 13.8)	(79.3 ± 12.1)

The individual competency areas were also analysed separately. Table 8.3 shows the pre-intervention score and mean change for each of the individual 23 competency areas pre-(E1) and post-(E2) the six month mentoring intervention. The change in competence was determined to be significant ($p<0.05$) for 20 competency elements and not for three, these being 'interpersonal and written communication skills' ($p=0.15$), 'assessment of food, nutrient and dietary intake and status in populations' ($p=0.16$) and 'nutritional requirements of populations' ($p=0.06$), all of which rated highly on initial assessment.

Table 8.3. Change in self reported competence from pre- and post- six month mentoring intervention for 32 participants from lowest to highest change.

Competency Area	Score (max 5) Median, IQR (Mean±SD) pre-intervention (E1)	Change pre vs post-intervention Median, IQR (Mean±SD) (E2)	Z (Wilcoxon t test)	P (Wilcoxon t test)
Policy processes: policy development skills, influence policy development, evaluate policy impacts, organizational politics	2.0, 1.0 1.8 ± 0.7	1, 1* 0.86 ± 0.85*	-4.09	0.000
Building community capacity: community engagement, collaboration, partnership, coalition building and community dimensions of practice skills	3.0, 1.0 2.6 ± 0.8	1, 1* 0.84 ± 0.68*	-4.56	0.000
Building capacity of the health workforce through training, up-skilling and mentoring	2.0, 1.0 2.5 ± 0.9	1, 1* 0.73 ± 0.68*	-4.06	0.000
Service and program prioritisation based on identified needs, their potential impact, as defined by objective measurable criteria	3.0, 1.0 2.7 ± 0.8	1, 1* 0.66 ± 0.75*	-3.72	0.000
Design, plan, implement, monitor and evaluate nutrition strategies and programs for promoting health and well-being of the population, that reduce inequalities	3.0, 2.0 3.0 ± 0.9	0.5, 1* 0.63 ± 0.70 *	-3.75	0.000
Reflective practice to enhance performance	4.0, 1.0 3.7 ± 0.9	0.5, 1* 0.59 ± 0.67*	-3.76	0.000
Advocacy at government, organization, profession levels	2.0, 0 2.2 ± 0.9	0.75, 1* 0.55 ± 0.66*	-3.58	0.000
Awareness, knowledge and skills that enable a system, agency, or professional to work effectively in cross-cultural situations	3.0, 2.0 2.9 ± 1.1	0, 1* 0.48 ± 0.62*	-3.49	0.000
Principles and practice of health education, health promotion theory, behaviour change and health promotion policy and programs, public health methods	3.0, 1.0 3.2 ± 1.0	0, 1* 0.47 ± 0.58*	-3.49	0.000
Population nutrition intervention strategy options and selection	3.0, 1.0 2.7 ± 1.0	0.25, 1* 0.47 ± 0.61*	-3.40	0.001
Knowledge of food and nutrition systems and community food needs	3.0, 1.0 3.1 ± 0.8	0, 1* 0.45 ± 0.56*	-3.56	0.000

Ethics of public health nutrition practice	3.0, 2.0 2.8 ± 1.0	0, 1* 0.45 ± 0.76*	-2.88	0.004
Professional accountability and social responsibility	3.0, 1.0 3.5 ± 0.8	0, 1* 0.39 ± 0.68*	-2.99	0.003
Grantsmanship-submission writing to access resources to enable intervention and service delivery	2.0, 2.0 2.4 ± 1.2	0, 1* 0.38 ± 0.66*	-2.76	0.006
Applied research, research and development. The ability to appraise, plan and manage research, interpret research findings and apply in practice	2.0, 1.8 2.4 ± 1.1	0, 1* 0.34 ± 0.70*	-2.51	0.012
Needs assessment- assessing population needs using various methods	3.0, 2.0 3.0 ± 0.9	0, 1* 0.34 ± 0.55*	-3.05	0.002
Food and nutrition monitoring and surveillance	2.5, 1.0 2.5 ± 0.9	0.25, 1* 0.31 ±0.54 *	-2.89	0.004
Analysing the determinants of nutrition issues using a range of information sources	3.0, 1.0 3.3 ± 0.7	0, 1* 0.30 ± 0.52*	-2.75	0.006
Commitment to continual competence development and lifelong learning	4.0, 1.0 4.2 ± 0.8	0, 1* 0.27 ± 0.60*	-2.46	0.014
Knowledge and understanding of the psychological, social and cultural factors which influence food and dietary choices	4.0, 0.8 3.9 ± 0.7	0, 0* 0.22 ± 0.42*	-2.65	0.008
Nutritional requirements of populations	4.0, 1.0 3.6 ± 1.1	0, 0 0.19 ± 0.54	-1.90	0.058
Assessment of food, nutrient and dietary intakes and status in populations	3.5, 2.0 3.3 ± 1.2	0, 0 0.13 ± 0.49	-1.41	0.157
Interpersonal and written communication	4.0, 1.0 4.1 ± 0.7	0, 0 0.11 ± 0.40	-1.44	0.149

* Statistically significant p<0.05

Figure 8.1 shows the proportion of participants who reported a positive change pre-(E1) and post-(E2) intervention to each individual competency area. Overall, and in general, participants reported a positive change across the competency areas. The competency area that may have had the greatest gain was ‘building community capacity’ with 78 per cent (n=25) participants reporting a positive change in this competency area. The competency areas where no change was most commonly observed were ‘assessment of food, nutrient and dietary intakes and status in populations’ and ‘nutritional requirements of populations’. This may be explained by the relatively higher starting competene in these areas. The participants reported a reduction in competence in the areas of ‘interpersonal and written communication’, ‘professional accountability and social responsibility’ and ‘commitment to continual competence development and lifelong learning’. This may be explained by the participants gaining a greater appreciation of the breadth and depth of these competencies and evaluating their practice as a result of this.

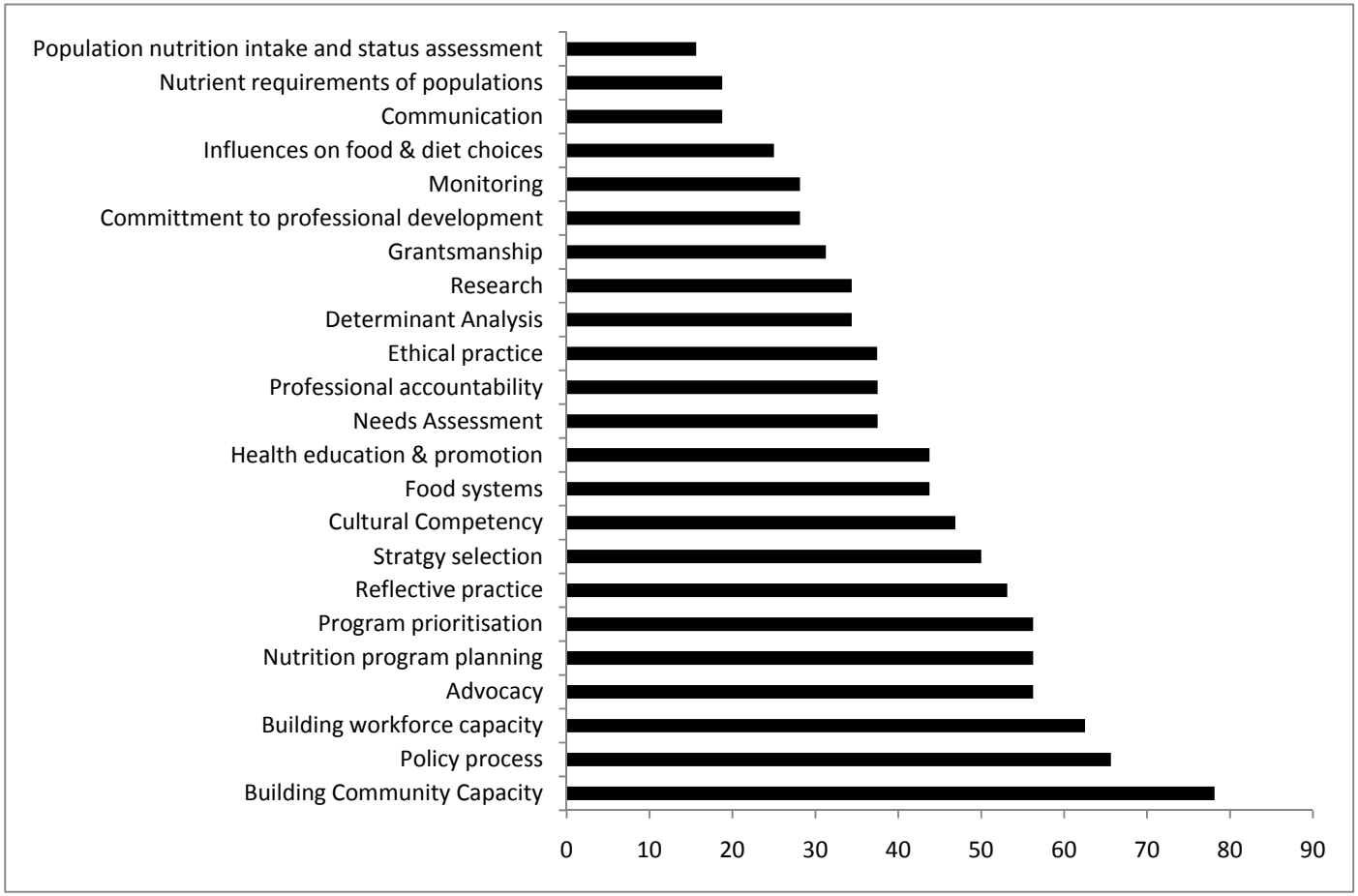


Figure 8.1. Percent proportion of participants reporting positive change between pre- and post- intervention for the competency areas.

8.2.2. Change in self reported competence after additional nine months of mentoring

Table 8.4 describes the change in competence for those who continued the mentoring intervention for the nine months extension compared to those who exited after six months.

Table 8.4. Mean sum of competence score for participants who exited after six months and those who continued with mentoring extension.

	Mean Sum of 23 Competencies Score Six month intervention participants n=16	Mean Sum of 23 Competencies Score Nine month extension participants n=11
E1*		
Median, IQR (mean ± SD)	70.5, 24 (70.7 ± 13.9)	68.5, 28 (66.5 ± 13.7)
E2*		
Median, IQR (mean ± SD)	80.8, 19 (80.0 ± 11.1)	79.8, 24 (78.1 ± 14.1)
E3*		
Median, IQR (mean ± SD)	85.5, 13 (77.5 ± 29.6)	83.0, 17 (85.5 ± 13.4)
E3 - E2		
Median, IQR (mean ± SD)	9, 13 (7.6 ± 10.0)	8.5, 12 (7.4 ± 6.7)

*E1-E3: Competence self-assessment. E1 (baseline), E2 (immediately following completion of six month mentoring intervention), E3 (12 months after completion of six month mentoring intervention).

There was no significant difference in the sum of self-reported competence between the groups at the commencement of the intervention (Mann Whitney U test, Z= -0.90, p=0.37) or at the end of the six month intervention (Mann Whitney U test, Z= -0.41, p=0.68) (Table 8.4). There was also no significant difference in self-reported sum of competence 12 months after the completion of the six month intervention between the two groups despite one group having additional mentoring (Mann Whitney U test, Z=-0.32, p=0.75) (Table 8.4). When each competency area was analysed separately, the group who participated in additional mentoring did not have significantly greater gains in any specific individual competency area (Table 8.5).

Table 8.5. Change in individual competency area between participants who exited after six months and those who continued for extension nine months of mentoring.

Competency Area	Z (Mann Whitney U test)	P (Mann Whitney U test)
Food and nutrition monitoring and surveillance	-1.36	0.18
Applied research, research and development. The ability to appraise, plan and manage research, interpret research findings and apply in practice	-0.10	0.92
Needs assessment- assessing population needs using various methods	-1.32	0.19
Analysing the determinants of nutrition issues using a range of information sources	-1.15	0.25
Policy processes: policy development skills, influence policy development, evaluate policy impacts, organizational politics	-0.18	0.86
Building community capacity: community engagement, collaboration, partnership, coalition building and community dimensions of practice skills	-0.33	0.74
Advocacy at government, organization, profession levels	-0.46	0.64
Awareness, knowledge and skills that enable a system, agency, or professional to work effectively in cross-cultural situations	-0.50	0.96
Knowledge and understanding of the psychological, social and cultural factors which influence food and dietary choices	-0.42	0.67
Design, plan, implement, monitor and evaluate nutrition strategies and programs for promoting health and well-being of the population, that reduce inequalities	-0.31	0.76
Principles and practice of health education, health promotion theory, behaviour change and health promotion policy and programs, public health methods	-0.80	0.44
Building capacity of the health workforce through training, up-skilling and mentoring	-1.04	0.30
Knowledge of food and nutrition systems and community food needs	-0.82	0.41
Service and program prioritisation based on identified needs, their potential impact, as defined by objective measurable criteria	-1.38	0.17
Grantsmanship-submission writing to access resources to enable intervention and service delivery	-1.64	0.10
Interpersonal and written communication	-0.44	0.66
Assessment of food, nutrient and dietary intakes and status in populations	-0.88	0.38
Nutritional requirements of populations	-0.90	0.37
Population nutrition intervention strategy options and selection	-1.16	0.25
Professional accountability and social responsibility	-0.47	0.64
Ethics of public health nutrition practice	-1.91	0.06
Commitment to continual competence development and lifelong learning	-0.19	0.85
Reflective practice to enhance performance	-0.73	0.47

8.2.3. Discussion of self reported competence

The field of public health internationally, like many other health professions, has moved to competence based training[27]. Nutrition, as a discipline of public health, is in a unique position whereby specific competencies have been articulated[29] and this study is the first to apply these competencies as a framework for education. This study demonstrated the ability of individuals to measure self-perceived confidence across each core competency element and the change in self-perceived competence after the mentoring intervention.

The results showed that the group as a whole reported an increase in their confidence across all competency areas by 15%. At the commencement of the intervention, overall the novice public health nutritionists had high confidence in communication, reflective practice, commitment to professional development, foundation nutrition knowledge and the factors that influence food choice. They reported lower confidence in policy processes, advocacy, food and nutrition monitoring, research processes and grant writing. This is somewhat consistent with a Canadian study of public health nutritionists, both novice and expert, that demonstrated higher confidence in interpersonal, communication and organisational competencies[111]. These Canadian public health nutritionists viewed research as a lower confidence item, however the nutritionists with more years of experience reported greater confidence in the research competency element[111]. Dodds and Polhamus 1990 study on advanced public health nutrition practitioners in America identified that they reported the highest level of competence in the communication area[110]. These comparisons must be interpreted with caution as the specific competency elements differed across the studies. This type of assessment of competence may be useful in guiding undergraduate and postgraduate curriculum planning and CPD[110]. Self-assessment of competence has the potential to act as a learning needs assessment by identify areas of strengths and potential weaknesses which has been identified a key step in planning professional development for dietitians[165] and is the first step in curriculum development[150] and planning adult learning[66].

The results of this study also showed that the specific six month mentoring intervention appeared to improve confidence in policy and capacity building competencies. This may be linked to positive feedback about the result of the focus of discussions in the mentoring circles

(see Chapter 6 table 6.2). However this is assumed as there is a lack of published work on workforce development interventions in this field. Some literature suggests that post-graduate professional development is effective in developing self-reported skills and knowledge for health promotion and public health nutrition practice[166, 167]. This work recognised that training alone is insufficient to change practice and that additional strategies, such as mentoring and on-the-job experience are required[166, 167].

This mentoring intervention provides some evidence that mentoring combined with practical experience improved self-reported competence. However, the issues related to self-reporting of competence and the inability of competence self-assessment to correctly reflect true performance must be taken into consideration when interpreting these findings. The results from the competence self-assessment indicate that additional mentoring did not support increase competence independent of experience through time in the workforce (Table 8.4). The failure to accurately determine the independent effects of mentoring versus practical experience in the study is a constraint. It was not deemed appropriate to employ a randomised design for this study which may have assisted in addressing this concern. The issues related to controlling when evaluating educational designs is well documented[168-170]. Issues associated with the naturalistic setting including the inability to consider, and therefore control for, the range of variables, confounding and bias and difficulties in reproducing and standardising the educational intervention are documented[168, 169]. In this study a control group was not deemed practical in that it was predicted that there would not be enough participants. In addition, the ethical issues of providing only one group of novice practitioners with mentoring opportunity, which based on the literature was predicted to be a worthwhile experience, further meant controlling was not possible.

Self-assessment of competence among the health professions is a contentious area[171]. In the field of public health nutrition self-assessment of competence has been used and promoted as an effective means for planning professional development[110, 111]. Self-assessment is implicit in professional development planning and evaluation[114] and is thus used as a form of assessment for the purposes of credentialing and registration across health professions. Self-assessment can be strengthened through feedback and detailed assessment criteria[171]. It could be argued that those who volunteered to participate in the mentoring intervention in this study were

likely to be more competent and thus more accurate at assessing their competence. The small variation in rating across most of the 23 competency areas among an analogous group of novice public health nutritionists is also evidence of some accuracy in their self-rating. However the relationship between confidence and competence is not known. Some studies have identified a relationship between confidence and competence and suggest that those who are more confident are less skilled[172]. These findings reduce the interpretative quality of the competence self-assessment tool used in this study. The need for reliable and valid measure of competence and performance across public health disciplines, including nutrition, is acknowledged[27] and this study further supports this need. As discussed earlier in considering the role of assessment and mentoring in public health nutrition it should be noted that any form of assessment should be external to the mentoring relationship to avoid impeding the dynamics of the trusting relationship.

The use of the competence self-assessment was introduced in this study to provide a quantitative estimation of the effect of the mentoring intervention and to supplement the data obtained from the qualitative methods. The challenges of designing robust evaluations of educational interventions are well described[168-170] and this study aimed to encompass different forms of data collection to assist in strengthening and explaining the findings which is recommended for education evaluations[168]. The design used for assessment of competence aimed to provide data on the impact of the mentoring intervention. The pre-post nature of data collection and quasi-control group for follow up competence self assessment aimed to strengthen the findings. This quantitative data was used in combination with qualitative data to triangulate the data sources and assist in interpreting and strengthening the findings.

The role of a learning plan as a means of self-assessing learning needs and the use of a portfolio for documenting evidence towards achievement of competence offers a potential solution to assessment of competence in public health nutrition. The advanced-level competency areas may provide a useful framework to identify learning needs and develop plans for development and would therefore provide a useful structure for the development of a portfolio of practice in public health nutrition. If used for assessment or credentialing purposes this portfolio would need to be assessed using qualitative criteria independently of a mentoring relationship. The self-assessment of competence used in this study provided some

indication on perceived gain from the mentoring intervention. It was useful for individuals to identify the specific areas of practice to target for the mentoring intervention and thus served a function in this study. The tool did not have the ability to accurately measure true competence based on performance as thus was a limitation.

8.2.4. Qualitative data on competence and confidence

Qualitative analysis of the interviews, mentor reflections and focus group data identified two key themes that provide evidence relating to the impact of the mentoring circle, 'competence development' and 'networks and professional support' (Table 8.6, 8.7). The theme and subthemes of competence development are described below.

Table 8.6: Qualitative thematic analysis of data on impact of mentoring intervention.

Key Themes	Sub Themes	Descriptors
Competence development	▪ Competence and confidence ▪ Professional development individual responsibility ▪ Mentoring part of solution	▪ Mentoring increased confidence and improved competence in public health nutrition ▪ Development individual responsibility ▪ Competence gain ongoing ▪ Learning plan and self assessment of competence were subjective measures of performance ▪ Structures to support competence development ▪ Mentoring only part of the solution to competence development – role of further education/training and learning on-the-job acknowledged

8.2.4.1. Competence and confidence

Participants reported in both the interviews and focus group discussions that group mentoring was an effective way to develop public health nutrition competence. They described development across a range of different competency areas, exemplified in Box 8.1. They reported that the mentoring helped build their confidence to work in the area of public health nutrition.

> 'You might hear of a big project and think I could never possibly do that, then you hear someone else talking about the individual steps and then think well, I could do that, and I could do that, so you feel more confident to try and aim for the bigger projects.' [AK, focus group]

Generally all participants felt their confidence and competence had improved by being part of the mentoring circle. They explained that confidence and competence are not directly related. In an attempt to explain these terms the participants described currency of practice being related to confidence. They also felt that the group process of sharing with others instilled confidence, independent of whether competence had increased.

> 'I don't know if my competency has increased. I don't know, maybe my confidence has in taking on public health ….. projects.' [NK, interview]

This data is congruent with the literature that suggests an independent relationship between confidence and competence. As described above, practitioners with high confidence may over report their true competence[172]. This study identified that confidence was related to other factors such as level of support and discussions and comparisons with others in similar roles. 'Confidence is said to be central to learning'[173(page 467)] and while there is little evidence to identify what develops confidence, the role of mentoring and discussions with peers about experiences are acknowleged[173]. This study certainly supports the role of peer support and discussion in building confidence.

The participants also described challenges in self-assessing their own competence throughout the mentoring intervention. The validity of the competence self-assessment tool in measuring competence development was reported by the participants as an issue with many indicating that as they became more familiar with the tool and competency elements they realised their 'true' level of competence in the area. When ranking their own competence many participants reported that gaining a greater understanding of the breadth and depth of the competency areas made them feel less confident in them as they progressed. The participants reported that the mentoring circle provided an avenue to define advanced-level practice that would not have otherwise been articulated or understood. Familiarisation with the competency areas influenced their self-assessed levels of competence. The more familiar some participants became with the competencies and their interpretation the more critical they were of their ability to perform in that area.

> ‘I think competency is pretty hard to measure and it’s hard to measure what increases competency…..I think that especially at our age and expectations that competency will increase from year to year anyway. So it’s kind of hard to know what I’ve learnt just because I would have anyway, or what’s been supported by mentoring. I know I probably learnt more because of mentoring, but I don’t know how you measure and separate the two.’ [AS, interview]

> ‘I remember the first time I actually ticked the boxes… there were a couple [of competencies] I thought I’m not really sure if I know what that is …. so I sort of did it and …. the second time round they might have scored lower because I actually understood what they were now.’ [AB, focus group]

> ‘I think in my mind I progressed a lot. It’s really strange, but just because of the way it works in public health and in the community things are so slow….probably action wise I started on most of them [competencies], like I said the momentum is still just building up.’ [JMcE, interview]

The mentor also reflected upon other impacts on competence development and the difficulties of measuring this objectively through mentoring. The difficulty in knowing the independent effect of the mentoring on competence development and the ability to objectively measure competence was also expressed in the reflections. The objective assessment of competence is a topic of much debate in the literature. A range of different key methods used to assess competence have been reported, these include assessment of performance in the workplace for the completion of qualifications and/or on-the-job assessment for professional recognition[30]. Direct observation has been stated as the most valid and reliable form of assessment[30] and the participants and mentor clearly recognised the inability of the learning plans with reflection to accurately assess competence. There is increasing attention being placed on a range of different methods to assess professional competence [30, 112, 174] and there is an opportunity to look at models for assessment of competence in public health nutrition.

These findings assist in the interpretation of the quantitative data reported above and may further strengthen the results found. The change in participants' self-reported competence after involvement in the mentoring intervention may have been greater than reported when based on these qualitative findings. This qualitative data combined with the process evaluation data (reported in the previous chapter) provide evidence that mentoring combined with experiential learning had an impact on public health nutrition competence. The quantitative data that showed no additional effect of the extra nine month of mentoring circles (Table 8.4) may be explained by these qualitative findings. The participants that continued for the additional nine months became more familiar with the competency areas and thus may have been more critical in the self-assessment. This may explain the fact that there was no quantitative effect of the additional mentoring. In addition, mentoring may have had other benefits not captured through the competence-self assessment or qualitative methodologies. For example, career progression and mentoring others, which have been reported as benefits of mentoring in other studies[38]. While this study showed the quantitative assessment of competence alone was not perfect in assessing competence, in combination with qualitative data it has provided some evidence for a mixed method approach for competence assessment. Other studies have reported an increase in competence as a result of mentoring in nursing[35] and public health[77, 78]. Whether this increase in competence results in improved public health outcomes for communities and populations is not known and warrants further investigation.

The participants also explained that the effect of the mentoring was dependent on the ability of the group to agree on a shared, common goal or focus to prevent discussions being irrelevant. They explained that the mentoring circles provided them motivation to advance their practice and that the structure of mentoring facilitated their advancement in public health nutrition practice more efficiently.

It appears from these results that orientation to the mentoring circles commencing with explicit discussions around purpose, direction and rules for engagement was instrumental in setting up effective group learning. The concept of learning circles for professional development are recognised as being a powerful tool from which to identify learning needs and seek collective development[140]. They are similar to the notion of 'communities of practice' that recognise that competence is related to experience and that through work and

discussions with communities of practice, the experience is interpreted and learning takes place. 'Learning….is an interplay between social competence and personal experience'.[60(page 227)].

Boundaries are an important element for communities of practice[60]. The boundaries for the mentoring intervention focused on advancement of public health nutrition practice and/or reorientation of practice towards public health nutrition. These boundaries for learning have been described as significant for learning particularly 'when experience and competence are in close tension'[60(page 233)]. At the orientation session and at all mentoring circle session these boundaries were made clear and participants knew that discussions outside these boundaries, such as those surrounding clinical practice for example, were not appropriate. The mentoring intervention was effective in developing self-perceived public health nutrition competence due to its focus, involvement of real work experiences and integration of the learning plan identifying what the participants needed to learn. These factors are in line with adult learning principles which describe the process of learning as identifying the learning that is needed and the strategies to achieve it, implementing the strategy and then assessing if the learning has taken place[66].

Box 8.1. NP's Story – adapted from interview and focus group data

I graduated as a dietitian at the end of 2006. When I started in the mentoring program I was still working in my first job - a part-time position working with a local government area in the south eastern area of Melbourne doing a project around improving childhood nutrition. I joined the mentoring program because I wanted to gain support and advice to improve my skills and knowledge. I also wanted direction for my career path and I wanted to develop links and relationships with other dietitians working in public health nutrition with similar experience.

The mentoring program was a great opportunity to meet other people in the same situation, gain feedback on issues that I faced in my work and have support for trying to solve some of those issues. That was especially important because working in local government there aren't a lot of dietitians working in that sector so although there's other health promotion people, to be able to meet people that are doing dietetics specific work was really important for me. I think the program also gave me the opportunity to gain new skills, different skills that help you solve problems you encounter in public health nutrition practice.

One of my key achievements in the mentoring program was working through the development of a nutrition policy for the local government. It was specifically targeted to events run by the local government. I was able to initiate it through the process of mentoring which was really fantastic as policy was something that was a bit different for local governments to be considering and something I had not been involved in doing before. I used the mentoring program to get advice about how to approach this task. The advice was really useful and gave me confidence to work through this initiative in my workplace. I was involved in both parts of the program for a total of 16 months. I was glad that we were able to have input into the mentoring program continuing as it has taken me a while to get my head around more advanced level practice and it takes time in public health nutrition to see things happen. This was certainly the case for the policy development. It only got to a consultation phase when the mentoring program was coming to a close.

One of the key strengths of the program for me was the ability of the mentor to make discussions relevant for everyone in the group. Even though no one else worked in local government I found that some of the issues that community health dietitians were discussed in such a way that was beneficial to me. The important thing was that everyone had the same goal for the program – we wanted to get better at doing public health nutrition. I also found the learning plan a really useful exercise to go through. It helped me focus my development and reflective practice. My work is so busy that if I didn't have this plan I think my learning would have fallen by the way side. I think I gained skills and knowledge across a wide range of areas as part of participating in the program.

The organisation that you work for has a lot to do with your ability to develop your competency in public health nutrition. I was lucky in that I had a team around me at my workplace that were supportive of public health nutrition and could help me. My role was only funded by a short term project so it finished while I was still involved in the mentoring program. I have moved into community health where I have a community nutrition role. It's amazing how much I know about public health nutrition and health promotion compared to the other dietitian's in the organisation – I guess because of my experience and I think the mentoring program.

8.2.4.2. Professional development is an individual responsibility

Participants acknowledged that their competence development was directly related to their level of commitment to the mentoring intervention which was an individual responsibility. Participants who were able to find time for the mentoring circle and were more committed described greater gains in competence. Participants acknowledged that there is no upper limit to competence development as you can always continue to improve.

> 'I think it's sort of up to the individual and how much effort and time they put into it as well, you know if someone's sort of not self-directed in their learning they could just go to the mentoring and have done thing in between, you know like towards their competencies.' [APe, interview]

> 'It did to an extent [meet expectations], but not I guess, because I was only involved in it for a short amount of time probably didn't achieve it one hundred percent….. I think the fact that I wasn't in it, the program, long enough was probably why I couldn't fully fulfill them [my expectations].' [DT, interview]

The relationship between commitment and learning is articulated as part of adult learning principles. Knowles theory of adult learning states that adults often need direction and support to learn. Support is the result of a commitment to the process of learning and confidence in ability[66]. This data shows that the participants acknowledged the relationship between commitment to learning and learning outcomes in relation to perceived competence.

The public health nutrition competency areas provided a new and additional model to support professional development for the participants. They provided structure to guide and direct competence development in certain areas and a mechanism from which to measure professional development. The DAA APD program was the other professional development program outside of the mentoring intervention that provided a framework for professional development. This program was generally viewed favorably by participants reporting that the program structure, requirements and mandatory nature facilitates commitment to ongoing

professional development, reflective practice and learning. Mentoring relationships developed as part of the provisional APD program were reported to have continued into the future however they did not recognise the role of mentoring as part of a CPD plan after the provisional phase.

Workplace supervision and performance review was inconsistent among participants and workplaces. Participants reported utilising peers within workplaces or previously established formal or informal mentoring relationships for support with competence development.

The participants in this study acknowledged engagement in mentoring as a professional development activity. The literature suggests that dietitians as a professional group are generally committed to professional development[113, 175] which is supported by this study. The focus on engaging passive learning activities, such as lectures, seminars, workshops, conferences and reading for professional development compared to more active strategies such as higher education and mentoring, has been noted among the profession[175, 176]. There is a need to establish a culture of mentoring as a model for promoting reflective practice and thus learning and development. The lack of support structures for this group of novice practitioners identified in this study further necessitates this. The mandatory nature of mentoring as part of the provisional phase of the APD program may impact on the views of mentoring by novice dietitians. This study provides evidence to show that mentoring is a useful and valid form of professional development. Other programs may like to recommend mentoring as part of a set of strategies for professional development.

8.2.4.3. Mentoring part of the solution

The role of experiential or on-the-job learning was recognised by participants as contributing significantly to their competence development.

> ‘On the job experience is really important. I find that if I learn things that are relevant to what I am doing at the time obviously it really sinks in and

it's a lot more useful that if you just try and learn things for the sake of it.' [MR, interview]

Participants felt strongly that the mentoring intervention improved their skills and knowledge in addition to what they learnt on-the-job as it provided time out for reflection and facilitated reflective practice, that they described they would not have done if it were not for the mentoring circle. They also explained that the mentoring circle facilitated on-the-job learning due to the ability to structure learning around anticipated workplace experiences or projects and allowed learning to be used more effectively to improve practice, exemplified in Box 8.2. The mentoring circle provided participants with motivation to advance their practice and the structure of mentoring supported them to develop competence more efficiently.

'It's not just the reflection, just being about to talk about things and hearing other peoples issues. It does support what you are doing on the job as well.' [SH, focus group]

In addition to experiential learning, some participants recognised the importance of post-graduate training as also contributing to the development of their competence and many described potential plans to commit to further education. The mentor reflected on encouraging some participants to enroll in Master of Public Health programs, using her own positive experience as the basis of these recommendations. Some of the participants alluded to the fact that mentoring was potentially more important for work in public health compared to clinical dietetics due to the fact that a minority of dietitians chose a public health career path and the political nature of the work activities.

'I was lucky … I had a [health promotion] team around me that was doing the same sort of work … I don't know how I would have coped going into a community health service where I was the only person doing this sort of work ….. I think you need that support around you when you're doing something that's a bit different from what most other people are doing.' [NP, focus group]

These findings are consistent with data reported on the career development of advanced-level public health nutritionists. Hughes[12] identified that on-the-job experience was the most powerful contributor to competence development. In addition the advanced-level public health nutritionists used in this study as part of the formative assessment also recognised the value of mentoring in supporting their competence development. This study identified mentoring as a vehicle to promote reflection on experience – a fundamental component of adult learning[66] and experiential learning theory[69]. Best practice teaching and learning emphasises the importance of problem based or practical experience supported by feedback and support[66, 150]. This study demonstrated the value that the participants placed on being able to reflect on experiences gained in the workplace and obtain feedback and be challenged around their practice.

The role of post-graduate training on competence enhancement was also identified in this study and is supported by previous evidence[12]. Post-graduate training has been the focus of international effort in public health nutrition workforce development with the aim of improving the competence and thus practice of the workforce. While there is some data that supports the development of skills and knowledge of those completing these programs[75] there is limited evidence on the effectiveness of these programs in developing public health nutrition workforce capacity. The issues related to the role of post-graduate training in building workforce capacity include the fact that it is acknowledged that training in public health may not necessarily guarantee competence[62] and will not fill the competence gaps of the existing public health workforce[33]. In the theory of adult learning, adults must be facilitated to undertake critical reflection to promote a change to their practice or perspectives[66]. There is limited evidence that suggests that these post-graduate programs alone do this. Another significant issue to consider in promoting post-graduate training as a strategy to build workforce capacity is cost. For example, the cost for the participants in this study willing to undertake a Master of Public Health would be approximately $7,000, for a full Commonwealth Supported Place, but may be around $20,000 if paying full fees[177]. There is a need to integrate a range of different learning opportunities for the workforce to provide necessary skills and knowledge, support experience and promote reflection. This mentoring intervention provided a framework from which to support learning across specific

competencies. Post-graduate education may have a role in developing other specific knowledge and skills and should be considered as one of a range of strategies in the context of workforce development.

Box 8.2. SC's Story – adapted from interview and focus group data

I didn't know .... (the mentor) before I started the program. As a new graduate it seemed like a good opportunity to learn more about health promotion as this is a small part of my role at the community health service where I work on the outskirts of Melbourne. I hoped to gain new ideas and ways of thinking. I also wanted to find out whether I wanted to follow public health nutrition as a career path. Soon after I joined the program I was employed for some extra hours to work on an Indigenous nutrition project for six months. This was great timing!

The program was fantastic in that it provided me with the opportunity to meet others working in community nutrition. I was able to compare my work with theirs and consult with them as part of the program. The mentoring program made me realise that my confidence was the same as everyone else, even for people who had been working for more years than me. We all approached public health nutrition cautiously and anxiously. I felt confident to bring any question to the group without fear of being ridiculed or looked down upon. I learnt a lot from all the other group members and have built strong friendships and working relationships with them all.

The program has taught me to think strategically about my public health nutrition effort. Not just doing things or programs because people ask you to. Everything needs a plan and there must be evidence of a need! The mentor was great fun, really approachable and she asks questions that make you think outside the square. I had no preconceived ideas of her but we have developed a really strong relationship particularly as I continued in the program. She really supported my work with a partnership of people interested in nutrition in my local area to assess food security. She mentored me to teach others about the best approach and encouraged me to put an abstract in for a conference which got accepted. It was a great experience to present my poster at the conference.

While my hours for public health nutrition have decreased over the course of the program, I am certain that my future career lies in public health nutrition and I am seeking such opportunities and experiences in the near future to support this goal through the mentors continued support. The passion that has been instilled in me through the mentoring program has helped me realise this.

8.2.5. Increased Professional Support

Qualitative analysis of the interviews, mentor reflections and focus group data revealed the impact of the mentoring intervention. The theme of professional networks and supports with subthemes are described below (Table 8.7).

Table 8.7. Qualitative thematic analysis of data on networks and professional support.

Key Themes	Sub Themes	Descriptors
Networks and Professional Support	▪ Mentors ▪ Participants	▪ Utilised the mentor and other supports outside mentoring circles ▪ Developed relationships with fellow participants and made contact with them to assist practice outside of the mentoring circles

8.2.5.1. Mentors

Most of the participants contacted the mentor in some capacity independent of the mentoring circle sessions. Participants reported the benefits of utilising the mentor in between group sessions.

> '…we had [the mentors] email and phone number whenever we needed to call her so that was good. …. I had to call her once, I think she was at home and she liked let me call me anyway, so she was really helpful.… I was moving into my new position and so I hadn't done that work full time before so it was really good to discuss the issues of moving into that kind of job and that kind of stuff with her and helping out with aims and objectives and that kind of stuff for the project.' [SR, interview]

While managers and supervisors were identified by study participants as generally supportive in the workplace environment, few offered experienced or informed guidance in the area of public health and community nutrition. These supervisors were more likely to support day-to-

day work activities and tended not to be focused on facilitating longer term outcomes such as extending professional growth and career development of the participants. The participants who felt they had skilled and experienced leaders in health promotion within their workplace indicated that they were more supported in their public health nutrition work than those who did not have access to this knowledge base. Coworkers in similar fields were reported to be used for organisationally based practice support and guidance.

These findings are consistent with previously collected workforce data that showed public health nutrition type positions often worked as sole practitioners under the supervision of managers generally without nutrition or public health expertise[155]. The formative data collected as part of this study demonstrated that the advanced-level public health nutrition workforce in Australia are limited in number and were the first designated workforce providing further evidence of the limited capacity of the public health nutrition workforce to provide support, supervision and mentoring to the profession. The results indicate satisfaction with the mentor however the literature would suggest that 'in reality no one person has all the attributes of a 'good' mentor and students would be better served by a mentoring team' [107(page 206)]. The data showed that participants looked to multiple sources for support and guidance. A multiple mentoring-model whereby novices have access to several experienced practitioners with different sets of skills and expertise[178] may be an effective framework to consider for public health nutrition workforce development. However, within the field of public health nutrition the reality of this model is limited due to the lack of designated public health nutrition positions and expertise, especially in Victoria[11, 155]. Evidence suggests that network of mentors outside the field of nutrition can be effective[82] and appropriate to support the diverse range of skills required for public health nutrition practice. The ability of the broader public health and health promotion workforce to fulfill this need offers potential. Experienced public health and health promotion practitioners in other disciplines such as epidemiology, environmental health and health policy, may provide unique knowledge and skills to the public health nutrition workforce and compliment competence development. The exact nature of their role in mentoring public health nutritionists requires further investigation.

8.2.5.2. The participants

The majority of participants reported working in isolation with limited supervision or support structures and that mentoring provided them an opportunity for additional support.

> 'It's been beneficial for me just to have that support and it's something you don't really get in community health because most of the time you're not working with a whole group or department of dietitians.' [JMc, interview]

The participants reported that the group setting promoted networking and the sharing of experiences. The relationships developed as part of the group process facilitated extended networks in the field of public health and community nutrition and participants reported utilising these networks both inside and outside the group setting. Many of the participants contacted each other outside the mentoring circle sessions to gather further information on a project or program others had experience in. The group sharing provided an avenue for sharing community and public health nutrition practice stories and thus building knowledge of good practice or intelligence.

> 'I've got the contacts from the program now so I'm able to in the future without programs running as such I can still use those people. It definitely opened up my eyes to a lot more different areas just having those contacts available.' [RM, interview]

The value participants placed upon peer mentoring developed during the intervention with some participants reporting they wanted to mentor others into the future. The mentor reflected that group relationships developed over the duration of the intervention. Strong links and professional partnerships were established between group members and between individual participants and the mentor.

In the context of mentoring, networks refer to the human resources that facilitate advancement of practice[127]. Networking describes the process of communication with key professionals to

exchange ideas[127] and be socialised to the field[34]. The benefits of mentoring in enhancing professional networks found in this study are also supported by the literature[38, 127]. In a review on the benefits of mentoring the most commonly reported outcome of mentoring relationships was 'collegiality and networking'[38(page 523)]. The power of professional networks as an avenue for learning are evident[60, 140]. Learning circles provide the environment for peers to think together, support one another, reflect, provide feedback and encouragement to change practice[140]. Mentoring circles 'generate many different perspectives, with group members combining energies and experience beyond what individual members know or contribute. The group shares experiences, challenges and opportunities for the purpose of creating solutions.'[109(page 126)]. This mentoring circle intervention provided further evidence that group learning is not only more effective in supporting learning, but also increases professional networks.

8.3. Summary

The results of this impact evaluation show, using both quantitative and qualitative data, that the mentoring intervention was an effective public health nutrition workforce development initiative for the novice practitioners in this study. Mentoring was found to develop confidence and self-reported competence across a range of areas within public health nutrition, namely policy processes and building community capacity, and increase professional supports and networks. The public health nutrition core competency areas provided a useful framework for planning practice improvement however they were viewed by participants as subjective. The effects were felt by the participants to be dependent on their participation in the mentoring circle. Participants also explained that mentoring is only part of the solution to workforce development in public health nutrition. Longer term involvement in mentoring may have some additional benefits for those who are working predominately public health nutrition. These findings suggest that mentoring circles have the ability to develop confidence, provide professional supports and may impact positively on the development of competence.

Chapter 9

Outcome Evaluation - Mentoring for increased capacity for public health nutrition

9.0. Preamble

This chapter describes the results of the outcome evaluation of the mentoring circle. It provides evidence of the effect of the intervention on capacity for public health nutrition action using mix methodologies.

The chapter describes the analysis of data on the amount of time participants worked in public health nutrition prior to and after involvement in the mentoring intervention. This measure of time in public health nutrition practice being a tangible gauge of practice reorientation and a proxy for increased capacity. In addition, qualitative data from interviews, mentor reflections and focus groups have been analysed and reported as themes relevant to capacity. The results are supported with discussion from the literature throughout the chapter. A summary of the data presented in this chapter is provided in Table 9.1 below.

Table 9.1. Summary of outcome evaluation results presented in chapter

Capacity	Capacity (time) for public health nutrition
Capacity	Qualitative story on capacity for public health nutrition - Reorientation of practice - Other influences on capacity

9.1. Overview of Outcome Evaluation

Outcome evaluation in this chapter attempts to determine the effect of mentoring on public health nutrition workforce development and capacity for public health nutrition action. More specifically the outcome evaluation measured any changes to practice or reorientation of practice as a result of the intervention and whether capacity, in terms of time dedicated to public health nutrition action, increased.

The goal or aim (outcome) of the six-month mentoring intervention was to enhance the public health nutrition capacity of dietitians working in community and public health nutrition in Victoria. The results of this outcome evaluation or whether the intervention addressed its goal will now be described.

9.2. Outcome Evaluation - Capacity

9.2.1. Capacity (time) for public health nutrition action

As outlined in Chapter 2 there are a number of factors that influence the capacity of the public health nutrition workforce. Of note, and particularly relevant to the Victorian public health nutrition workforce, is the amount of time within exiting job roles that dietitians work on public health nutrition activities as defined by their job description or organisational mandate. This time has been identified as a capacity determinant in its own right[43]. This time is in contrast to the time spent on direct care nutrition and dietetic services to individuals and small groups. This research used this time estimate as a proxy measure for the public health nutrition capacity of the workforce.

The change in time spent working in public health nutrition within the participants work role before and after six month mentoring intervention was significant. Participants reported the time within work roles dedicated to public health nutrition practice increasing by an average of 1.5 hours per week (Wilcoxon t test, Z=-2.23, p=0.03) (Table 9.2). The participants who elected to continue after the initial six month mentoring intervention were working significantly more hours in public health nutrition before the six month intervention (Mann Whitney U test Z= -2.62, p=0.009) (Table 9.2).

Table 9.2.Time (hours) dedicated to public health nutrition action by participants in six month only and extension nine month mentoring intervention.

	Time dedicated to public health nutrition All participants n=32	Time dedicated to public health nutrition Short Term Participants n=16	Time dedicated to public health nutrition Long term participants n=11
D1* Median, IQR (mean ± SD)	7.5, 15.0 (15.5 ± 13.4)	7.5, 15.0 (11.4 ± 10.6)	20.6, 30.0 (21.8 ± 15.2)
D2* Median, IQR (mean ± SD)	15.0, 18.75 (17.3 ± 12.8)	7.5, 15.0 (13.0 ± 10.9)	22.5, 22.5 (22.5 ± 12.0)

*D1/D2: Time working in public health nutrition (hours). D1 (baseline), D2 (at completion of six month mentoring intervention)

This increase in capacity is small at an individual level. However in the context of capacity building this implies an increase of 1.5 extra positions for public health nutrition work (i.e. 32 dietitians x 1.5 hours = 48 hours per week) and equates to an approximate increase of at least 5% in the Victorian public health nutrition workforce (based on estimated size of the Victorian workforce being around 30 positions[8]). Given that many of the community dietitian's roles involve a large proportion of direct care services this increase may be even more significant as it represents a shift in service delivery from treatment to prevention.

Workforce capacity 'includes analysis of the size, practices and competencies within the workforce to address public health nutrition priorities.'[8(page 11)]. This analysis focused on the size of the workforce as a measure of capacity. Other work has measured public health nutrition workforce capacity by the number positions[49]. In Australia, the Queensland government invested in public health nutrition workforce development through an increased capacity of 137 public health nutrition positions. This strategy also acknowledged other measures of capacity such as competence/professional development, support and supervision of this workforce[49]. While the increase in time working in public health nutrition reported related to this intervention is modest, in comparison, it may provide an alternative model, with a modest cost, of increasing capacity without the need to fund new positions. The estimated costs of increasing capacity by 1.5 EFT through mentoring circles was $14,562 which is relatively inexpensive compared to the creation of 1.5EFT of new positions (estimated cost $63,375 based on dietitian, grade 2 year 4). However it must be recognised that this time reorientation is likely to have been at the expense of direct care services. Increasing the size or EFT of the workforce is only one capacity determinant. The organisation and policy environment, access to and use of intelligence, practice improvement and workforce preparation are other determinants that should be considered for investments workforce capacity[9]. While this data provides some evidence of the impact of practice reorientation on workforce capacity, there is a need to further evaluate the impact of reorientation of practice on capacity including in clinical practice.

9.2.2. Qualitative story on capacity for public health nutrition action

Qualitative analysis of the interviews, mentor reflections and focus group data explored the interventions outcomes. A key theme around capacity for public health nutrition with subthemes emerged (Table 9.3).

Table 9.3: Qualitative thematic analysis of data on impact of mentoring intervention

Key Themes	Sub Themes	Descriptors
Capacity for public health nutrition	▪ Reorientation of practice ▪ Other influences	▪ Passion for public health nutrition ▪ Reorientation of work role towards a public health approach ▪ Up skilling managers and peers in public health nutrition ▪ Size of the workforce identified as key determinant of capacity

9.2.2.1. Reorientation of Practice

The participants reported that the mentoring intervention increased their passion and commitment to public health nutrition and provided them with an avenue for advocating for the role of public health and community nutrition in their workplaces. This was reflected in their workload reorientation towards public health nutrition described above. Many of the participants reported reorienting their work roles towards public health and community nutrition while participating in the mentoring intervention, exemplified in Box 9.1. During the mentoring circle many of the participants found more time for public health nutrition activities in their work role and a couple moved completely away from their community dietitian roles into public health nutrition roles.

> ‘I wasn’t expecting to reorientate the dietetics department [towards public health nutrition] at all. I was more wanting to get a better understanding of how a health promotion unit should work……I feel the mentoring program worked really well for me. The mentoring program gave me at least the support and the courage to actually do it [reorient the nutrition service] ‘cause it was in my head but I had no idea of how to do it and if it wasn’t for this I wouldn’t have done it at all.’ [KC, interview]

The confidence gained as part of mentoring circle allowed participants to challenge supervisors and managers decisions about best practice nutrition service delivery and their individual work role and function. The community health dietitians explained that the mentoring intervention supported them with the challenges of working in health promotion in primarily direct care organisations, for example giving them the confidence to promote a health promotion approach to health problems in the community other than treatment. There was also an opportunity to share learning from the mentoring circle with others in the workplace.

> ‘During the program I think maybe that I was getting more active in health promotion….. I think just during the program I got a little bit more time to think about alternative ways of doing health promotion in the roles I have here…’ [KS, interview]

> ‘When I came into the position I saw that there was the potential to be doing more health promotion work and see that as an important thing to do and I guess the mentoring program reinforced that feeling and encouraged me to push for those sorts of changes…. I’m in the process of changing so I will drop the client days down and do a bit more health promotion.’ [AR, interview]

Box 9.1. KC's Story – adapted from interview data

I finished my nutrition and dietetics degree in 2005 and started working soon after in a small rural Victorian town as the community dietitian. My role predominately involved seeing individuals in the community to provide direct care or nutrition and dietetics advice. I also have a small amount of time for health promotion – this essentially involves projects in the community around healthy eating. I was part of a small team of dietitians, the others work seeing individuals. There was very limited supervision or anyone to get advice from for my health promotion work.

I joined the mentoring program to get guidance and confidence regarding public health nutrition and an increased understanding of best practice in the field. I also wanted to see whether what I was doing differed from best practice or what others were doing in other settings. I certainly achieved this, in fact so much more! I developed a nutrition service delivery plan that included more time for public health nutrition. I got support from the other dietitians for this plan and senior management. While I think the mentoring program guided me through this process and gave me the confidence to follow it through, it was good timing also that influenced its adoption into the organisation. The mentor was readily available and provided useful feedback all the way through the process. I knew her previously to the mentoring program – she was my lecturer at Uni. She had been through a similar planning process before so her experience in doing this was very valuable. This was great as I did a lot of verbal reflection with her. I was pretty lazy in developing my learning plan and regularly documenting progress towards achieving it. This format for learning didn't really work for me. Although in saying that the program overall wasn't too much of a time commitment.

Being in a rural area it was great to hear from other rural dietitians facing similar challenges as me. The video link worked surprisingly well and even though I was five hours from Melbourne, I felt like I was supported and not forgotten – this often happens to us in rural areas! I finished up the program after the six months. There were quite a few of us rural dietitians moving. I was one of them. Soon after the program finished I went travelling around the world.

The role of practice reorientation from a clinical or individual focus to a preventative population focus is described in the literature as important to improving population health outcomes and a key strategy for building capacity[179]. This data provides evidence that supports mentoring as an effective strategy to reorient practice towards a public health focus. Other capacity building strategies, such as post-graduate training are effective in developing competence but are limited in their reach due to the changes required at an organisational level[166]. This data provides evidence that mentoring provided the tools and the confidence to challenge organisational practice and policy to make way for a public health approach to solving nutrition problems. Unlike other professional development activities, mentoring has the potential to offer support and specific and tailored guidance in addition to knowledge to facilitate a change to practice[38]. These findings demonstrate that the mentoring intervention

promoted critical thinking and changed the way the participants viewed their work function. This notion of critical reflectivity underpins the theory of adult learning whereby learning is effective when it has the ability to transform perspectives[66]. Despite the fact that the participants were supported in making sustainable and efficient changes to their service delivery so as not to effect direct care dietetics, the impact of reorientation of community nutrition practice away from direct care or treatment to a preventative approach may have had impacts on dietetics services to the communities of the participants. There is a need to not only reorient community health services but also acute care services to deliver to most effective and efficient system of care to all members of the community. The effect of reorienting all dietetics services within a community catchment area and the subsequent effect on nutritional health warrants further exploration.

9.2.2.2. Other influences on capacity

The participants discussed that the mentoring intervention highlighted to them the diversity of roles dietitians play in public health nutrition increasing the transparency of career scope and options, and therefore potentially facilitated the identification of avenues that may be of future career interest to them. Dietitians working in community health were provided with the opportunity to better understand the role and work of public health nutritionists. Similarly participants working in public health roles better appreciated the challenges of working in the community health sector and capacity of community dietitians to embrace public health nutrition interventions.

Mentoring is well documented for its role in career counselling[3, 34, 38, 180]. While career counselling was not a specific objective of the mentoring circles, it appears that the mentoring influenced the participants' career decisions about working in public health nutrition. *The passion emitted by me as the mentor about the exciting nature of the work in public health nutrition may have had an influence on this choice for some participants.* Others may have benefited from their peers in this context. The role of mentoring in supporting career choice should not be underestimated and needs further investigation.

9.3. Summary

The results of this outcome evaluation, using both quantitative and qualitative data, show that the mentoring intervention had an impact on capacity for public health nutrition practice for the novice practitioners in this study. Mentoring was found to increase the capacity for public health nutrition, through supporting a change to practice and increasing the time dedicated towards population based prevention and promoting public health nutrition as a career path.

These findings are significant as they provide evidence of the ability of mentoring to support practice reorientation. The following chapter focuses on the participants' recommendations for the role of mentoring in workforce development.

Chapter 10

Evaluation to Action - The role of mentoring as a workforce development strategy

10.0. Preamble

This chapter describes the final step of the action research cycle. The first part of the action research process was to plan a workforce development strategy on mentoring based on the literature and perspectives of advanced-level practitioners. The second action research process was implementing the mentoring circle intervention. The final action research step is to reflect upon these steps and actions and make recommendations for policy and practice. Thus this chapter provides a commentary on the future prospects of mentoring as a public health nutrition workforce development strategy based on the lived experience of the participants.

The purpose of this chapter is to (i) highlight the potential scope for mentoring as a pathway in public health nutrition workforce development, based on the perspective of participants post-intervention and (ii) describe the key elements of mentoring for public health nutrition as identified by participants. The results of data obtained from focus groups, which are integrated and supported with discussions from the literature, are used as the basis for the discussions.

10.1. Results to Inform Policy and Practice for Public Health Nutrition Workforce Development

The qualitative analysis of the focus groups discussions aimed to complete the action research cycle providing recommendations for practice. The analysis of the focus group discussions, mainly from questions 2 and 3 (see Chapter 4, table 4.10), revealed five key themes that may inform recommendations for practice and policy in relation to mentoring for workforce development (Table 10.1).

Table 10.1: Qualitative thematic analysis of data from focus group discussion relating to mentoring in public health nutrition workforce development

Themes	Sub Themes
1. Mentoring circles are part of a multi-strategy workforce development system	▪ Mentoring only one component of a workforce development system ▪ Key elements for workforce development are post graduate training/education opportunities, increased workforce, size, career structure, clear work functions and priorities, interprofessional collaboration ▪ Post graduate training needs to be linked to mentoring learning plans ▪ Mentoring opportunities for whole workforce
2. Mentoring circles offer an effective educational model	▪ Longer-term, small group, face-to-face ▪ Safe and supportive learning environment ▪ Structured learning and reflection linked to on-the-job experience ▪ Diverse group with common, shared learning goal ▪ Skilled mentor
3. Organisational development	▪ Organisational supervision and mandate in public health nutrition ▪ Support and recognition for participation in mentoring and link to work based development ▪ Mentoring provides opportunity for consistency of practice – strategic action
4. Culture of mentoring	▪ Recognition of the value of mentoring ▪ Embracing mentoring for all in the workforce and in preparing entry-level practitioners ▪ Professional recognition of the value of mentoring circles for learning and professional development
5. Competencies are important and useful for professional learning/practice	▪ Core competencies effective for: - Structuring, planning and driving learning - Evaluating development and performance and practice improvement

10.2. Mentoring Circles are Part of a Multi-Strategy Workforce Development System

10.2.1. Mentoring and other components of workforce development

When asked whether 'mentoring is part of the solution to workforce development in public health nutrition?' the participants explained that mentoring is a valid and important professional development activity and part of the workforce development solution. They however acknowledged the important role of other professional development activities such as workshops, seminars and conferences or post-graduate training opportunities in their professional development. Many also acknowledged the potential role of a Master of Public Health in advancing their skills and knowledge. They explained that relevant and appropriate professional development opportunities in public health nutrition were rare and participants described the difficulties they faced in fully meeting their professional development needs with what was available to them in Victoria. They explained that mentoring partly filled this gap and provided an opportunity to strengthen skills learnt through other avenues.

> 'We would make our learning plans and … refer us to whatever CPD [continuing professional development], some of our learning might be still self directed but … mentoring would be the central hub.' [JB, focus group]

This finding provides evidence to support the value of mentoring as a professional development activity for dietitians working in public health nutrition. The roles of other professional development activities were also acknowledged. The value of experiential or on-the-job learning is also acknowledged by dietitians as contributing to their development[175, 181] however there is a gap in their ability to turn these experiences into meaningful learning[175]. Nutrition and dietetics practitioners need support and guidance to enhance the learning experiences gained through practice. Mentoring offers a potential solution to bridge this gap by facilitating active reflection within scheduled sessions and developing skills in critical

reflection and promoting deep learning. Research suggests that practitioners' reflective capacity is linked to deep learning and improved performance[31, 182].

While the participants recognised the skills and experience of the workforce as important for workforce development, they also emphasised that the size of the public health nutrition workforce is also an important determinant. They also described the lack of positions and career structure and frequent changes in work roles and function as being prohibitive to a long term career in public health nutrition in Victoria.

> 'We need to make sure we've got the workforce to do .. it'. [BG, focus group]

These results support the determinants of workforce capacity identified by Hughes[4]. Hughes work emphasised human resource infrastructure, policy frameworks, intelligence and workforce preparation in addition to practice improvement as components of workforce capacity[4]. The lack of public health nutrition positions in Australia has been documented[18] and the barriers for dietitians working in public health nutrition in community health, in relation to orientation towards direct care services, acknowledged[51]. The participants in this study recognised the importance of human resources and additional practice improvement strategies to build capacity.

10.2.2. Mentoring for the interprofessional public health nutrition workforce

The participants also recognised the need for interdisciplinary practice to achieve public health nutrition outcomes. Participants recognised their role in mentoring other public health and health promotion staff to engage in public health nutrition.

> 'I can go and do my own work but that's not as useful as being able to reach the broader workers in your organisation ….. otherwise potentially it could be a bit of a waste of time if we just do it for ourselves.' [SH, focus group]

The multisectorial and interdisciplinary approach to public health practice have been identified[13]. The participants in this study recognised the need for the involvement of other professionals in public health nutrition action. The literature also identifies the generalist public health nutrition workforce as being a key contributor to public health nutrition action however recommends that initial investments should be made in specialist nutrition professionals as the priority target for workforce development interventions[51]. Development of the dietetics workforce 'is likely to be the most efficient and effective target for workforce development, at least in the immediate short-medium term'[51(page 6)].

Interprofessional education is thought to improve practice[164] and in public health has the potential to improve health outcomes[22]. While interprofessional mentoring programs exist in the field of public health[183] the benefits and outcomes of these are poorly described. There is a need to evaluate the effect of interprofessional mentoring circles as a professional development activity in the context of improving population health.

Participants made clear that mentoring should be available for more of the public health nutrition workforce and, if offered as a pathway for newer graduates or those new to working in public health nutrition, has the opportunity to increase recruitment and retention of this workforce. The mentoring intervention revealed the diversity of roles dietitians play in public

health nutrition and therefore potentially facilitated the identification of avenues that may be of future career interest.

> 'I almost feel sorry for those who have missed the opportunity to be part of this.' [BG, focus group]

Accessibility to mentors and mentoring programs is one of the key criticisms of mentoring as a strategy for professional development[38]. The mentoring circle intervention used in this study aimed to increase accessibility, by using a group format, however there were still concerns for those who missed out. This study highlighted the role of mentoring in career development over and above individual competence development that may be of benefit to the interdisciplinary public health nutrition workforce.

10.3. Mentoring Circles offer an Effective Model for Professional Development

10.3.1. The circle

The results of the focus groups suggest that longer-term, structured mentoring circles, guided by a more experienced mentor, offer a system for practice improvement and learning in public health nutrition. Participants explained the key elements to the mentoring framework as being the small group learning, safe and supportive environment and opportunity for structured reflection.

> 'I think it's [mentoring is] like trying to get to a destination, you can walk your way through the city and get there in the end, but having the mentoring is like having a map, having some direction, so you get there quicker without wasting time.' [JB, focus group]

The focus group discussions further identified the beneficial nature of the group setting. The participants felt that the optimal group size is less than ten to allow all participants adequate time for all to share during the discussions and develop accordingly. Participants reported that the group setting provides opportunity to share and learn from others experiences to inform practice however they recognised the value of one-to-one contact with the mentor as well to provide individual feedback and guidance and also to facilitate development in between mentoring circle sessions. They reported that the face-to-face nature of the learning and continuity of group participants and relationships as important. The participants suggested that a mentoring program in public health nutrition may need to be longer term than other mentoring programs as work in public health nutrition has longer term outputs.

The participants explained that the composition of group members is also important. They identified benefits of having a mix of public health nutritionists and community dietitians in the group. Participants explained that the group could be diverse as long as they agree on a

shared, common goal or focus and rules for discussions to prevent discussions being irrelevant.

> ‘Having a group that has a shared goal so that everyone understands we’re meeting for the same purpose. I think … earlier … there was that struggle as to whether we were here to talk about public health nutrition or are we here to work out how to get more of that time and how to convince our manager of the value of public health nutrition. It seems like at times there wasn’t the same focus for everyone in the group…. I think for a successful group everyone needs to come to the regular meetings with the same understanding of what the purpose is. I think the group would get a lot further if that was set out from the beginning.’ [AS, focus group]

The elements of the mentoring intervention that participants described as central to its success include creating a supportive and safe learning environment that is reaffirming.

These components of the mentoring circle described by participants are consistent with good education practice and adult learning principles evident throughout the literature[66, 149]. This data provides evidence of need to foster these elements in future mentoring interventions in public health.

10.3.2. The mentor

The participants describe the importance of having a suitably skilled mentor that is independent to allow participants the freedom to speak frankly. The mentor needs to be more experienced than participants but not so experienced that they don’t have the time, skills or understanding of what it is like for the participants. The mentor must have adequate knowledge and experience public health and community nutrition and have understanding of the working roles of the participants. The mentor must have the personal skills, attributes and experience to be able to relate to participants.

> *I think we've actually challenged the traditional mentoring model of the wise old owl and the junior very inexperienced [mentee]. I think what we've shown is that it doesn't actually have to be that huge… gap that you get lots from your peers but you get something from someone who is only 10 years out….. I think sometimes the wise old owl doesn't have the time to dedicate to the mentoring relationship.* [Mentor, focus group]

The mentor must have the ability to effectively facilitate a group and promote positive solution oriented discussion. Participants suggested having teaching and learning as well as public health nutrition skills and experience was also important. The mentor should have a recognised role in supporting workforce development in public health nutrition for sustainability and be trained for the role. The qualities of the mentor indentified in the in depth interviews were reaffirmed in the focus groups.

> 'I'm just thinking about just the importance of the mentor…. to facilitate discussions so that people feel comfortable to talk about things… then they can develop because they've felt comfortable to discuss things and so … they walk away feeling … more confident about issues that they can take back to their workplace…. I think a lot of it stems from the person facilitating.' [SH, focus group]

> 'The real standout is that equal relationship, it's more of a peer mentoring relationship like you're treated as equal colleagues, but the mentor is providing that experience and creative thinking but they are not necessarily looking down [on you], they work as an equal.' [ST, focus group]

The qualities of an effective mentor and mentoring relationship described in this study are synonymous with the literature[3, 34, 38, 54, 125, 128, 184]. The ability of the mentor in this study to use appreciative inquiry to facilitate solution focused discussion is unique. The benefits and positive changes resulting from solution focused teaching are documented[185]. This study

shows the importance of a mentor having the ability to utilise a solution focused approach and highlights the need to train mentors in these skills. The personal qualities of mentors described by these findings should be considered essential criteria and the skills highlighted as areas for development through training or experience.

The participants describe a mentoring relationship based on the foundations of informal mentoring but superimposed with structure. Informal mentoring relationships are built on natural and mutual agreement[126]. The mentoring circles were based on volunteer involvement and personal advancement and there was no agreement or requirement from the participants' employer to attend. In addition the friendships established as part of the mentoring relationship aimed to replicate informal mentoring. The competencies and learning plan provided the boundaries and structure for learning rather than being official documentation or agreements or goals which may have formalised the relationship.

While the original concept of mentoring was developed based on the notion of a much more senior expert being paired with a junior novice[3] there is increasing evidence to suggest that a generation gap may be more appropriate for mentoring relationships[125]. This study provides additional evidence to support a generation gap difference between mentor and mentees but perhaps more importantly the mentor must have the ability to empathise and relate to the mentees in a meaningful and productive manner. This is not independent of their level of experience and appreciation of the work of mentees and the ability to relate to their stage on the novice to expert continuum[31].

The participants recognised the need to measure outcomes from mentoring to support its value and contributing to professional development. They reported a willingness to document outcomes from the mentoring intervention.

> 'workforce development overall is not necessarily valued ….. so we need to be really clever and clear about our measures of …the … outcomes and … show the improvement in our confidence, or …. competencies and …. justify …. being here.' [BG, focus group]

The need to measure the value of mentoring and the challenges associated with this have been documented[98, 129]. This study highlights the value participants placed in measuring their progress through the mentoring relationship. Those considering initiating mentoring interventions need not be concerned about the additional burden placed on participants or mentees when asking them to document the impact of mentoring on them. Relationships based on informal mentoring should be considered in the field of public health.

10.4. Organisational Development

10.4.1. Organisation support

The role of organisations in supporting and advancing public health nutrition practice was acknowledged. The participants reported that the mentoring intervention filled a gap in support offered to advance public health nutrition practice not otherwise offered by organisations or workplaces that employ dietitians to work in health promotion or public health roles in Victoria. This was true for community dietitians and also for public health nutritionists. They emphasised that workplaces that employ dietitians to work in public health and community nutrition rarely offer the appropriate supervision or support to assist or advance public heath nutrition practice.

> 'I don't feel like I'm supported at all in my workplace in any way so to come here and hear about what everyone else is doing and see that there are people working in this area for me has been really huge.'[AK, focus group]

The participants also recognised their employment organisations role in workforce development. Participants felt that mentoring could be better promoted as a valid form of professional development and active learning and workplaces need to better recognise and support the role of mentoring for professional development. They emphasised the importance of workplaces supporting their dietitians to attend mentoring by providing time release to attend but also recognising it as a valid professional development activity built into their work role and work plans so it is not an additional task or an activity they do in their own personal time. They recommended that there needs to be a link between organisational work plans and professional development learning plans and feedback needs to be streamlined so that work plans inform mentoring learning plans and managers and supervisors are informed of individuals development as a result mentoring.

> ‘If there was some form of competency assessment or recognition so that our workplaces would realise that it’s valid’ [JB, focus group]

Organisational development is a key component of workforce development[1]. ‘Organisational development refers to the processes that ensure that structures, systems, policies, procedures and practices of an organisation reflect its purpose, roles, values and objectives and ensure that change is managed effectively’[51(page 15)]. The findings of this study further support the role of organisational development for capacity building. Specifically this study identified the role of organisations, that employ dietitians to work in public health nutrition in Victoria, play in supporting practice by releasing them attend relevant CPD. It also identified the lack of capacity within organisations to supervise public health nutrition action. The recommendation to integrate work plans with CPD plans may appear obvious but was identified as a gap by participants. Competencies play a vital role in guiding professional development[8] and need to be considered in the context of planning professional development in this field.

Professional development of the current health workforce plays an essential role in meeting the health needs of the population. Employers need to recognise the importance of health professionals participating in activities that improve practice. The need for organisational support to allow dietitians to participate in professional development activities has been previously identified[175]. The use of both personal and organisational time to participate in CPD is acknowledged as valid with more experienced dietitians more willing to use personal time to dedicate to professional development[175]. The role of organisations in supporting reorientation of practice in addition to workforce development to improve health outcomes for the communities they serve have also been acknowledged as important in building capacity[166].

10.4.2. Strategic public health nutrition action

The participants reported that group mentoring has the potential to influence the work performed on the ground in public health nutrition. Participants suggested that in Victoria in the absence of a coordinated public health nutrition workforce structure, mentoring could provide the system to ensure consistency of practice and work towards priority public health nutrition areas. They suggested that this structure would provide government with an identified group to consult with around public health nutrition issues across the state. In addition the independence of the group would enable advocacy around public health nutrition issues.

> 'I guess you are going to indirectly influence the type of … work they are doing…I think coming to a group …… if you're someone who … has …health promotion hours, that's going to be more focused ….. because everybody has a common working .. agenda.' [NP, focus group]

The importance of public health nutrition efforts being directed towards priority public health nutrition issues outlined in strategic plans is a key component of workforce capacity[4]. The participants in this study recognised the importance of a collegial and coordinated approach to addressing nutrition issues and offered the mentoring circle model as part of a solution to address the lack of workforce infrastructure currently in Victoria.

10.5. Culture of Mentoring in Public Health Nutrition

The results of the focus group indicated that mentoring was an effective educational strategy to develop public health nutrition competence and thus should be embraced as a valid professional development activity within the discipline. The participants also suggested that mentoring for public health nutrition workforce development needs to be appreciated and be accepted as an important part of being a practising public health nutritionist. Participation in mentoring needs to be recognised so that on-the-job learning and the learning that occurs through mentoring compliment each other. Participants also explained that by ensuring newer graduates or those new to working in public health nutrition are able to access mentoring is part of continuing the culture of mentoring within the field.

The DAA was viewed by some participants as not adequately promoting mentoring as a professional development activity. They recommended that mentoring needs to be better promoted as an active learning process that can contribute to professional development hours required for their credentialing program. The DAA could consider different models of mentoring, including group based for their compulsory credentialing system. They felt that the role of public health nutritionists and the outcomes of public health nutrition work should be more effectively promoted within the profession.

> "I think particularly for me having that group setting was important rather than doing one-on-one … like I …did... with ... DAA … It was a completely different focus and I felt like … there was a lot more …interaction with other people and …you get a broader perspective of what everybody else if doing and I'm not the only one who's got no idea of what's going on …. and that's … confidence building." [NP, focus group]

Participants suggested that the practitioners involved in training of entry-level dietitians and nutritionists in public health nutrition competencies through practical placements have an opportunity to influence career choice by providing quality student learning experiences and promoting mentoring as part of workforce development in this field.

The evidence suggests that a culture of mentoring already exists within the public health nutrition workforce in Australia[12]. This study highlighted the need to further promote mentoring as an important element of professional development and career in public health nutrition and reduce barriers to access mentoring for novice practitioners. The role of mentoring in public health may even be more important than for clinical practice due to the longer term and political nature of the work.

10.6. Competencies are Important and Useful for Planning and Evaluating Practice Improvement

The results suggest that the framework for professional development used in the mentoring circle intervention, namely the public health nutrition core competencies imbedded into a learning plan, were effective in supporting advanced level practice. The competencies provided a useful, yet subjective measure of competence and achievements. The public health nutrition core competencies were new to participants when they entered the mentoring intervention and were challenging to work with because of this. Participants recommended that the competencies need more exploration, discussion and definition prior to them being used to develop learning plans for professional development (for example, providing sample learning objectives and activities). They recommended that the structure and layout of these competencies, as presented in the mentoring intervention, could be improved to also enhance understanding and usability.

> "I think without the program I wouldn't have necessarily found the competencies … [they] gave us a good opportunity …to … work on specific skills which otherwise, we, well I, might not have looked for and tried to pick out a few specific areas to try and develop. I would still have been looking for on-the-job learning but not in particular areas... So I think that definitely helped having some areas of focus to work towards." [AS, focus group]

The participants also recommended having greater support from the mentor to write learning plans. Participants described that being involved in the mentoring circle for the additional nine months improved their ability to identify their learning needs, use the competencies and develop appropriate learning goals and plans for development, both within and external to the mentoring intervention. They suggested the development of learning plans through mentoring was a potential avenue for prioritising and planning the content and topics for training.

There is widespread support for the use of portfolios in post-graduate education as a means of measuring learning and competence development[143, 159, 160]. This study provides evidence to

support the use of the core competencies in public health nutrition as the basis for a portfolio of practice. Development of qualitative criteria from which to judge or assess the portfolio, independent of the mentoring relationship is a key consideration[161].

10.7. Summary

The action research process resulted in key recommendations for policy and practice in relation to mentoring as a strategy for workforce development. The participants in the mentoring intervention suggested that mentoring is part of a multi-strategy approach to workforce development in public health nutrition but recognised the additional important role of post-graduate training and practical experience. They also reported the size of the workforce, career structures, clear work roles and other professionals as important components of workforce development in public health nutrition. The participants recommended that mentoring circles provide an effective and efficient environment for learning. The important characteristics of the mentoring circle and mentoring relationships were articulated. The fundamental role of organisational development as part of workforce development was also explored and participants described the importance of linking learning through mentoring to organisational work plans and supervision. They recommended the need to continue to promote a culture of mentoring within the field and improve the recognition given to participating in active mentoring relationships. They explained that the core competencies for public health nutrition practice are fundamental to progressing workforce development as they provide a framework for planning and evaluating learning.

These findings suggest that mentoring should be considered as part of a framework for workforce development in public health nutrition and identified some key elements for the framework for consideration. The following chapter integrates the results from this research to provide recommendations for public health nutrition workforce development policy and practice and future research.

Chapter 11

Implications of this Research for Public Health Nutrition Workforce Development Intelligence

11.0. Preamble

This chapter critically summarises the key findings of the study and describes the implications of this research for public health nutrition workforce development. It is envisaged that these recommendations will be used for public health nutrition workforce development strategic planning and research in Australia.

11.1. Implications of this Research

This study used action research methodology in the development and evaluation of a mentoring intervention for workforce development in public health nutrition. Qualitative and quantitative mixed-method approaches were used to answer the research questions. This integrated approach was effective in that qualitative methods were used independently and to support and explain the findings of quantitative data. The methods provided adequate depth and breadth to effectively answer the research questions.

The study explored the nature and potential role of mentoring in public health nutrition workforce development an identified the key elements of effective mentoring in this field. The impact and outcomes of the mentoring circle intervention on public health nutrition practice and capacity for public health nutrition action were measured.

11.1.1. Summary of key findings

This study is the first attempt in Australia to develop and thoroughly evaluate a mentoring circle approach as a workforce development intervention in public health nutrition. Prior to this work mentoring had been proposed as a workforce development strategy[37] and small scale practical applications of mentoring for this workforce reported[85]. Much of the dedicated focus on practice improvement strategies in public health nutrition was on post-graduate education and training[41, 75, 186] and only studies measuring the effect of education had been published[167]. A focus on post-graduate training was not an appropriate workforce development strategy for the Victorian public health nutrition workforce. Hughes and Woods assessment of this workforce identified that professional development based on experiential learning with guided support by a mentor was the most appropriate approach[8]. Other workforce development effort has been concentrated on human resource infrastructure and increasing the size of the workforce[49]. While these strategies are a critical part of the multi-strategy efforts to build workforce capacity there was a need to investigate, using robust methods, the effects of other approaches that make the most of existent workforces. A mentoring framework as an approach to workforce development in this Victorian workforce was appropriate.

The data revealed that mentoring has utility and positive consequences for novice public health nutritionists. This study showed that a mentoring circle intervention for novice public health nutritionists was considered a quality intervention and met participants' expectations. Mentoring was shown to increase the self-reported competence of participants and their capacity to undertake public health nutrition action. Professional networks and supports and confidence were reported to increase as a result of the mentoring circle reducing practitioner isolation. These impacts were dependent on a number of important factors. The structured, longer term mentoring circle facilitated by a mentor with important key characteristics, and the relationships developed between participants, was central to the success. The appreciative inquiry framework used to guide discussions and reflection of on-the-job experience was also considered valuable. Organisational and professional support was essential. Although a full economic analysis was not possible this data provides some indication that the mentoring circle intervention was low in cost ($14,562 for six months) relative to return (1.5 EFT approximately $81,120, based on grade 2 year 4 Victorian dietitian).

This study was also the first to use the core competencies in public health nutrition as a framework for practice improvement and evaluation. The importance of competencies to guide strategic workforce development has been previously described[8,29]. These competencies were found to provide a useful framework for guiding the development of the participants learning plan and measuring practice improvement. The novice public health nutritionists in this study initially found the competencies daunting, but with exposure and use found them effective in identifying learning needs and planning practice improvement.

11.1.2. Reflections on the mentoring intervention experience

I entered into this mentoring experience with excitement. I had previously only mentored individuals, approximately 5 formally through the DAA APD program and others informally through my networks in community health in Victoria. I had not used a group-style of mentoring before. My passion for public health nutrition workforce

development gave me enthusiasm and I was initially optimistic about the potential role mentoring could play given that I read it had contributed significantly to developing our existing public health nutrition workforce. The skills I was developing in becoming a better teacher in my work role gave me confidence in being able to embark on mentoring novice practitioners. My personal experience about how the community health nutrition workforce could do their roles differently was a key driver for me in this work.

In recruiting to the study I was amazed at the level of interest. I had aimed for approximately 20 practitioners expressing interest and I had almost 40. This gave me faith in the need for the work and also confidence in my ability – these practitioners obviously thought I had something to offer them. I wasn't surprised with the few that dropped out and felt confident that those remaining would commit for six months. I was reassured of the importance of mentoring when 12 participants wanted to continue with the mentoring. I had not expected that the intervention would continue beyond six months. I had expectations of influencing the career paths of the participants towards public health nutrition rather than community dietetics and improving their day to day practice. I hoped too to show the state government the need for workforce development for this group.

It was a significant advantaged that I met all the participants face-to-face before commencing the mentoring circles. I knew some of them through prior encounters and I looked forward to getting to know those new to me. I aimed to interact with the circles similarly and I felt I achieved this. The reality of the video-conference interaction made communication more disjointed than in the face-to-face circles however I felt I was still able to build strong relationships with the rural participants. Over the course of the intervention I felt strongly that I had engaged, on some level, all of the 32 participants, some better than others.

The key challenges I faced included feeling confident and adequately skilled in using an appreciative inquiry approach to guide discussions. I improved with practice but still feel I have more skills to gain in this area. The other challenge was ensuring all

individuals felt they had a voice and an opportunity to raise their issues in the group setting. I used the participants as my supports to obtain formative feedback during the intervention to ensure I was meeting their needs.

From this experience I have learnt that I am a giving person, making myself available to the participants at all times. My passion for the role of a community dietitian in working in population focused prevention rather than with individuals drove this commitment to my mentees. I have also reflected on the process of learning from novice to expert and identified they key elements in my experience that has progressed me along this continuum. Most importantly I have learnt about the need for professional development and supports for the junior public health nutrition workforce and the need for a career structure with appropriate experiences to guide their development.

11.1.3. So what?

It is almost ten years since strategic planning in public health nutrition workforce development in Victoria gained momentum[8, 21, 51]. Despite this documented 'interest' including descriptive, speculative papers, there has been little change and limited investment in public health nutrition capacity in this state since this time. The Victorian workforce, as represented by the responses from participants in this study, is still small in size and many of the roles are part time or short term funded positions. The ongoing lack of a career structure was particularly highlighted as gap by participants. While this study demonstrated the potential benefit of mentoring for workforce development, the effects of mentoring on workforce capacity will be limited without a corresponding increase in workforce size[8]. The need for investment in public health nutrition human resources together with other determinants of workforce capacity is essential in order to improve population health in Victoria. A multi-strategy approach is still needed. Workforce capacity development is limited without workforce growth[8], however in situations of no growth mentoring circles may help.

The mentoring circle intervention attempted to addresses two of the key determinants of workforce capacity previously identified and described in Chapter 2 (Table 2.1). While the intervention aimed to provide mentoring and increase competence in public health nutrition, a number of other determinants of capacity were influenced by the intervention (Table 11.1). The intervention promoted sharing of public health nutrition activities effectiveness and established partnerships between academia and practice as the mentor was employed by a University. The availability and accessibility of data to inform program development was enhanced through the mentor, increased networks and sharing among participants. The data also showed that a number of participants reoriented their practice towards population health as a result of the intervention. These findings support the multiple benefits of mentoring reported in the literature and the role mentoring plays in public health nutrition workforce development. The study highlighted the need for a multifaceted approach to building workforce capacity.

Table 11.1. Determinants of workforce capacity and description adapted from Hughes[4].

Bold Italics text indicates determinants affected by mentoring intervention.

Determinants	Addressed
HUMAN RESOURCE INFRASTRUCTURE	
Workforce size relative to need	×
Designated mandate, with ongoing funding for positions for public health nutrition action, career progression opportunities, leadership positions	×
Collaboration within and outside the health system	×
ORGANISATIONAL AND POLICY ENVIRONMENT	
Policy and strategy documents for public health nutrition action, including workforce development with appropriate resource allocation	×
Organisational expectations of the role of public health and community nutritionists in prevention	✓
INTELLIGENCE ACCESS AND USE	
Intelligence refers to information that provides evidence for effective prioritisation, planning and evaluation of public health nutrition action	×
Availability and accessibility of intelligence (availability of data and the awareness for where to obtain)	✓
Evidence of effectiveness of public health nutrition interventions	×
Sharing of intervention effectiveness (research and evaluation) and partnerships with academia	✓
PRACTICE IMPROVEMENT AND LEARNING SYSTEMS	
Workforce practices and competencies match priority action areas	×
Practice reorientation from individuals to populations	✓
Access to mentors for support, challenge and networks	✓
Incentives for excellence of practice	×
Agreement of core functions	×
Competencies for workforce preparation, professional development and credentialing	×
Competence (knowledge, skills, attitudes) development	✓
WORKFORCE PREPARATION	
Dietetic training in public health nutrition and opportunities for nutrition science education for non-nutrition public health professionals	×
Post graduate public health nutrition training and education programs	×

The role of leadership as a component of building capacity for public health nutrition is well documented[8, 43]. 'The leadership capacity of the existing (Victorian) public health nutrition workforce is limited, primarily by the small workforce and the absence of a designated specialist workforce tier available to address public health nutrition issues.'[8(page 28)]. This study demonstrated the potentially powerful influence of the leadership of the mentor in supporting improvement to practice of novice practitioners as recommended by the literature. It also provides a model for academic-to-practitioner exchange advocated by Hughes and Woods[8]. The model of mentoring is also one of promoting and nurturing leadership within the field. In this study this was achieved through role modeling effective practice, supporting advocacy for practice reorientation and promoting a culture of mentoring in the field. Mentoring should be viewed as an important component of leadership initiatives to build capacity.

The theoretical underpinnings of the mentoring intervention design, namely experiential learning theory, reflective practice and appreciative inquiry generally provided a useful foundation to guide the process of learning. In the context of public health nutrition practice experiential learning and reflective practice may not be fully realised due to the slow pace of developments in the work. For example, while a practitioner may have an experience and reflect upon that experience to inform future practice, it may be a long time into the future when a similar opportunity arises to review and improve the approach. The assumptions underpinning this model may limit the impact on learning and rather experiential learning in the context of public health practice may only require a three-step process of experience, reflection and formation of concepts. In the context of best practice public health nutrition the formation of concepts may be in the form of a report on the intervention so others can learn from this experience. Appreciative inquiry offered a supportive framework for the mentor to guide the participants to see issues and problems differently. Appreciative inquiry may be limited for some issues in public health where a solution is not possible and it is almost impossible to find the positive aspects of a situation. In the context of public health nutrition this could occur for example, in communities or populations in desperate situations or in relation to the workforce size, where there are simply just not enough workers to undertake the work required. In these cases, acknowledging the difficulties of the situation are as important as working towards a solution as this is part of the process of development and learning.

11.2. Limitations

This research employed a range of different qualitative methods in combination with quantitative methods to evaluate the effect of the intervention and in doing so aimed to establish strong evidence of an effect. The longitudinal cohort design of this study strengthened the process. The findings of this work provide evidence of the value of a mixed method approach to add depth in answering the research questions. The analysis of the rigour and performance of each the methods, described in Chapter 4, demonstrates that the findings of this study can be interpreted with confidence.

11.3. Recommendations for Public Health Nutrition Workforce Development Practice and Policy

The action research framework from which this research was based provides a strong foundation from which to guide and develop recommendations for practice in relation to the role of mentoring in public health nutrition workforce development. The findings from the process evaluation and final stage of the action research process, integrated with the literature, provide useful evidence from which to guide the development of recommendations outlined in Table 11.2.

Table 11.2. Recommendations for mentoring as a public health nutrition workforce development strategy.

Recommendation	Description
1. Appropriate mentors	▪ Experienced (half a generation older than mentees), knowledgeable ▪ Approachable, available, accessible ▪ Trusting, respectful, promote equality ▪ Passionate, friendly, warm, positive ▪ Ability to effectively facilitate a group, promote learning through solution focused discussions ▪ Academic with ability to bridge gap between theory and practice
2. Use mentoring circles	▪ Group size min 6 max 10 ▪ Minimum six month duration with group session every six weeks ▪ Agree to common goal or purpose of learning circle ▪ Discussion based on appreciative inquiry
3. Target novice practitioners	▪ Novice - new to work in public health nutrition (≤5 years experience) ▪ Working in community or public health nutrition with a minimum of 20% of their time dedicated to public health nutrition effort - organisational mandate to work in public health nutrition ▪ Committed to program and practice improvement ▪ Employing organisation support attendance and respect mentoring as a valid form of professional development
4. Use a portfolio of practice to guide and assess development	▪ Based on core public health nutrition competencies ▪ Incorporate reflective practice ▪ Integrates experiential or on-the-job learning
5. Link mentoring with other practice improvement strategies and capacity determinants	▪ Master of Public Health or Public Health Nutrition ▪ Local and National continuing professional development ▪ Strategic state priorities ▪ Government public health nutrition divisions

11.3.1. Appropriate mentors

Mentors in public health nutrition need to be adequately experienced and have a sound knowledge of and passion for public health nutrition practice. Mentors who have followed a similar career path, or who have elements of their career that mentees can relate to, are additionally beneficial. Ideally, there should be half a generation (approx 10 years) of experience between mentor and mentees. The mentor must be a role model.

The mentor must be approachable, available and accessible to mentees and support a culture of trust and respect in the relationship. This includes being available on an individual level external to the learning circle group setting. The mentor must have the ability to provide effective feedback and challenge mentees. A friendly, warm and positive personality is essential. The mentor must have the ability to effectively facilitate a group, inspire and support creative thinking and learning through an equal relationship. They must also facilitate reflective practice and have basic skills in appreciative inquiry and solution focused teaching. Mentors from academic settings are recommended as they provide independent support and create links between academia and practice and should have skills and experience in teaching and learning strategies.

Involvement as a mentor in public health nutrition workforce development is rewarding. The time commitment is important to recognise however the gain from seeing the development of fellow practitioners outweighs this cost. There is also personal competence gain for the mentor and this should not be underemphasised. The capacity of mentoring as a workforce development strategy is limited by the capacity of mentors with the skills, personal qualities and commitment to undertake this important role.

11.3.2. Use mentoring circles

Orientation to the process and format of the mentoring circle is recommended. A group of approximately 6 to 10 practitioners, supported by one mentor, should form the community of practice for the mentoring circle of learning. The mentoring circles need to occur face-to-face (or via videoconference) for two hours, at least every six weeks, for a minimum of six months. The mentoring circle participants need to agree on a common outcome goal. Group dynamics and personalities must be managed by the mentor.

The environment created by the circle must be safe, secure and comfortable. Confidentiality must be assured. The session could be structured around sharing updates of work and personal life of participants, time out for written reflective practice and facilitated, whole group discussions. The group discussions should focus on participant issues in their workplaces and be focused on their identified learning needs. The mentor should facilitate discussions using the solution oriented appreciative inquiry framework which will guide reflective practice and promote the generation of answers.

11.3.3. Target novice practitioners

Mentoring is suited to novice public health nutritionists with less than five years experience in the field. Mentees must commit to mentoring for the purpose of practice improvement in public health nutrition. Mentees will gain the most from the mentoring if they are personally committed, allocate adequate time to the relationship and have a designated mandate of at least 20% of time in their work role to undertake public health nutrition activities (i.e. at least 1 day per week). Community and public health nutritionists can work together in a peer mentoring relationship. The organisation that employees the novice practitioner must fully support their participation in mentoring and recognise mentoring as a valuable professional development activity. Mentees from other professional backgrounds, such as nursing, community development, health promotion, may offer additional benefit to the group make up however in the context of public health nutrition the effect of their involvement is not known.

11.3.4. Use a portfolio of practice to guide and assess development

A portfolio of practice, based on the core competencies for public health nutrition, may provide a useful framework to guide and assess development. Initial orientation to the core competencies for the novice practitioners is recommended. The portfolio should contain at minimum a learning needs assessment; identified competencies that require progression; a learning plan to address competencies involving on-the-job experience/work; reflection; and an evidence collection. An example template of a portfolio for public health nutrition is shown in Figure 11.1 below.

Assessment of the portfolio should be undertaken using qualitative criteria independent of the mentoring circle. Credibility can be ensured by including different types of evidence collected over sufficient time and involving more than one assessor and the practitioner in the assessment. Dependability can be enhanced by documenting the process through which the assessment was undertaken and undertaking a quality assurance process with an external assessor.

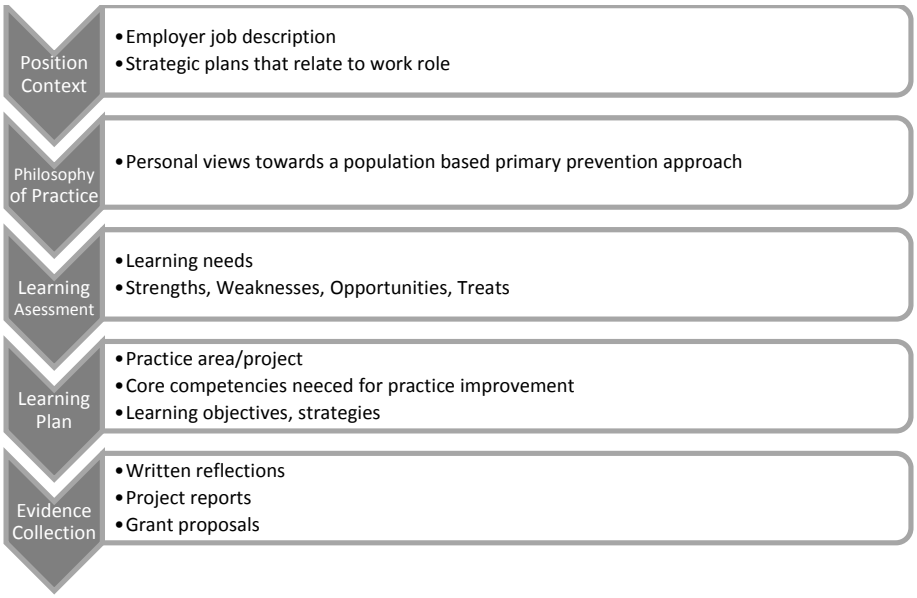


Figure 11.1. Example of a structure for a public health nutrition practice portfolio.

11.3.5. Link mentoring with other practice improvement strategies and capacity determinants

Workplace support for participating in mentoring as a professional development activity is essential. Where possible, organisations should aim to limit change in positions and/or role and responsibilities of novice practitioners to reduce the depth and breadth of competence development needs. In addition organisations should limit competing demands of client or direct care work. These strategies will support a focus on public health nutrition practice development. The professional development planned for the mentoring circle should be integrated into organisational strategic plans and individual participant's work plans. Organisations must be encouraged to support mentoring as a valid professional development activity.

The role of post graduate education in workforce development must be acknowledged despite the fact that the public health nutrition workforce have reported wanting to learn on-the-job. There is an opportunity to link Master of Public Health programs to mentoring circles. This could be in the form of encouraging mentees to enroll in post graduate studies or bringing the learning from studies to the mentoring circle to share best practice. An academic mentor also provides an option to support the research project component of many of these programs.

The mentoring circle could be linked to the DAA APD program. DAA may consider recognising this learning circle model of mentoring as part of their provisional and ongoing credentialing program. To reduce duplication and additional work for practitioners, continuing professional development plans and logs for the APD program ideally should align with portfolio of practice as part of other professional development plans in public health nutrition. DAA may consider how the profession views mentoring as a professional development activity and consider alternative promotion.

Mentoring circles potentially provide an opportunity to progress public health nutrition priorities in a coordinated fashion. Government and non-government organisations responsible for public health nutrition action need to recognise that the benefit of mentoring on workforce capacity is going to be limited without a corresponding increase in workforce size.

11.4. Recommendations for Future Research

The results of this research provide the evidence for mentoring in workforce development in the field of public health nutrition. A number of areas for future research were identified during this research. These are described below and summarised in Table 11.3 in order of priority.

Table 11.3. Summary of recommended areas for future research listed in order of priority.

Further research questions	Sample/Setting
1. Development and testing of valid and reliable forms of assessment of public health nutrition competence - Exploration of the relationship between self-reported competence and externally assessed competence of performance	▪ Entry-level nutrition and dietetics students ▪ Post-graduate public health nutritionists
2. Evaluation of the revised DAA entry-level competencies for dietitians	▪ Employers of novice public health nutritionists ▪ Graduates of dietetics programs ▪ Novice public health nutritionists
3. Impact of workforce development interventions on public health outcomes	▪ All health professionals ▪ Population based health outcomes
4. Effect of mentoring on public health nutrition practice and workforce capacity - Further exploration of the process of mentoring, in particular the questioning/prompting behavior of the effective mentor - Impact on public health nutrition capacity of reorienting acute care nutrition services	▪ Mid-career public health nutritionists in Australia ▪ Interprofessional groups working in public health nutrition (dietitians, health promoters, nurses etc.) ▪ International public health nutrition workforces ▪ Acute nutrition services
5. Full economic evaluation of mentoring compared to other workforce capacity building interventions	▪ Graduates of Masters of public health nutrition programs ▪ Partnerships between academia and practice
6. Monitoring of public health nutrition workforce	▪ Victoria ▪ Australia

11.4.1. Development and testing of valid and reliable forms of assessment in public health nutrition practice

The development of reliable (dependable) and valid (credible) forms of assessment for public health nutrition practice is also recommended. For fulfillment of the DAA entry-level competencies for practice as a dietitian a range of different tools are used to assess competence in the public health and community nutrition, including exams, project proposals, project reports and presentations. This is in line with the idea of a portfolio of practice post-entry into the workforce. The need to develop a structured portfolio of practice based on entry-level and advanced-level public health nutrition competencies is essential. A peer reviewed portfolio approach is being developed by the World Public Health Nutrition Association as part of global professional recognition[63]. Measurement of the portfolios ability to reliably and validly assess competence in this field is needed. The relationship between self-reported competence and actual performance as measured by an external assessor needs to form part of this investigation.

11.4.2. Evaluation of the revised DAA entry-level competencies for dietitians

The release of the revised DAA competencies for entry level dietitians in 2009[73] appear to have greater emphasis on public health and community nutrition practice in that they include 22 additional competency elements in comparison to the earlier version[187]. There is a need to evaluate whether these competencies are better preparing dietitian graduates for work in public health nutrition. Available evidence suggests that most dietitians working in public health nutrition roles felt under prepared for work in this field[10]. The change to the entry-level competencies should translate to revised curricula within Universities delivering dietetic education. It is essential to determine whether this is effective and adequate at meeting the workforce needs.

11.4.3. Impact of workforce development interventions on public health outcomes

Finally there needs to be a shift in the research on mentoring from one of process to that of outcomes. This study was rare in that it attempted to evaluate the impact and outcome of mentoring on workforce development. While a plethora of literature on mentoring within the health professions exists, few studies measure the impact or influence of mentoring on health care outcomes. The use of professional development to create a competent workforce to meet the health and social needs of the population it serves is acknowledged as potentially contributing to improvements in health[22]. There is a need to determine the effect, if any, of mentoring the workforce on the health of populations. This data will change the view of mentoring and imbed it as a valid practice improvement activity into the future.

11.4.4. Effect of mentoring on public health nutrition practice and workforce capacity

There is a need to further evaluate the effect of mentoring on public health nutrition workforce capacity with a varied audience. This should include an analysis of the process of mentoring, in particular the questioning/prompting behavior of the effective mentor. It is recommended that the effect of mentoring on mid-career public health nutritionists be explored. The effect of reorienting acute care nutrition services together with community dietetic services to further increase capacity for public health nutrition action could be explored. In addition whether an interprofessional mentoring circle would have the same and/or additional effects would also be valuable. The results from interprofessional education strategies would indicate that interprofessional mentoring may be even more effective but in the context of mentoring for public health nutrition this is not known. The effect of mentoring on international public health nutrition workforces is also not known. The United States, Africa and Canada have acknowledged the potential value of mentoring for the dietetics profession[20, 83, 188, 189]. Whether mentoring has an impact on public health nutrition workforce capacity internationally also warrants further investigation.

11.4.5. Economic evaluation of other workforce capacity building interventions compared to mentoring

Evaluation of other interventions in Australia that aim to increase the capacity of the Victorian public health nutrition workforce, such as post-graduate training or partnerships between academia and practice, are also encouraged. The evaluation of the human resource investment into public health nutrition in Queensland[49] is a good example of the importance of evaluating workforce development endeavours. Evaluation of other strategies that aim to address any of the determinants of workforce capacity identified in Table 11.1 is encouraged.

11.4.6. Monitoring of the public health nutrition workforce

There is also a need to establish a better system to monitor and review the public health nutrition workforce and determine the effects of public health nutrition workforce capacity building effort. The lack of data pertaining to the composition and characteristics of the public health nutrition workforce in Australia has been documented[51]. Without a system of monitoring the workforce, efforts to improve capacity will be unable to be effectively measured and the impact of workforce development strategies limited.

11.5. Summary

This chapter summarises the results of this research highlighting the benefit of mentoring in increasing competence in and capacity for public health nutrition practice. The mentoring circle model, mentor characteristics and group learning that focused on core competencies for public health nutrition practice, were identified as key determinants of the success of the mentoring circle intervention.

Recommendations for mentoring as a strategy for public health nutrition workforce development are provided. These include attracting and skilling appropriate mentors, using mentoring circles, targeting novice practitioners, guiding and assessing development using a portfolio of practice and linking mentoring to external systems and structures related to workforce capacity. Public health nutrition workforce planners need to recognise that the effect of mentoring in enhancing public health nutrition workforce capacity without an investment in workforce size will be limited.

There is a need to undertake further research to determine the effect of mentoring on other public health nutrition workers and devise valid and reliable forms of assessment of competence in public health nutrition. Improved systems for monitoring the workforce are needed and an evaluation of the revised entry level dietetics competencies for preparing dietitians to work in public health nutrition practice is recommended. Mentoring programs need to measure outcomes, including their impact on the population's health, not just the practitioners they support.

This research demonstrated the role mentoring plays in workforce development in public health nutrition. In particular, mentoring circles were shown to improve practice through increases in self-reported confidence and competence and enhanced networks. This mentoring intervention also illustrated the effect of mentoring on increasing capacity for public health nutrition practice through reorientation of services towards prevention. It is recommended that mentoring is part of multi-strategy approaches to future workforce development efforts in public health nutrition.

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Appendix 1

Flyer advertising mentoring intervention

MONASH University

Are you a dietitian working in public health or community nutrition in Victoria with less than 5 years experience looking for professional development opportunities?

You are invited to participate in a mentoring program.

What is involved?

- Commitment to the mentoring program
  - 6 x 3 hour sessions to be held over one year

- Participation in assessment of competency as part of the program.

- Participation in an interview post participation in the program.

For more information or if you would like to be involved contact:
Claire Palermo, Nutrition & Dietetics, Monash University

Phone: (03) 9594 5652 or Mobile: [redacted]

Email: claire.palermo@med.monash.edu.au

Appendix 2

Mentee Questionnaire Pre Participation in Mentoring

Name:

Current Position:

Organisational structure?

Organisation:

How many years have you had in the practice of community/PH nutrition?

Qualifications:

DAA membership/APD:

What has been your career path to get to your current role?

Can you describe your current work roles and responsibilities?

Have you developed any mentor-type relationships to assist you in your role? Can you describe these relationships?

What qualities are important for you in a mentor and in a mentoring relationship?

What do you hope to gain from the mentoring program?

Please estimate the time in your current role (as a proportion of EFT or hours per week) you dedicate to public health nutrition activities.

Appendix 3

Competency Self Assessment

Rate your confidence in addressing each competency element from 1 (not confident) → 5 (confident).

	1	2	3	4	5
1. Food and nutrition monitoring and surveillance					
2. Applied research, research and development. The ability to appraise, plan and manage research, interpret research findings and apply in practice					
3. Needs assessment- assessing population needs using various methods					
4. Analysing the determinants of nutrition issues using a range of information sources					
5. Policy processes: policy development skills, influence policy development, evaluate policy impacts, organizational politics					
6. Building community capacity: community engagement, collaboration, partnership, coalition building and community dimensions of practice skills					
7. Advocacy at government, organization, profession levels					
8. Awareness, knowledge and skills that enable a system, agency, or professional to work effectively in cross-cultural situations					
9. Knowledge and understanding of the psychological, social and cultural factors which influence food and dietary choices					
10. Design, plan, implement, monitor and evaluate nutrition strategies and programs for promoting health and well-being of the population, that reduce inequalities					
11. Principles and practice of health education, health promotion theory, behaviour change and health promotion policy and programs, public health methods					
12. Building capacity of the health workforce through training, up-skilling and mentoring					
13. Knowledge of food and nutrition systems and community food needs					
14. Service and program prioritisation based on identified needs, their potential impact, as defined by objective measurable criteria					
15. Grantsmanship-submission writing to access resources to enable intervention and service delivery					
16. Interpersonal and written communication					
17. Assessment of food, nutrient and dietary intakes and status in populations					
18. Nutritional requirements of populations					
19. Population nutrition intervention strategy options and selection					
20. Professional accountability and social responsibility					
21. Ethics of public health nutrition practice					
22. Commitment to continual competency development and lifelong learning					
23. Reflective practice to enhance performance					

Appendix 4

Competency Importance Ranking

For each of the following competency elements rank in order of importance to you as a practitioner in your current role (1 = most important → 23 = least important).

Food and nutrition monitoring and surveillance	
Applied research, research and development. The ability to appraise, plan and manage research, interpret research findings and apply in practice	
Needs assessment- assessing population needs using various methods	
Analysing the determinants of nutrition issues using a range of information sources	
Policy processes: policy development skills, influence policy development, evaluate policy impacts, organizational politics	
Building community capacity: community engagement, collaboration, partnership, coalition building and community dimensions of practice skills	
Advocacy at government, organization, profession levels	
Awareness, knowledge and skills that enable a system, agency, or professional to work effectively in cross-cultural situations	
Knowledge and understanding of the psychological, social and cultural factors which influence food and dietary choices	
Design, plan, implement, monitor and evaluate nutrition strategies and programs for promoting health and well-being of the population, that reduce inequalities	
Principles and practice of health education, health promotion theory, behaviour change and health promotion policy and programs, public health methods	
Building capacity of the health workforce through training, up-skilling and mentoring	
Knowledge of food and nutrition systems and community food needs	
Service and program prioritisation based on identified needs, their potential impact, as defined by objective measurable criteria	
Grantsmanship-submission writing to access resources to enable intervention and service delivery	
Interpersonal and written communication	
Assessment of food, nutrient and dietary intakes and status in populations	
Nutritional requirements of populations	
Population nutrition intervention strategy options and selection	
Professional accountability and social responsibility	
Ethics of public health nutrition practice	
Commitment to continual competency development and lifelong learning	
Reflective practice to enhance performance	

Appendix 5

Introduction to Mentoring

Overview of powerpoint presentation

Slide 1:
An invitation to be part of a Public Health and Community Nutrition Workforce Development Research Project, August 2007

Slide 2:
Definition of Mentoring
"an enabling relationship that facilitates another's personal growth and development (and learning). The relationship is dynamic, reciprocal and can be emotionally intense. Within such a relationship the mentor assists with career development and guides the mentee through the organisational, social and political networks" [Morton-Cooper & Palmer, 2000]

Slide 3:
Darling's parameters of mentoring – the mentoring relationship

- Model envisioner
- Energiser
- Investor
- Supporter
- Career counselor
- Standard prodder
- Teacher
- Coach
- Feedback giver
- Challenger
- Eye opener
- Door opener
- Idea bouncer
- Problem solver

Slide 4:
Modes of mentoring

- One-to-one
- Group
- Peer
- E-mentoring
- Formal / Informal

Slide 5:
Supervision – in contrast to mentoring is characterised by formality and assessment
"an exchange between practising professionals to enable development of professional skills" [Butterworth 1992]
"a mandatory… relationship … in which the worker gives an account for his/her work with the .. purpose of developing their competence in providing the highest quality of service" [McCallion & Baxter, 1995]

Item	**Mentoring**	**Supervision**
Focus	Profession/career (stimulate, guide, reflect)	Skills/clinical/placement (demonstrate, monitor, assess)
Driver	Internal (driven by the needs of mentee which in turn drives the roles and boundaries of the partnership)	External (driven by the needs of the student to attain competence)
Participation	Voluntary (mentor and mentee have choice to participate in mentoring and mentoring process)	Mandatory (may be required part of a formal or structured education, registration or credentialing process)
Communication	Face-to-face or distance	Face-to-face
Duration	Longer or shorter term (may extend over a number of years or be limited by the needs of mentee)	Shorter term (normally limited to the duration of the placement or related activity)
Choice	Choice of mentor	Assigned preceptor/supervisor
Assessment & Competence	No supervision or assessment Involved (dynamics of the partnership are destroyed if assessment involved)	Supervision and assessment may be involved

Slide 6:
Reflective Practice
…. more than just thoughtful practice. It is the process of turning thoughtful practice into a potential learning situation. It is the utilisation of good theory in ractice….
and is always trying to ensure that the outcome of any action is close to what is anticipated by the theory and the previous experience combined. [Jarvis, 1992]

Reflective Practice cycle [Gibbs, in Johns 2004]

Slide 7:
Role of the Mentor

- Assist identification of areas for growth and development
- Specific skill training or coaching
- Psychological support and counselling
- By
  - Encouraging the exploration of ideas and risk taking in learning
  - Listening
  - Assist the mentee to identify strengths and build on them
  - Help the mentee shift their mental context
  - Asking the right questions

Slide 8:
Role of the Mentee

- Commitment to mentor and mentoring program
- Commitment to professional development plan
- Take on new challenges
- Seek feedback
- Accept responsibility for their own growth and development