The paramedic response to intimate partner violence

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Contents

General Declaration

I hereby declare that this thesis contains no material which has been accepted for the award of any other degree or diploma at any university or equivalent institution and that, to the best of my knowledge and belief, this thesis contains no material previously published or written by another person, except where due reference is made in the text of the thesis.

This thesis includes 3 original papers published in peer reviewed journals and 3 papers currently under review. The core theme of the thesis is the paramedic response to intimate partner violence. The ideas, development and writing up of all the papers in the thesis were the principal responsibility of myself, the candidate, working within the Department of Community Emergency Health and Paramedic Practice, Monash University, under the supervision of Professor Brett Williams, Professor Jan Coles and Dr Angela Williams.

The inclusion of co-authors reflects the fact that the work came from active collaboration between researchers and acknowledges input into team-based research.

My contribution to the chapters in this thesis involved the following:

Chapter	Publication title(s)	Publication status	Nature and extent of candidate's contribution	Co-author name(s) Nature and % of Co-author's contribution	Co-author(s), Monash student
1	Article 1 Preventing and reducing the impacts of intimate partner violence: Opportunities for Australian ambulance services.	Published in *Emergency Medicine Australasia* IF 1.223 Ranked 12/24 (Emergency Medicine	Lead author responsible for study design, literature review, and writing of manuscript. 80%	Brett Williams 10% Jan Coles 5% Angela Williams 5%	No No No
2	Article 2 Paramedic students' knowledge, attitudes and preparedness to manage intimate partner violence patients.	Published in *Prehospital Emergency Care* IF 2.690 Ranked 5/24 (Emergency Medicine)	Lead author responsible for study design, literature review, statistical analysis and interpretation, and writing manuscript. 75%	Brett Williams 10% Jan Coles 5% Angela Williams 5% Peter Lucas 5%	No No No No
	Article 3 The knowledge, attitudes and preparedness to manage intimate partner violence patients of Australian paramedics – A pilot study.	Under review in The Australasian Journal of Paramedicine IF 0.62	Lead author responsible for study design, literature review, statistical analysis and interpretation, and writing manuscript. 75%	Brett Williams 10% Jan Coles 5% Angela Williams 5% Auston Roberts 5%	No No No
3	Article 4 A systematic review of intimate partner violence educational interventions delivered to allied health care practitioners.	Published in *Medical Education* IF 3.369 Ranked 2/40 (Education: Scientific disciplines)	Lead author responsible for study design, literature review, and writing of manuscript. 80%	Brett Williams 10% Jan Coles 5% Angela Williams 5%	No No No
4	Article 5 The psychometric properties of an intimate partner violence education outcome measure delivered to allied healthcare students.	Submitted to the American Journal of Preventative Medicine IF 4.465 Ranked 16/151 (Medicine – General and Internal)	Lead author responsible for study design, literature review, statistical analysis and interpretation, and writing manuscript. 80%	Brett Williams 10% Jan Coles 5% Angela Williams 5%	No No No
5	Article 6 Paramedics as a new resource for women experiencing intimate partner violence.	Under review in *The Journal of Interpersonal Violence* IF 1.940 Ranked 13/43 (Family Studies)	Lead author responsible for study design, literature review, and writing of manuscript. 80%	Brett Williams 10% Jan Coles 5% Angela Williams 5%	No No No

Note I have not renumbered sections of submitted or published papers in order to generate a consistent presentation within this thesis. Also note I have not included references from individual articles in the reference section of this thesis, for referencing of individual articles please see individual reference sections.

Student's Signature: [redacted] Date: 7th January 2017

The undersigned hereby certify that the above declaration correctly reflects the nature and extent of the student's and co-authors' contributions to this work. In instances where I am not the responsible author I have consulted with the responsible author to agree on the respective contributions of the authors.

Main Supervisor signature: [redacted] Date: 13th January 2017

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Finally I acknowledge and pay respect to the Traditional Owners and Elders both past and present of the lands and waters in which this research was completed.

List of Tables and Figures

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Abbreviations

AHP	Allied Healthcare Practitioner
AHS	Allied healthcare student
AUD	Australian Dollars
CME	Continuing Medical Education
COAG	Council of Australian Governments
ED	Emergency Department
EMT	Emergency Medical Technician
GP	General Practitioner
IPV	Intimate Partner Violence
KAP	Knowledge, Attitudes, Preparedness
KAS	Knowledge, Attitudes, Skills
KASB	Knowledge, Attitudes, Skills, Behaviours
Modified PREMIS	The Modified Physician REadiness to Manage Intimate partner violence Survey
the National Plan	The National Council's Plan for Australia to Reduce Violence against Women and their Children, 2009-2021
NICE	National Institute for Health and Care Excellence
PREMIS	The Physician REadiness to Manage Intimate partner violence Survey
STI	Sexually Transmitted Infection
WHO	World Health Organization

Definitions

Intimate partner violence (IPV)	Abuse transpiring between people who are, or were formally, in an intimate relationship, IPV occurs when a person uses physical, sexual, psychological or any other kind of abuse to control or otherwise harm their partner[1]
Prehospital	Occurring before or during transportation to a hospital
Paramedic	A person trained to give emergency medical care and to facilitate transport to hospital. Also known as Emergency Medical Technician (EMT).

Publications, presentations and awards

Publications obtained during candidature forming part of this thesis

1. Sawyer S, Coles J, Williams A, Williams B. Preventing and reducing the impacts of intimate partner violence: opportunities for Australian ambulance services. Emergency Medicine Australasia. 2015;1;27(4):307-11.
2. Sawyer S, Coles J, Williams A, Lucas P, Williams B. Paramedic students' knowledge, attitudes and preparedness to manage intimate partner violence patients. Prehospital Emergency Care, 2017;21(6): 750-760.
3. Sawyer S, Coles J, Williams A, Rotheram A, Williams B. The knowledge, attitudes and preparedness to manage intimate partner violence patients of Australian paramedics – A pilot study. Australasian Journal of Paramedicine (under review), 2017.
4. Sawyer S, Coles J, Williams A, Williams B. A systematic review of intimate partner violence educational interventions delivered to allied health care practitioners. Medical Education. 2016;1;50(11):1107-21.
5. Sawyer S, Coles J, Williams A, Williams B. The psychometric properties of an intimate partner violence education outcome measure delivered to allied healthcare students. The Journal of Interpersonal Violence (under review); 2017.
6. Sawyer S, Coles J, Williams A, Williams B. Paramedics as a new resource for women experiencing intimate partner violence. The Journal of Interpersonal Violence (under review); 2017.

Publications obtained during candidature not forming part of this thesis

- Sawyer S, Parekh V, Williams A, Williams B. Are Australian paramedics adequately trained and prepared for intimate partner violence? A pilot study. Journal of Forensic and Legal Medicine. 2014;30;28:32-5.
- Boyle M, Williams B, Sawyer S. The accuracy of undergraduate paramedic students in measuring blood pressure: A pilot study. Australasian Journal of Paramedicine. 2014;5;11(2).

Citations arising from published works forming part of this thesis

- Burgueño E, Carlos S, Lopez-Del Burgo C, Osorio A, Stozek M, Ndarabu A, Muamba P, Tshisuaka P, De Irala J. Forced sexual intercourse and its association with HIV status among people attending HIV Voluntary Counseling and Testing in a healthcare center in Kinshasa (DRC). PloS one. 2017;18;12(12):e0189632.
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- Hanson MD, Wathen N, MacMillan HL. The case for intimate partner violence education: early, essential and evidence-based. Medical Education. 2016;50(11):1089-91.

Presentations

1. Paramedics Australasia International Conference 2017 – Paramedics: A New Resource for Intimate Partner Violence Patients, Oral presentation 15 minutes (Melbourne, 25th November 2017)
2. EMS World Expo, International Scientific Symposium - A paramedic guideline to recognise and refer intimate partner violence patients, Oral and Poster presentations 15 minutes (Las Vegas, USA, 18th September 2017) – **Winner best presentation.**
3. The 2017 Council of Ambulance Authorities conference – Paramedics as a Resource for Patient's experiencing Intimate Partner Violence, poster presentation (Adelaide, 9th August 2017).

4. 2017 Monash University 3 Minute Thesis Competition (Melbourne, 10th August 2017) – **1st Place winner**
5. 2017 Asia-Pacific 3 Minute Thesis Competition (Queensland, 29th September 2017)
6. Paramedics Australasia International Conference 2016 – Paramedic preparedness for intimate partner violence, Oral presentation 15 minutes (Auckland, NZ, 19th November 2016) – **Winner Best postgrad presentation.**
7. Paramedics Australasia International Conference 2016 – Educating paramedics on intimate partner violence, Poster presentation (Auckland, NZ, 19th November 2016).
8. The 2016 Emergency Management Conference - Preventing and reducing the impacts of intimate partner violence: Opportunities for Australian ambulance and emergency services, oral presentation, 40 minutes (Melbourne, 13th July 2016).
9. The 2016 Council of Ambulance Authorities conference - Opportunities for Australian ambulance services to help prevent and reduce the impacts of intimate partner violence, poster presentation (Brisbane, 16th October 2016).
10. DCEHPP 6th annual research symposium – The role of Australian ambulance services in responding to intimate partner violence, oral presentation, 15 minutes (Melbourne, 6th November 2015).

Awards

1. Best presentation, *2017 EMS World Expo.*
2. 1st Place ($5,000), *2017 Monash University 3 Minute Thesis Competition*
3. Best postgraduate presentation (1st place, $250), *Paramedics Australasia International Conference 2016.*
4. 2015 Australian Postgraduate Award, $25,000.

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1. Monash University SEED grant, The development of a new tool to measure the impact of intimate partner violence education with allied healthcare students, $5000.

Abstract

Intimate partner violence (IPV) has a significant impact on the health and wellbeing of women worldwide. Defined as abuse transpiring between people in a current or past intimate relationship, IPV occurs when one person uses violence or fear to control or otherwise harm their partner. In Australia one in three women report experiencing IPV at some point in their life. For young Australian women IPV is the leading preventable contributor to death, disability and illness, and accounts for a higher percentage of the overall burden of disease than any other risk factor.

The need for a coordinated and meaningful response from every healthcare profession encountering IPV patients has been well established. Leading health agencies have called for increased action and education for frontline staff encountering IPV patients. Paramedics are believed to frequently encounter IPV patients and yet they rarely receive education or training, and the expected response of ambulance services is currently unclear. Paramedics operate in a unique environment and may be able to improve the overall healthcare response to IPV by improving the recognition and referral of patients, which is a key strategy to reduce overall harm.

This thesis will examine the role of ambulance services and paramedics in responding to IPV and IPV patients. This includes exploring how Australian paramedics and ambulance services should be responding to IPV, examining the current preparedness of Australian paramedics and paramedic students to respond to IPV patients, and examining the educational requirements of paramedics. This thesis will represent the first attempt to examine IPV from a prehospital context, and will provide unique evidence which can be used to inform the practice of paramedics in Australia and potentially internationally.

This thesis was undertaken via a publication method, with the results of six separate studies presented in five chapters. The role of Australian paramedics and ambulance services in responding to IPV is explored, and key actions are proposed that ambulance services in Australia can undertake immediately to improve their response to IPV.

Central to these key actions is improved education for paramedics. To better understand the current educational needs of Australian paramedics this thesis has presented the first available data on the current

paramedic preparedness to manage IPV. Findings indicate that paramedics and students are not being properly prepared, and potentially lack the education necessary to respond appropriately to IPV.

In order to inform the creation of IPV educational packages aimed at paramedics this thesis presents the results of a review examining the evidence for previous educational interventions delivered to allied healthcare practitioner groups. Results indicate that while previous interventions have met with some success there is a need to generate more high quality evidence of the effectiveness of specific interventions in improving educational outcomes, provide more opportunity for skills practice with expert guidance, and identify outcome measures capable of accurately measuring educational effects.

To assist with the identification or creation of such outcome measures this thesis examined the psychometric properties of a leading IPV educational scale. Findings indicated that it did not demonstrate sound psychometric properties, and therefore may require revision before further use in Australian paramedic cohorts. Future research should attempt to identify other robust instruments, or generate new ones, before the paramedic profession will be capable of accurately measuring the impact of educational interventions.

Finally, to assist with the development of future educational packages there is a need to provide guidance on how paramedics should be responding to IPV. Therefore this thesis has generated the world's first guideline for paramedics to recognise and refer IPV patients, which could potentially be modified for use in any ambulance service worldwide. This guideline clearly defines how paramedics can identify IPV in the prehospital environment, and how to facilitate referrals to care and support.

This body of work comprises the first evidence drawn from a prehospital context on the response to IPV. Results of this thesis can be used to direct paramedic education and activities, and may be instrumental in ensuring that paramedics become a resource for women who are experiencing IPV. By improving the response of paramedics to IPV it may be possible to improve recognition and referral of women experiencing IPV, which has the potential to aid in the reduction harm caused by violence against women.

Introduction

A DESCRIPTION OF THE PROBLEM AND THE RATIONALE FOR THIS RESEARCH

Introduction

What is intimate partner violence?

Intimate partner violence (IPV) is a common and highly damaging form of violence which has been identified as a major health issue requiring immediate action[2-4]. Intimate partner violence is the leading preventable contributor to death, disability and illness in young Australian women, and accounts for 8% of the burden of disease in Australia, which is more than double any other risk factor[5].

There is no universally accepted definition of IPV, however broadly speaking IPV is defined as abuse transpiring between people who are, or were formally, in an intimate relationship, and occurs when a person uses physical, sexual, psychological or any other form of abuse to control or otherwise harm their partner (see Table 1)[1]. Distinct from violence directed at a stranger, family member, or other known person, IPV is restricted to such events occurring exclusively between intimate partners, which includes married couples and de-facto relationships, as well as dating couples and other informal relationships[1].

This definition, provided by the World Health Organization (WHO), is broad and encompasses a wide range of behaviours that could constitute IPV. Previous research has been criticised for using too narrow a definition of IPV, particularly when defining IPV as only physical violence, as such definitions ignore the complex and multifaceted nature of IPV[6]. Alternatively, broad definitions can be problematic when attempting to study IPV, as much of the definition requires interpretation by both researchers and participants which may not always correlate[7]. Debate is ongoing between researchers who would include all acts of violence or aggression as IPV, and those who consider the severity, frequency, meaning and intention behind violence[6].

As the purpose of this thesis is to discuss the paramedic response to IPV as a health issue, the definition provided by the WHO will be adopted. This definition is appropriate as it forms the basis for the definition used in Australian government policy documents[4] which provide context for the role of healthcare providers in responding to IPV in Australia. Additionally this definition has wide international acceptance[8], and allows this thesis to consider a broad range of research which could encompass IPV.

With regard to the definition of IPV it should be noted that terms such as domestic violence, family violence, relationship violence, partner abuse and 'wife beating' are often used interchangeably in the literature. Many of these terms are either obsolete (e.g. 'wife beating), refer to broader contexts of violence (e.g. domestic violence or family violence) or were created for use within a specific context and hold a specific meaning (e.g., for use within legislation or psychological counselling). While some of these terms are used in the literature referred to in this thesis, throughout this manuscript the term IPV will be used exclusively.
Nomenclature for the 'victim' of IPV also varies between settings and industries (e.g., patient, survivor, or victim) however in this thesis the term 'patient' will be used to reflect common healthcare terminology.

When examining the gendered nature of IPV the relationship of the patient to the perpetrator and their respective genders can vary, however the evidence shows that the vast majority of the most damaging violence is perpetrated by men and born by women[1, 9]. The root causes of violence occurring in this context is believed to be different from violence occurring in other contexts[1]. Due to these factors the male-perpetrator, female-patient context is often the subject of the majority of research. This does not imply that violence occurring in other contexts (e.g., same sex couples or female-perpetrator-male-patient) is not equally damaging to individuals, or that it does not deserve equal attention in the literature, but rather that attempts to study and reduce violence must be tailored to the context in which they present. This thesis will discuss the most common form of IPV within Australia, which is violence occurring against women, though we recognise that violence can occur in other contexts and they deserve equal attention.

Table 1. Defining IPV[1]

Physical	Inflicting pain or injury, e.g., slapping, hitting, kicking, or beating
Psychological	Causing psychological or emotional harm, e.g., intimidation, constant belittling or humiliating
Sexual	Forced intercourse or sexual acts and other forms of sexual coercion
Controlling behaviours	Preventing freedom of movement, access or expression, e.g., Isolating partners from their family and friends or from social, cultural or religious association; monitoring their movements; restricting their access to information, assistance, money or resources

The prevalence of IPV

International prevalence

Accurate measurement of the prevalence of IPV is difficult, due in part to definitional discrepancies and estimated low disclosure rates[1]. In 2002 The WHO, collating the results of on 48 population studies conducted worldwide between 1982 and 1999 (including Australian data), estimated that between 10-69% of women will experience physical or sexual violence from a partner at some point in their life[1]. More recently they have estimated that 1 in 3 women worldwide will experience IPV[10]. It is important to note that women from all ages, cultures, religious affiliations and socioeconomic statuses report experiencing IPV, and therefore IPV is not symptomatic of one or more at risk populations, but permeates throughout society as a whole[1].

As acknowledge by the WHO their results only included physical or sexual abuse, which is a significant limitation as evidence shows emotional or psychological abuse can be more common, and often can be just as debilitating, particularly when used in combination with physical or sexual abuse[11]. There are considerable discrepancies between reported rates across countries, which could be accounted for by differences in culture, legislation or states of civil unrest, however this may also be impacted by individual study methodological issues, particularly recruitment of samples. It has been suggested that discrepancies between prevalence rates may be due to differences in the questions asked to participants[12], however the WHO data is reflective of the same questions asked across countries, which adds to its reliability.

While these worldwide figures can be used as an indication of the scope of this health issue, they are not necessarily indicative of prevalence rates within paramedic patient samples, which will be discussed later.

Australian Prevalence

Within Australia, the first robust published attempt to measure the extent of IPV in the community was the 1996 Women's Safety Survey, which found that 23% of women had experienced IPV at some point in their life, 2.6% had experienced IPV in the last 12 months, and half of the women who reported experiencing IPV by their current partner had experienced more than one event[13].

More recently the most comprehensive data on the prevalence of IPV comes from the Australian Bureau of Statistic's Personal Safety Survey, which has been run in 2005 and 2012 (the survey was also run in 2016 but data is not yet publically available). The most recent 2012 survey found that an estimated 17% of women over the age of 18 had experienced IPV at some stage since the age of 15, and 1.5% had experienced it in the past 12 months[14]. The same data set showed that while 17% women had experienced physical or sexual violence, as many as 25% had experienced emotional abuse from a current or past partner.

The 2012 report noted that there was no statistically significant change between 2012 and 2005 in the proportion of women who reported experiencing violence in the 12 months prior to the survey, and while there appeared to be a decline in prevalence between the 1996 Women's Safety Survey and the 2005 Personal Safety Survey the questions asked were different and so direct comparisons cannot be made. Therefore it appears that the overall rate of IPV measured in a population sample of Australian women, as taken from self-reporting measures, has not changed in the past decade.

These figures provide an indication of the likely prevalence rates in Australian community populations however as with the international figures there were limitations that may have impacted the results and their generalisability to ambulance patient populations. Specifically the Personal Safety Survey defined partners as someone living with the patient in a married or de-facto relationship at some point, which would exclude violence occurring in dating or other relationships where the participants do not live together or consider themselves a 'couple'. Additionally the definition of violence used included only actions that would be considered as offences under Australian criminal law, and therefore behaviours that are linked to negative health outcomes, but which are not crimes, may not have been included. The Personal Safety Survey was conducted via face-to-face interviews and while efforts were made to arrange private interviews there may have been situations where women chose not to participate, or were not permitted to participate by their partners. Research has shown that face-to-face interviews can be a successful method for eliciting disclosure [(15)] , however the impact of the interviewer's personal characteristics, particularly race and gender, can impact discloser rates[(16)]. Potentially results were impacted by such methodological concerns. Finally participation was limited to women over the age of 18 who were a regular resident in private dwellings, and yet family violence is a leading cause of homelessness in Australia[(17)] and therefore this may have led to underestimations.

It should also be noted that the above listed figures are widely believed to be under estimations, due largely to the considerable barriers for IPV patients to disclose or report their experiences, such as fear of not being believed or of repercussions, as well as limitations to study methodology[(18, 19)]. There is evidence that women who experience IPV as opposed to some forms of non-partner violence are less likely to disclose to healthcare

professionals, report incidents to police, seek support, and less likely to name the act as violence[20]. There is currently no data which could be used to assess the barriers and facilitators for IPV patients to disclose to paramedics, and it is unclear if the above evidence will be generalizable.

The Australian data discussed above comprises some of the most encompassing attempts to measure the prevalence of IPV in Australian community populations, however they may not be indicative of samples of Australian ambulance patients. No robust published data could be located that attempts to measure the prevalence of IPV in Australian ambulance patient samples, however there is evidence from GP settings that prevalence can be as high as 28%[21], and a recent systematic review of prevalence rates in primary healthcare settings estimated 40% of cases were associated with IPV[22] . Further research will be required to ascertain if Australian ambulance patient populations demonstrate higher rates of experiencing IPV. Nonetheless these figures show that IPV is a common occurrence in the Australian population, and it appears likely that paramedic may frequently encounter women experiencing IPV in their practice.

The impact of IPV

The impacts of IPV can vary widely depending on the patient and their individual circumstances, and can also affect other family members and even entire communities[1]. In general, women experiencing IPV report poorer physical health overall, have greater difficulties in accessing health services, have a greater risk of developing mental health problems[23] and are more likely to engage in risky behaviour such as alcohol abuse, smoking, and abusing non-prescription drugs, amphetamines and solvents[1]. Research also indicates that the impacts of IPV can persist after the violence has ceased, that there is a link between the severity of the abuse and its

impact, and that the effects over time of different types and multiple episodes of abuse appear to be cumulative[1]. Furthermore the impacts of psychological IPV can be just as harmful as physical IPV[24], and women often report that the lasting psychological injuries are far greater and more damaging than any physical injury[25].

Table 2 provides a summary of health consequences and health risk behaviours associated with IPV taken from a 2011 study which drew together research taken from a wide variety of disciplines, countries and settings. Additionally below will be a summary of the major impacts of IPV as well as statistics and research pertaining to the more damaging health outcomes of IPV.

Table 2. Health consequences and health risk behaviours associated with experiencing IPV [11]

BRAIN AND NERVOUS SYSTEM Headaches Migraines Memory problems Seizures Speech difficulties Traumatic brain injury	**CARDIOVASCULAR SYSTEM** Angina Cardiovascular disease High blood pressure/hypertension High cholesterol Stroke	**SOMATIC SYMPTOMS** Chronic fatigue Chronic pain Fibromyalgia Temporomandibular disorder Somatic symptoms
GASTROINTESTINAL SYSTEM Constipation Diarrhea Frequent indigestion Functional gastrointestinal disorder Gastric reflux Gastrointestinal disturbances Inflammatory bowel syndrome Irritable bowel disorder Spastic colon Stomach ulcers Stomach/gastrointestinal problems	**REPRODUCTIVE SYSTEM** Chronic pelvic pain Genital injuries Hysterectomy Lack of sexual pleasure Sexual dysfunction Painful intercourse Painful menses Pelvic inflammatory disease Poor sexual health Sexually transmitted infections Vaginal bleeding	**ADVERSE PREGNANCY OUTCOMES** Abortion Increased abortion rate Multiple induced abortions Delayed prenatal care Foetal death, foetal loss (miscarriage, spontaneous abortion) Interference with contraception Low birth weight Neonatal death Preterm delivery Premature labour Premature rupture of membranes Unintended pregnancy
OTHER HEALTH OUTCOMES Asthma Chronic health conditions Delayed diagnosis of breast, cervical, endometrial, and ovarian cancer Hearing loss Physical symptoms Poor general health Poor physical health	**MENTAL HEALTH OUTCOMES** Anger/hostility Anxiety Depression Mental health disability Poor mental health Posttraumatic stress disorder Psychological distress Sleep disturbance Suicidality	**MUSCULOSKELETAL SYSTEM** Activity limitations Arthritis Broken bones Joint disease Physical disability Functional impairment Physical injuries
IMMUNE AND ENDOCRINE FUNCTION Chronic pain Inflammation Metabolic syndrome/diabetes	**GENITOURINARY SYSTEM** Bladder/kidney infections Genitourinary problems	**HEALTH RISK BEHAVIOURS** Decreased preventive care use Heavy or binge drinking HIV and other sexually transmitted disease risk factors Not having check-up with physician in the past year Smoking

Injuries and physical health

Physical assault is a common occurrence for women experiencing IPV[11]. One Australian study examined a cohort of women who had been assaulted by an intimate partner and found that 48% were physically injured, with the most common injuries being bruises, cuts, or scratches (all statistics excluding sexual assault)[13]. Common injuries as a result of IPV which require hospital attendance are injuries to the eyes, ears, head and neck as well as the breasts and abdomen[25], and in extreme cases traumatic brain injury and strangulation[11].

Further to physical injuries, the US National Intimate Partner Violence and Sexual Violence Survey, a telephone survey which had over 18,000 male and female respondents from across the USA found that IPV was associated with an increased risk of a wide variety of conditions, including asthma, irritable bowel syndrome, diabetes, headaches, chronic pain, sleeping difficulties, and poor general physical health[26]. While a causal link between IPV and specific health outcomes cannot be drawn from current data, several theories have been suggested which may describe the relationship. For example health conditions may arise directly

from physical injuries sustained[26], from adopting other health-risk behaviours (such as smoking or drug abuse) as a result of the abuse[25, 27], or from chronic stress brought on by the abuse[28].

It is estimated that as many as 38% of all murders of women are committed by an intimate partner[10]. Analysis of Australian homicide records between 2010 and 2012 has shown that there were 83 female intimate partner homicides, which comprised 45.6% of all female homicides for the period[29]. Currently on average one woman is killed each week in Australia by a current or past male partner for 'domestic motives'[30, 31]. Data also shows that homicides involving intimate partners account for 66% of domestic homicides, and 24% of national homicides, the majority of which (77%) involved males killing females[32].

Sexual and reproductive health

Evidence demonstrates an association between IPV and several negative sexual and reproductive health outcomes, including unwanted pregnancies and early terminations, spread of sexually transmitted infections (STIs), complications during pregnancy, urinary tract infections and sexual dysfunction[25].

The risk of IPV is higher in pregnant women, and in the period following the birth of a child[33]. Injuries sustained while pregnant have been associated with miscarriage, poor attendance at pre-natal care, stillbirth, premature labour and birth, foetal injury, and low birth weight[33]. Violence during pregnancy has been associated with miscarriage, poor prenatal care, stillbirth, premature labour and birth, foetal injury, and low-birth-weight[34, 35].

Mental Health

Women experiencing IPV have been shown to have a higher risk for several mental health outcomes including depression, anxiety, post-traumatic stress disorder and other mood and sleep disorders[11]. International and Australian studies have shown the women experiencing IPV display greater rates of depression and anxiety, with one Australian study finding that 33% of the impact of IPV on the burden of disease was attributed to depression and 26% to anxiety[1, 36, 37].

Evidence shows that the impact of mental illnesses such as depression can increase with the magnitude of violence, and reduce with distance from the perpetrator, indicating potential correlations[38]. There is evidence to suggest that the type of abuse can impact on the type of mental illness[39]. An Australian study found that

women reporting IPV were nine times more likely to report having harmed themselves or having recent thoughts of doing so than women who had never experienced violence[40]. A study conducted by the WHO found that up to 50% of IPV patients developed substance abuse problems and that this was most prevalent among depressed patients[41].

Impacts on Children

Children are often present during acts of IPV, with one Australian study conducted estimating that 25% of children and young people have witnessed IPV[42]. Statistics released by the Australian Department of Justice show that over the period 1999-2010 between 48%-35% of family violence incidents attended by police had at least one child present, and that the number of child victims of IPV has tripled in the last 10 years[43]. Research has shown that childhood exposure to IPV increases their risk of behavioural and learning difficulties in the short term, and of developing mental health problems later in life[44].

Economic cost

The cost of IPV is difficult to estimate, particularly due to the variations in prevalence rates reported by the various studies. One Australian study conducted in 2009 examined incidence of violence against women in general (i.e. not restricted to IPV) and estimated the cost to be AUD $13.6 billion, which is predicted to rise to AUD $15.6 billion by 2022[45]. This report also found the average cost for each time a woman reported violence was AUD $20,000, which encompasses such expenses as medical, legal, policing and lost work time.

Further to these figures, the impact of IPV over time appears to be cumulative, and is further compounded through multiple instances and multiple manifestations creating higher economic costs[23, 38, 46]. Studies have found that the costs associated with females experiencing IPV amounts to more than twice the cost to men who experience violence[47], and the majority of the higher costs incurred by victimised women seeking help derive from inefficient mental health services[25]. The authors of the WHO report *The Economic Dimensions of Interpersonal Violence* concluded that prevention violence is economically rational as savings outweigh potential costs[48].

Relevance to paramedicine

The research findings listed above demonstrate the wide variety of impacts that IPV can have on a person. This summary is therefore broad and does not contain research specific to ambulance patient populations.

Many of the conditions listed are chronic in nature and would not necessarily result in the need for an ambulance. It is currently unclear how women experiencing IPV utilise the ambulance service. For example it is unknown if women call due to specific acts of violence, such as assault, or if they would be more likely to call for exacerbations of chronic conditions which are associated with their experiences IPV, such as asthma or chronic pain. Evidence taken from ED settings show that IPV commonly presents as traumatic injuries[49], however screening rates in EDs are reportedly low[50] and it may be the case that patients are not asked about IPV unless they present with traumatic injuries that indicate the potential for assault. Therefore while the research summarised above provides a useful list of the potential health conditions which women experiencing IPV could present to an ambulance service with, further research will be required to determine for what conditions IPV patients utilise ambulance services.

Why IPV happens

The root causes of IPV are complex, variable and not entirely understood. Several theoretical models for understanding violence have been proposed, one major theory is the Ecological Model (see Figure 1), which categorises the key factors and determinants into four levels: individual, relationship, community and societal[1]. Each level describes the known factors which make the presence of IPV more or less likely. At an individual level factors include attitudes or beliefs that support or excuse IPV, the presence of anti-social behaviours or alcohol or other drug abuse, as well as personal history of abuse or witnessing abuse. The relationship level refers to factors such as belonging to a family or peer group who use, accept or excuse abuse. At a community level factors include a general tolerance for violence and lack of support from police or justice systems, as well as weak sanctions against people who use violence. At the societal level factors include greater disparities in wealth and power and cultural norms supporting inequality[1].

The Ecological Model has been used by The Council of Australian Governments (COAG), which represent the governments of each state in Australia, to create *The National Council's Plan for Australia to Reduce Violence against Women and their Children, 2009-2021*[4] (the National Plan), which aims to address the factors which lead to violence. The plan acknowledges that all forms of violence against women and their children is wrong, that the patient is never at fault, and that such violence is a fundamental violation of human rights. The plan focuses on prevention activities such as changing community attitudes and building resilience through enhanced collaboration and coordination across agencies encountering all forms of violence against women, and emphasises the disproportionate impact of sexual assault and family violence (including IPV). This

initiative has led to the development of individual actions plans by each state in Australia, all of which refer to and follow similar theoretical underpinnings, while being targeted towards their unique populations and contexts.

The Ecological model will therefore form part of this thesis as it forms the basis of the response from the Australian government to IPV[4]. Australian emergency ambulance services are all divisions of State or Territory Governments, and therefore operate under the auspices of the governments who have signed to the National Plan. This thesis discusses the National Plan and uses it as a basis for proposing the role of paramedics in responding to IPV. The Ecological Model therefore informed the conceptualisation of the issue of IPV and how ambulance services and paramedics should be responding to IPV.

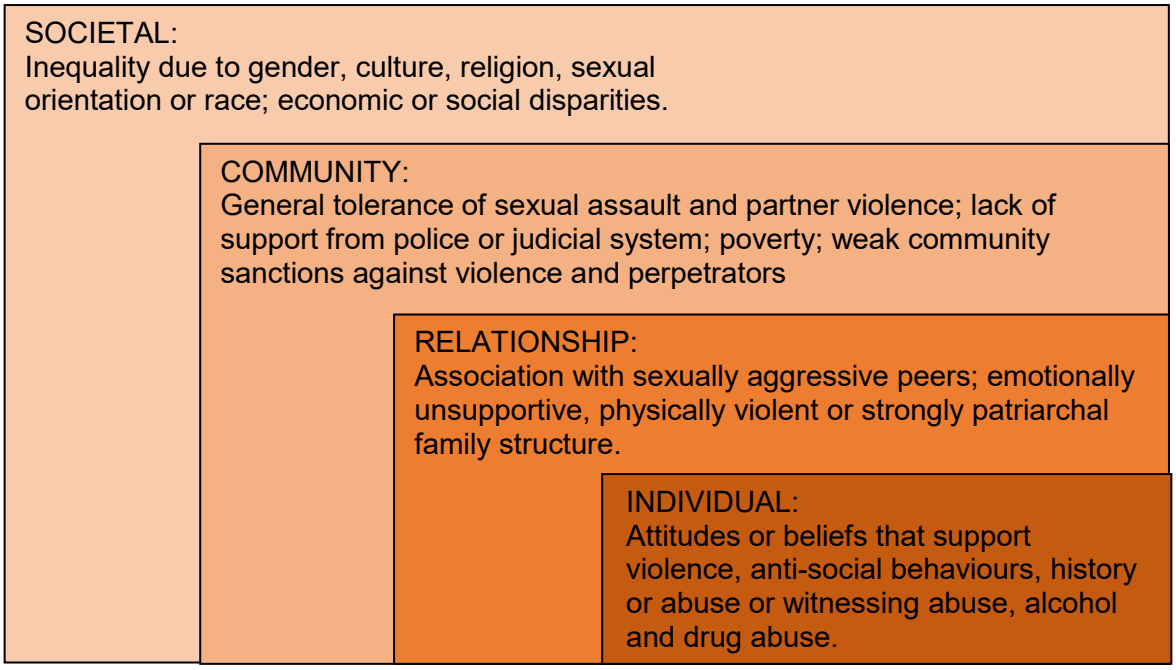

Figure 1. The Ecological Model of IPV (adapted from Krug *et al.* [1])

Risk and Protective Factors

Intimate partner violence is known to occur in all population groups[1], however there are certain risk factors which increase the likelihood of experiencing IPV which have emerged from several epidemiological studies[3]. Presented within the framework of the Ecological Model, risk factors at an individual level describe the characteristics of the victim, at the relationship level they describe the association between the victim and perpetrator, at the community level they refers to both the response and beliefs of a community to IPV, and the societal level they describe governmental controls and punishments for IPV. Table 3 summarises the known risk factors for experiencing IPV.

Protective factors for IPV have been far less studied than causes and prevention strategies, and as a result there is only partial evidence for many factors. Nonetheless there is evidence that women can benefit from such protective factors as completion of secondary school or higher education, marital duration more than 15 years, healthy parenting as a child, supportive and extended family structures, and belonging to a supportive social association or group[3].

Individual and relationship level risk and protective factors have some relevance to paramedic practice, as they may be present in individual cases or may be more prevalent in certain geographical areas, thus greater emphasis or resources can be put onto IPV recognition and prevention. Risk and protective factors alone may not indicate the presence of IPV in the prehospital environment, however when these factors are taken into account with other scene findings and the patient's presentation they may be useful for paramedics to increase suspicion. Therefore these factors may be useful to consider when exploring the prehospital response to IPV.

Table 3. Risk factors for IPV[1]

Individual	Young age Excessive consumption of alcohol Low socioeconomic status and education, Separated or divorced marital status[34], Exposure to childhood abuse Mental health disorders Substance abuse Pregnant status
Relationship	Educational disparities Marital dissatisfaction Male dominance Economic stress
Community	Acceptance of traditional gender roles Weak sanctions for perpetrators Poverty
Societal	Traditional gender stereotypes Social norms supportive of violence

The relevance of IPV to paramedics and ambulance services

The evidence for links between paramedicine and IPV

There is no published, robust data which estimates the frequency with which paramedics encounter IPV patients, however there is preliminary data which provides context.

While calculating the cost of IPV in the United States the Centre for Disease Prevention estimated that 95,000 ambulance visits are made annually in the US for domestic violence reasons[51]. This study only included call

outs related to a narrow definition of physical or sexual violence, and therefore would not include IPV related presentations which do not have an apparent physical component (e.g. mental health related call outs stemming from IPV). Therefore the figures may actually be much higher. A second study performed using a retrospective chart review of ambulance case sheets from a non-consecutive convenience sample in Boston, US found that 5.4% of call outs (*n*=876) were due to domestic violence, with an additional 10.8% being probable and 2.6% being suggestive of domestic violence[52]. The study was limited in that it only included women presenting with physical injuries, obstetric or gynaecologic complaints, or psychiatric complaints and the attending paramedic must have attributed the case to domestic violence in their case notes.
An online study of 480 Canadian paramedics found that 90% believed they had attended at least one domestic violence patient in the previous 12 months, with 65% reporting between 1 and 10 domestic violence related call outs, 24% reporting more than 10, and 10% reporting none in the past 12 months[53]. Again this study utilised participants who reported little significant prior education, and often relied on the paramedic's perception of the case due to there being no screening tool used.

Within Australia one self-reporting study of 50 Australian paramedics found that 90% believed they had seen at least 1 case of IPV in the last 12 months, with an average suspected number of cases being 3.66[54]. This study used a self-reporting measure which is likely to be inaccurate, as it required participants to recall cases from the previous 12 months and estimate the number of encounters. Furthermore the subjects also reported low levels of IPV education, and therefore they may only have noted the presence of IPV when it was openly disclosed by the patient, or where scene findings were highly suspicious, or they may have assumed based on their own suspicion. There is evidence that many cases of IPV are hidden, and women do not usually disclose without being asked[55] and therefore these figures could be underestimations. This is currently the only data that could be located from Australian samples, and despite its significant flaws it can still provide initial evidence that it is likely paramedics in Australia encounter IPV patients, though further research is required.

While the data discussed above indicates that paramedics believe they see IPV, it is difficult to draw firm conclusions due to the significant limitations. Further research using more appropriate methodology will be required before more reliable estimations can be reported.

In addition to estimates of the frequency of IPV related call outs, a US study has reported that women experiencing IPV are more likely to access emergency services than non-IPV patients[56]. This study included 461 women, the vast majority of whom were of African American decent, who lived in a predominantly poor area of the US so the generalisability of findings to Australian populations is unknown. This study did not specifically state the reason for the 911 call, and therefore it is also unknown if the women contacting emergency services were seeking emergency medical care, or other services such as police. The study concluded that women experiencing IPV do contact the emergency services and they could potentially perform screening for potential IPV patients.

Qualitative research conducted via telephone with a cohort of 1,057 US households found that 32.6% of participants thought the ambulance services was an appropriate resource for IPV patients[57]. This study also reported that 73.0% thought the police were an appropriate resource. While this study was conducted in a single US state and involved only participants who were willing and able to answer a telephone survey, it indicates that the public recognise the ambulance service as a potential resource for IPV related events. It was not made clear in the study under what circumstances the participants would contact ambulance services, for example if they themselves were the patient or if it was for a friend or family member, or if they would call for medical related reasons.

There is currently a lack of high quality evidence and so conclusions as to the prevalence of IPV patients in international or Australian ambulance cases is not possible. What is known is that paramedics believe they frequently encounter IPV patients, that IPV patients utilise the emergency services, and that the public believe paramedics are an appropriate resource provoke the need to further study the role and response of paramedics to IPV.

<u>The potential for paramedics to play a role in IPV prevention</u>

There is a growing body of international literature theorising that paramedics may often be the first, and sometimes the only prehospital agency, medical or otherwise, with which IPV patients have contact after an IPV related medical emergency[58-62]. Further contact made is often through other prehospital services such as police or social workers[60, 63]. Research indicates that the initial contact with IPV victims is crucial as it often affects how they interact with other health care providers and agencies and therefore can either promote or discourage further action[60]. Paramedics routinely assess patients in their homes, and are in a position to

witness signs of abuse that may not be present to other healthcare practitioners, such as at EDs or GP clinics. It may be the case that paramedics are in a unique and perhaps critical position when it comes to recognising the signs and symptoms of abuse and assisting patients to access care and support. Additionally if paramedics are encountering IPV patients and are not responding properly they may inadvertently cause harm, either by failing to recognise the potential for IPV thus missing an opportunity to refer them to support, or by responding to disclosure inappropriately and reducing the likelihood the patient will disclose again or seek help in the future.

Despite the potential for paramedics to play a significant role in the identification of IPV international studies have shown that paramedics generally have a low knowledge and understanding of the definition, protocols, and legal requirements of IPV[58, 60, 64, 65]. While there is some evidence that education and training can increase knowledge and improve management practices of IPV[58], no comprehensive studies with paramedics have been performed[66, 67]. A survey of health care providers revealed that they believe training and education are the most important step to improving their response to IPV[60], and both the American College of Emergency Physicians and the Australian Medical Association believe that allied health professionals should receive IPV education[68, 69]. The apparent lack of knowledge and prehospital screening raise concerns that IPV may go largely undiscovered or unreported in the prehospital setting, further impacting studies on the prevalence of IPV and potentially leading to missed opportunities to connect women experiencing IPV with care and support.

Both the WHO and the National Institute for healthCare Excellence (NICE) have recommended that front line healthcare workers should receive education in IPV[70, 71]. Paramedics were not specifically mentioned as front line healthcare workers, however this may be due to the lack of recognition of paramedics as a professional workforce as well as the scarcity and infancy of research which demonstrates paramedics could be a resource for women experiencing IPV. This thesis will assume that paramedics should be considered frontline workers, as there is preliminary evidence that IPV patients utilise the ambulance services, and that their response could impact on healthcare outcomes.

Recent Australian studies have identified the need for research into front line worker's education and training needs around IPV[72]. However no international or Australian study has examined the frequency of IPV in

ambulance patient care records, its impact on service delivery, or examined the impact that prehospital management has on patients and perpetrators[73].

The Australian prehospital context

In Australia there are eight emergency ambulance services operating, one in each state. Data from the 2011 Australian Census indicates there are approximately 10,000 emergency paramedics currently employed in state ambulance services, though this figure is expected to have risen since then. Most public emergency ambulance services now require new operational paramedics to complete an accredited Bachelor degree qualification. This means the majority of an Australian paramedic's formal education now occurs at university, though paramedics still commonly receive ongoing education through their employer. The Council of Ambulance Authorities, the peak body representing Australian and New Zealand ambulance services, has estimated that in 2015 there were approximately 6,300 paramedic students studying in Australia[74]. Perhaps unique in the healthcare field a paramedic's authority to practice is usually derived from their employer, as there is currently (as of printing) no registration of paramedics in Australia, though this is due to be implemented from 2018[75]. Therefore Australian universities and Australian ambulance services both need to take the lead in providing education for paramedics.

In regards to paramedic practice within Australia, the eight public emergency ambulance services utilise their own medical advisory committees, usually made up of representatives from paramedics, physicians, lawyers and other healthcare specialities, who agree upon guidelines which paramedics are expected to follow. Guidelines will typically define or list signs and symptoms which might indicate a condition, and then describe expected management, including both medication schedules and procedures to be performed. Each ambulance service maintains their own guidelines, however most services have similar if not identical treatment for commonly occurring acute and chronic health conditions which paramedics encounter.

The role of paramedics is evolving and largely dictated by the communities they serve, as it is the patient who decides that they need an ambulance. Therefore paramedics may encounter patients with health conditions (or contributing factors) for which there is no guideline, and the paramedic is expected to respond to the best of their ability and with the best intentions for the patient.

Australian emergency paramedics from public ambulance services will typically treat discovered health conditions as per their guidelines and only deviate where there is a clinical rationale or necessity. Usually any significant deviation would attract an internal review to ensure patient safety. It is therefore standard practice for Australian ambulance services to provide guidelines and the necessary education and training before paramedics will be expected to respond to health conditions not previously covered. Currently there is no comprehensive guideline which directs paramedics how to identify and manage IPV patients in the prehospital environment.

Rationale for this research

The rationale for this research stems from three premises:

1. That IPV is a common occurrence in society which has major impacts on the health and wellbeing of women;
2. That there is preliminary evidence that paramedics are likely to encounter IPV; and
3. That the response of paramedics to IPV patients has the potential to benefit IPV patients.

No previous research has attempted to define the role of paramedics in responding to IPV. Therefore there is a need to define how paramedics and ambulance services should be responding to IPV, examine the current preparedness of paramedics to manage IPV, and explore options for providing recommendations on IPV patient management for paramedics.

Research aims and objectives

This doctoral thesis, including published works, provides an overview of IPV within a paramedic context, as well as provides direction for the profession to improve their response to IPV patients. The overarching aim of the thesis is to explore the paramedic response to IPV. The research objectives of this thesis were:

1. To propose the theoretical role of ambulance services and paramedics in responding to IPV.
2. Examine the current preparedness of paramedics and paramedic students to respond to IPV
3. Explore the effectiveness of previously delivered educational interventions to allied healthcare practitioners (AHP)

4. Analyse the appropriateness of an educational outcome measure for use in Australian paramedic student educational intervention research
5. Create a guideline to direct the response of paramedics to IPV patients

Organisation and linking of chapters

This thesis is presented in 5 chapters, each providing further evidence and recommendations to the central aim which is to explore the paramedic response to IPV.

As there was very little research or guidance for the paramedic response to IPV from which to base further action Chapter 1 explores the expected response of Australian paramedics and ambulance services. This chapter theorises a response to IPV from paramedics and ambulance services in the form of four key actions. The remainder of this thesis expands upon one of these key actions, which is the need to provide greater education for paramedics to recognise and refer IPV patients.

Chapter 2 expands upon the educational needs of paramedics by reporting on the current preparedness of paramedics and paramedic students to respond to IPV patients and provides preliminary data to inform the creation of future educational packages. This chapter demonstrates that current educational activities are likely to be insufficient, and there is a need to improve education, specifically by introducing evidence based educational interventions.

Chapter 3 explores the current evidence for IPV educational interventions delivered to allied healthcare practitioners, and provides data from which future educational packages aimed at paramedics can draw upon. A key finding of this chapter is that the evaluation of educational interventions is problematic, which has made analysis of the various interventions difficult, and therefore there is a need to examine current post educational measures to see if they are appropriate for paramedic populations.

Chapter 4 provides the first evidence of the psychometric properties of an IPV educational intervention outcome measure when delivered to a cohort of paramedics. This chapter provides key data for the suitability of this tool for use with educational interventions in Australian paramedic and student paramedic populations.

Finally, Chapter 5 describes the creation of a guideline that defines a method for paramedics to respond to IPV patients. This chapter provides content for exactly what paramedics need to be educated to perform, and can be used to define the outcomes that educational packages must achieve.

This body of work will comprise the first attempt to explore the response of paramedics to IPV, and generates new research and tools from which paramedics and ambulance services can improve their response to IPV patients.

Chapter 1

THE PARAMEDIC RESPONSE TO INTIMATE PARTNER VIOLENCE

Chapter 1 –The Paramedic Response to Intimate partner violence

Declaration for Thesis Chapter 1

Publications linked to chapter
Sawyer S, Coles J, Williams A, Williams B. Preventing and reducing the impacts of intimate partner violence: Opportunities for Australian ambulance services. Emergency Medicine Australasia. 2015;27(4):307-11.

Declaration by candidate
In the case of Chapter 1, the nature and extent of my contribution to the work was the following:

Nature of contribution	Extent of contribution (%)
Lead author responsible for study design, literature review, data collection, and writing of manuscript. Responsible author who accepts overall responsibility for the publication	80%

The following co-authors contributed to the work:

Name	Nature of contribution
Brett Williams	Study design, editing of manuscript
Jan Coles	Study design, editing of manuscript
Angela Williams	Study design, editing of manuscript

The undersigned hereby certifies that the above declaration correctly reflects the nature and extent of the candidate's and co-author's contribution to this work.

Candidate's signature: [redacted] Date: 7th January 2018

Main supervisor's signature: [redacted] Date: 13th January 2018

Background and context

Violence against women, and in particular IPV, is a major health issue and leading international health agencies and governments have recognised the need for action from all healthcare practitioners encountering IPV patients[4, 71]. In 2009 the Australian government adopted the National Plan[4], which identifies the major causes and impacts of violence against women in Australia and stipulates actions aimed at preventing and reducing its occurrence. Intimate partner violence is recognised in the National Plan as a significant form of violence against women, and one that requires an individual and tailored response.

A key argument made throughout the National Plan is the need for increased action and collaboration between a wider variety of agencies which encounter IPV patients. There is little high quality evidence available in Australia, however the available literature indicates that paramedics may frequently encounter IPV patients, as per studies using self-reporting measures, case reports, and emergency service call data[54, 56, 58, 60, 62, 76]. Therefore it would be useful to review the National Plan with consideration for how paramedics and ambulance services should be responding to IPV.

Paramedics in Australia currently have no national regulatory body and receive their authority to practice directly from the ambulance service they are employed by. The ambulance service itself is responsible for ensuring paramedics remain competent and for providing continuing medical education (CME). Therefore it is not paramedics but ambulance services that are responsible for providing the strategic oversight of any change in evidence-based clinical practice, such as would be needed if paramedics were to adopt new guidelines for responding to IPV patients.

As an agency overseen by state government each of the Australian ambulance services should ensure that they are responding appropriately to IPV based on the requirements of the National Plan and it would be useful to define the role of Australian ambulance services in reducing violence towards women. This chapter adds to the literature as it provides a discussion of what the potential role of paramedics and ambulance services should be in responding to IPV. As the theoretical content for this chapter is drawn from the National Plan the results are consistent with the larger strategic priorities of the nation, and are based on high quality evidence. The evidence presented in this chapter can be used to direct the activities of ambulance services and paramedics in Australia, so that they are operating in accordance with the strategic priorities of the National Plan. This will help define the role of paramedics and ambulance services in responding to IPV.

Aims of this chapter

To propose the theoretical role of ambulance services and paramedic in responding to IPV.

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ORIGINAL RESEARCH

Preventing and reducing the impacts of intimate partner violence: Opportunities for Australian ambulance services

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Abstract

***Background*:** Violence against women is pervasive worldwide, and a high proportion of the most damaging violence is perpetrated by male intimate partners. The Australian government is committed to action to prevent such violence; however, strategies require input and collaboration from all agencies engaging patients, including ambulance services. To date no Australian ambulance service has published comprehensive guidelines or strategies to improve health outcomes for intimate partner violence patients in line with national strategies.

***Objective*:** To propose key actions for Australian ambulance services to undertake to reduce the impacts of intimate partner violence in line with national strategies.

***Methods*:** We reviewed the Australian government's National Plan to reduce violence towards women and its supporting literature, and created key actions for Australian ambulance services.

***Results*:** Our review has yielded four key actions that Australian ambulance services could undertake immediately for the benefit of intimate partner violence patients. Actions include collaboration with external agencies, education, data collection and championing values promoting zero tolerance of violence towards women.

***Conclusions*:** Australian ambulance services are currently underserving intimate partner violence patients and must undertake immediate action. Successful strategies to address knowledge and policy gaps will require significant input and guidance from key organisations, including advocacy groups, police and EDs. It is likely that EDs will need to take the lead in creating comprehensive policies and guidelines from which ambulance services can derive their own policies. Failure to address this practice gap might result in paramedics becoming a barrier for intimate partner patients to receive appropriate care and support.

Key words: *ambulance, domestic violence, family violence, prehospital emergency care.*

Key findings

- Preventing intimate partner violence (IPV) requires action from all agencies engaging IPV patients, including ambulance services.
- Due to the current lack of action from ambulance services, paramedics may have become a barrier for IPV patients to access help and care.
- Partnering with key domestic violence agencies and EDs will allow for comprehensive policies and procedures to be created to effectively respond to this patient group.

Introduction

Violence against women appears in every culture and society worldwide[1] and has been identified as a major health issue requiring immediate action by several leading international and Australian agencies.[2–4] Although the relationship of the patient to the perpetrator and their respective sex can vary, current statistics show that the vast majority of the most damaging violence is perpetrated by males against females within an intimate relationship,[5] and as such intimate partner violence (IPV) is often the subject of the majority of domestic violence research. IPV refers to abuse transpiring between people who are, or were formerly, in an intimate relationship and can take the form of economic, psychological and emotional abuse, as well as controlling behaviours and physical or sexual violence.[5] The majority of current research and action focuses on IPV within a male perpetrator–female patient context,[6] as whereas IPV and violence towards

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women does occur in alternative settings, often the root causes, prevalence, and impacts are fundamentally different.[5] Therefore, the present paper will address violence against women within the context of a male perpetrator–female victim IPV context.

Accurate measurement of the prevalence of violence against women and IPV is difficult and controversial, largely because of definitional discrepancies and significant disclosure barriers preventing accurate recording.[5] The World Health Organization (WHO) estimate that between 10–69% of women will experience being physically assaulted at some point in their life.[5] Within Australia the 2012 Personal Safety Survey found that 17% of women over the age of 18 years had experienced violence and 25% had experienced emotion abuse from a partner since the age of 15 years; results that were consistent with the 2004 survey.[7] Figures also show that on average in Australia one women is killed each week by a current or past male intimate partner.[8] Therefore, IPV is a frequent and highly pervasive occurrence in Australian society that should be preventable.

The impacts of IPV affect the patient, other family members and entire communities.[5] Women exposed to IPV report poorer overall health, experience difficulties in accessing health services, are more likely to engage in risky behaviour, such as drug and alcohol abuse, and have poor sexual and reproductive health outcomes[5] and have a greater risk of developing mental health problems, especially depression and anxiety.[9] Visible physical injuries are not always present and many times symptoms manifest as general medical or physical health complaints, including chronic pain.[10] Likewise children are often present in IPV incidents and have been shown to suffer severe negative consequences as a result of its occurrence.[5] In Victoria, IPV is the leading preventable contributor to death, disability and illness in women aged 15–44 years; and it accounts for 8% of the burden of disease Australia wide, double any other risk factor.[11] The economic cost of IPV in Australia in 2009 was estimated as $13.6 billion, with the majority of costs borne by patients, and figures expected to rise in the future.[12] Therefore, IPV has a significant impact on the physical, mental and economic health of Australian society.

In 2009, the Australian government adopted a *National plan to reduce violence towards women* (National Plan),[2] which has since been updated with a Second Plan.[13] The National Plan includes a comprehensive review of the literature from which the authors identify the major causes and effects of violence towards women in Australia, stipulate actions to prevent and reduce violence and provide outcome measures to gauge progress. A key argument made throughout the National Plan is the need for greater collaboration between agencies that engage domestic violence patients. There is little evidence from Australian sources regarding the frequency that paramedics encounter IPV and the impact of paramedics on patient health outcomes. However, the available Australian and international literature suggests that IPV is frequently encountered by ambulance services,[14–17] and paramedic interactions with patients and perpetrators can impact both prevention and harm minimisation.[18] Therefore, Australian ambulance services will need to ensure that their policies and practices are updated to reflect the requirements of the National Plan.

There are eight ambulance services operating in Australia; one in each state and territory. Each service differs in the skill sets of employees; however, each maintain their own clinical practice guidelines that their paramedics are obliged to adhere to. Responsibility for the maintenance of current and introduction of new clinical guidelines resides with ambulance services, as opposed to paramedics. This is largely because of the lack of national registration for paramedics where there are no formal requirements for continuing education programmes or points systems. Most services now require that staff hold an occupational related university undergraduate degree or complete a conversion course. Each service strives to provide best practice care based on contemporary evidence-based health care; however, to date, we are unaware of any comprehensive pre-hospital guidelines or strategies to improve health outcomes for IPV patients within Australia, despite previous calls for action.[19] To define the role of Australian ambulance services in reducing violence towards women, we reviewed the National Plan and its supporting literature[6] with the aim of proposing key actions to improve ambulance management of IPV patients in line with the strategic goals of the National Plan.

Opportunities for Australian ambulance services

Australian ambulance services strive to provide evidence-based care and to continually improve patient outcomes. Although proven strategies for ambulance services to positively impact IPV await development, our review has yielded four key actions that Australian ambulance services could undertake immediately to engage with the strategies of the National Plan. Although each action could theoretically be undertaken in isolation, their interdependent nature suggests their individual impact would be amplified when applied together.

Action 1: Partner with external agencies

The National Plan has made coordinated input and action from all relevant agencies a strategic priority. Researchers have previously reported that paramedics are one of the first points of contact for IPV patients[20–22] and that referral to advocacy groups is an important step to prevent further violence.[6] Therefore, as an agency that engages IPV patients, ambulance services should provide their workers with the tools to be able to recognise and refer patients to appropriate external agencies, such as police or advocacy groups. This can only be achieved in the context of ambulance services by partnering with these agencies so that they might provide guidance for the creation of paramedic guidelines in line with their own policies and procedures.

Three essential partnerships for ambulance services we identified are between police, advocacy groups and EDs. These partnerships will provide

clear guidance for ambulance services to educate their staff around the appropriate use of available services for IPV patients. For example, police are the agency that provide security for patients and their children and paramedics must be able to make an appropriate referrals to ensure patient safety. Likewise advocacy agencies that provide ongoing support for patients will need to guide the development of an educational programmes and referral procedures, which stipulate what services are available and how to put patients in contact with them. Although it might be found that enabling paramedics to liaise directly with advocacy agencies is beneficial to patients, traditionally the vast majority of patients will be transported to hospital EDs. Therefore, EDs will need to ensure they have appropriate policies and staff training in place to effectively receive IPV patients and continue their care. Indeed it could be suggested that the paramedic role in responding to IPV patients is to act as an extension of the ED. Therefore while paramedics do need the ability to provide a stand-alone service to patients (particularly when patients are not transported), in this context it is EDs that would need to drive innovation and policy development, from which paramedic procedures could be generated.

Although collaboration between a large number of agencies might be problematic, we suggest that the allocation of a specific workgroup with representatives from each agency will aid administration and ensure cohesive integration. We believe that this action should be the first that is undertaken as actions 2–4 are reliant on appropriate guidance from the external agencies.

Action 2: Educate paramedics in IPV

The National Plan calls for greater education of frontline domestic violence workers as a priority action. International studies have shown that paramedics generally have a low knowledge and understanding of the definition, protocols and legislation of IPV.[17,20–23] The deficiency of education for paramedics on IPV raises several concerns. First, untrained paramedics might be less likely to recognise the signs of IPV and refer patients to the appropriate care, resulting in unreported occurrences of IPV, further trivialising its prevalence and obstructing greater prevention expenditure. This is of particular importance as screening of women for IPV in hospitals is currently only advised where specific clinical criteria are present.[18] Paramedics often assess patients in home environments and as such are in a unique position of being able to witness and handover clinical symptoms and other evidence to hospitals to ensure potential IPV patients are screened. Current research indicates that identification of IPV in hospitals both in Australia and internationally is generally low,[24] further emphasising the need for paramedic education. Second, inadequately trained paramedics might inadvertently cause harm to patients through improper reactions, clinical management or by failing to refer to definitive care. A US study found that almost one in four women who called an ambulance because of domestic violence was not transported.[25] Because of this, paramedics might have become a barrier to definitive care, as without paramedic recognition and referral, IPV patients could remain in an unsafe or violent environment with no record of their encounter being made available to the appropriate agencies.

An education programme should provide paramedics with knowledge, skills and tools to accurately recognise and refer IPV patients, as well as perform supporting tasks, such as evidence gathering, documentation and injury management. Programmes should include education surrounding the definition, causes, myths, impacts, risk factors, health outcomes, referral pathways, best practice treatment methods and legality of IPV.[18] Education could take place initially in a pre-employment context, such as a university as most Australian paramedics are currently required to hold a university degree to gain employment. However, education programmes should also be made available to currently employed paramedics and allow for continuous refreshing and updating of content. Currently in Australia, as paramedics are not a registered professional body, continuous professional development is generated and organised by employers; however, it is likely that external agencies could deliver training content within the context of each individual ambulance service's training programmes. Additionally, education programmes might benefit paramedics by providing an appropriate forum to address vicarious trauma and exposure to often traumatic and violent experiences.

Although we believe that arguments to support education of paramedics is sound, there is likely to be significant barriers to introducing education in the short term. First, we could not find any validated educational packages, referral guidelines or assessment scales aimed at paramedics. Furthermore, there is little high-quality evidence that education of healthcare professional groups leads to improved behaviours or benefits to patients,[26] therefore further research will be required surrounding beneficial educational programmes. Second, it is currently unknown if there are any significant deficiencies in workforce attitudes towards women, which have been shown to affect behaviours and might jeopardise outcomes.[27] Third, it is likely that there will be a significant cost associated with widespread training of paramedics that might require state governments to allocate special funds. Nonetheless, there are several accredited educational programmes currently available through several sources throughout Australia. We suggest through effective partnerships suggested in action 1 it would be possible to tailor an effective programme aimed at paramedics and other prehospital practitioners.

Action 3: Collect meaningful data

The frequency of encountering IPV and its impact on ambulance availability and paramedic well-being is poorly documented and understood. There are no robust studies that document the frequency with which paramedics encounter IPV, and no Australian studies have examined the impact of IPV on ambulance service delivery or the

impact of paramedic management on patient health outcomes. Indeed it does not appear to be possible with current data collections to make any precise estimation of paramedics encountering IPV as accurate data are not currently collected by any agency, ambulance services included, which we could identify. Nonetheless, the available research, although rudimentary, does indicate that paramedics frequently encounter IPV cases. Sawyer *et al*. found that 90% of paramedics self-reported encountering at least one case of suspected IPV in the last year (average number of cases was 3.66).[17] Mason *et al*. reported similar findings as did the National Centre for Injury Prevention and Control in the USA.[15,16] Additionally, Datner *et al*. showed that IPV patients are more likely to arrive at hospital via ambulance than non-IPV patients.[14] Each of these studies was limited by small sample sizes and their use self-reporting methods with often uneducated populations.

The National Plan calls for the initiation of targeted data collection to improve the response to IPV as a priority action, echoing statements made by the WHO,[18] which would appear completely justified considering the known prevalence and impact of IPV in society. Indeed, standard practices to combat virtually every other cause of morbidity and mortality call for improved data collection to allow for proper estimation of prevalence and evaluation of reduction efforts. It is likely that IPV data collection by paramedics will require a standardised definition of IPV, validated measurement instruments and the ability to include associated patient survey findings. Documentation requirements should be determined largely by external agencies that require access to this information for the purposes of research and patient care. Further research will be required to assess if data collection should include targeted screening for IPV by paramedics. Large-scale collection of such data will allow for analysis of the prevalence and frequency of encountering IPV in paramedic practice, patterns of injury, demographic indicators, identification of at risk groups, impact on ambulance service delivery and evaluation of management outcomes. We suggest that useful outcomes from such data sources can be further realised through data sharing with other agencies, provided any privacy issues are adequately addressed.

Although improved data collection is an essential component of any strategy, there are significant barriers for ambulance services to implement this action in the short term. First, as stated above, there is a general lack of IPV education for paramedics that will likely result in low suspicion, questioning and discovery. Therefore, appropriate education will need to occur before data collection is improved. Second, patient care records used by paramedics are often not designed to capture the patient survey factors or diagnoses indicative of IPV. Therefore, modifications will need to be made that will require considerable time and cost. Third, the traditional barriers for patients to report IPV (e.g. fear, shame, normalisation of violence)[5] might affect the willingness of the patient to disclose to health professionals, such as paramedics, especially where the paramedic does not understand how to approach the topic. Last, there is a need for standardised definitions and a central repository for domestic violence-related data, which will allow for coordinated research and patient management between agencies.

We suggest that data collection is the most important action in terms of ensuring that any actions undertaken by ambulance services or paramedics does not inadvertently cause harm to patients. Likewise a key component of data collection will be validation of any potential education or recognition and referral programmes, which would benefit from data matching with external patient care records (particularly ED records) to ensure paramedic diagnosis is accurate.

Action 4: Champion values promoting zero tolerance of violence against women

It is essential that ambulance services instil within their own employees an understanding of, and adherence to, the tenants supporting strategies to reduce violence towards women. As outlined in the National Plan, attitudes of health-care providers are pivotal to the success of strategies, as attitudes can influence willingness to adopt new behaviours. This is of particular importance when considering the role of paramedics who interact with IPV patients, as patients need to feel that anyone to whom they disclose will provide them with caring and supportive treatment. This can only be achieved by ensuring paramedics hold three core values: (i) violence against women is not acceptable; (ii) patients will be cared for and their rights upheld; and (iii) perpetrators of violence against women will be held accountable for their actions.[6] Research has shown that the attitudes and beliefs towards IPV of health-care practitioners can be a significant barrier to disclosure for patients;[28] however, we could not find any research that examined the attitudes of Australian paramedics towards violence against women. Nonetheless, for IPV patients to feel comfortable disclosing violence to paramedic, they will need to believe that paramedics understand and act in accordance with these tenets. Paramedic education should aim to improve paramedic beliefs and attitudes towards IPV victims to ensure they are aligned to such tenants, and the adherence to these values should be well advertised to the community served.

This might be a significant barrier to the overall success of any ambulance service strategy to improve their response to IPV. It has been shown that attitudes can effect behaviour, and therefore failure to achieve this action might jeopardise the success of strategies to improve the ambulance response to IPV patients.

Conclusions

IPV is a common occurrence within Australia and has a serious impact on individuals and society. It is clear that early recognition and referral is essential for patients to reduce trauma and minimise the economic costs associated with IPV. Australian ambulance services could play a key role in advancing reduction strategies through improving their ability to respond to IPV patients. However, actions from ambulance services will be heavily reliant on collaboration and

guidance from external agencies, such as advocacy groups, police and EDs, who should be emphasising the need for engagement from the prehospital sector. The actions identified in this article represent the first steps to laying a foundation from which ambulance services can make a significant and meaningful contribution to the holistic violence reduction strategy set forth in the National Plan. Hopefully, with concerted effort, paramedics will not become a barrier for this patient group receiving adequate care. Although this article focuses on the role of ambulance services, many other allied health specialities, and indeed the general population, might find benefit from performing similar evaluations.

Author contributions

SS: author. JC: subject matter expert, editor. AW: subject matter expert, editor. BW: editor, PhD supervisor.

Competing interests

None declared.

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Principal findings and conclusions

This study identified four key actions which ambulance services and paramedics could undertake to improve their response to IPV patients. As discussed in this article it is the ambulance service that provide the authority to practice to the paramedics employed by them, and therefore these actions should be undertaken by the ambulance service. The actions identified in this article are consistent not only with the National Plan, but also with leading international research and recommendations on the prevention of IPV and violence against women[8, 70, 71, 77].

Forming collaborative partnerships between agencies encountering IPV patients is a key action as this will assist in creating a holistic and coordinated response to IPV and will allow the remaining action points to be achieved. The introduction of specific education for paramedics is essential as without effective education it is unlikely paramedics will be responding properly, which may lead to failure to recognise the signs of IPV, resulting in missed opportunities to refer patients to care and support. The introduction of education would be instrumental in improving the collection of meaningful data, which could be used to further improve the response of paramedics and also provide unique and additional data sources for family violence research. Championing the values of promoting zero tolerance of violence against women is an important step as it is the ambulance service itself that largely directs paramedic actions and therefore by promoting the ambulance service as a resource for women and by ensuring that paramedic staff hold the appropriate values it will enhance all efforts to improve their response to IPV.

It should be noted that the role of meaningful data is pivotal for the overall response as it can inform ongoing strategies to ensure actions are effective. One issue that may impact on the ability for paramedics to collect meaningful data will be their ability to code data into patient care records. No previous research has examined if the documentation procedures of paramedics in Australia actually allow them to record findings from IPV in a useful manner. Most Australian ambulance services make use of an electronic patient care record system called the Victorian Ambulance Client Information System (VACIS), with the majority of the remainder using paper based records. It is currently unclear if these methods will allow data to be coded in a useable manner, and there is the potential that reporting procedures will need to be reviewed and adjusted to allow the encoding of the necessary information, such as observed signs and symptoms of IPV and other scene findings. Future research should establish the best methods for paramedics to report data so that it can inform future practice.

The role of primary healthcare providers, particularly allied health, is largely centred around the recognition and referral of IPV patients to the appropriate care and support[8, 77]. The interruption of the cycle of violence, by connecting patients to support and advocacy groups, is seen as a key strategy in reducing the scope and magnitude of damage from IPV[71]. Allied healthcare professions are beginning to improve their capacity to do this, however the barriers to recognition and referral are high[78]. To improve responses, there is a need to generate and deliver educational interventions, create recognition and referral tools and pathways, provide clear organisational policies and procedures and ensure that staff have adequate resources available to achieve desired outcomes. There is currently a lack of evidence for the effectiveness of programs aimed at improving the response of individual organisations, which may be due to the complexity of the task combined with difficulty accessing specialist services capable advising organisations how to build their capabilities[67]. There is no published evidence for specific strategies that ambulance services could employ, and therefore they should ensure they engage experts and preferably record their attempts for further study.

Due to the nature of paramedicine in Australia and the ambiguity of their role in responding to IPV, the implementation of organisational wide programs to improve their response to IPV may prove a difficult task. Such programs may require significant monetary outlay, making adoption less economically attractive until either governmental requirements are initiated, or more compelling evidence for the effectiveness of such programs and their links to improved patient healthcare outcomes becomes available. Likewise there is currently little evidence that paramedics themselves are able to accurately and effectively recognise and refer IPV patients[61], and no published evidence which shows paramedic actions can impact patient outcomes. Therefore while such actions may be theoretically appropriate, further research should attempt to provide evidence for the benefits to patients of expanding paramedic workforce capabilities.

Based on the findings of this study, while ambulance services need to modify their activities to be more consistent with the National Plan, further research is needed to provide evidence for the most appropriate methods and strategies. This chapter has added to the literature by proposing a theoretical role for ambulance services and paramedics, and by providing priority actions to improve their response to IPV patients. As stated above the actions centre around improving the ability for paramedics to recognise and refer IPV patients, by improving organisational structures and resources. While there are numerous family violence organisations that ambulance services could partner with to assist in collecting data and promoting a culture which does not

support violence against women, there is currently little to no evidence from a paramedic specific context which can be used to guide the education of paramedics. In particular with regards to the ability of Australian paramedics to recognise and refer patients there is no published data on their current preparedness for this activity, including their level of knowledge and willingness. Likewise there is no published evidence to show that education is effective in Australian paramedic populations. Therefore the following chapters will examine the educational needs of paramedics, including an analysis of their current preparedness (Chapter 2), the evidence for effective educational interventions (Chapter 3) and their measurement (Chapter 4), and a guideline which can inform the content of the educational packages (Chapter 5).

Chapter 2

THE PREPAREDNESS OF PARAMEDICS TO RESPOND TO INTIMATE PARTNER VIOLENCE

Chapter 2 – The preparedness of paramedics to respond to Intimate partner violence

Declaration for Thesis Chapter 2

Publications linked to chapter
Paramedic students' knowledge, attitudes and preparedness to manage intimate partner violence patients. Prehospital Emergency Care. 2017;21(6):750-760.

The knowledge, attitudes and preparedness to manage intimate partner violence patients of Australian paramedics – A pilot study. Australasian Journal of Paramedicine (under review), 2017.

Declaration by candidate
In the case of Chapter 2, the nature and extent of my contribution to the work was the following:

Nature of contribution	Extent of contribution (%)
Lead author responsible for study design, literature review, data collection, statistical analysis and interpretation, and writing of manuscript. Responsible author who accepts overall responsibility for the publication	80%

The following co-authors contributed to the work:

Name	**Nature of contribution**
Brett Williams	Study design, editing of manuscript
Jan Coles	Study design, editing of manuscript
Angela Williams	Study design, editing of manuscript

The undersigned hereby certifies that the above declaration correctly reflects the nature and extent of the candidate's and co-author's contribution to this work.

Candidate's signature: [redacted] Date: 7th January 2018

Main supervisor's signature [redacted] te: 13th January 2018

Background and context

The healthcare sector's response to IPV has been framed in an educational context, meaning that it is hoped that by improving the education of practitioners to respond to IPV long term goals such as an overall reduction on violence may be possible[8]. Specifically education should improve the ability of healthcare practitioners to increase early recognition of abuse, and be able to provide referrals to support agencies[79]. Screening by healthcare practitioners is often not performed effectively due to barriers such as lack of knowledge and training, confidence and preparedness[55], even though women are generally accepting of screening by healthcare professionals[55]. Therefore the knowledge, attitudes and preparedness (KAP) of practitioners to recognise and refer patients can have a pivotal role in the overall success of their response to IPV.

Most new paramedics in Australia are now required to complete a three-year undergraduate degree in paramedic science, however the standard curricula does not currently include mandatory education on IPV. Furthermore currently qualified paramedics report very low rates of IPV education and training[54, 62, 80]. Training for paramedics could begin in the undergraduate degree and be continued throughout their career with educational packages delivered to practicing paramedics through CME-style interventions. The creation of such educational packages would benefit from examination of the current KAP to manage IPV patients of Australian paramedics and paramedic students.

The Physician REadiness to Manage Intimate partner violence Survey (PREMIS) and the version created for healthcare students called the Modified PREMIS are highly cited and comprehensive tools which can be used to measure KAP to manage IPV[81]. The PREMIS tools can be used to measure the education needs of a cohort, and can be used as a post-test for educational interventions, and therefore may be useful to measure the current KAP of Australian paramedics and paramedic students.

This chapter will add to the literature by delivering the Modified PREMIS to paramedics and paramedic students, providing the first data on paramedic preparedness to manage IPV patients. It is important to measure the current preparedness of both students as well as practitioners as the education of paramedics should be initiated at university and continued throughout their practice to ensure capable practitioners at all stages of their career. Data will be reported on in two separate articles, the first examining paramedic students from two Australian universities and the second currently practicing Australian paramedics.

Aims of this chapter

To measure the current KAP to manage IPV of Australian paramedics and paramedic students.

EDUCATION AND PRACTICE

PARAMEDIC STUDENTS' KNOWLEDGE, ATTITUDES, AND PREPAREDNESS TO MANAGE INTIMATE PARTNER VIOLENCE PATIENTS

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ABSTRACT

Background: Intimate partner violence (IPV) refers to abuse transpiring between people in an intimate relationship. Intimate partner violence is a leading cause of morbidity and mortality for women that paramedics frequently report encountering and yet paramedics rarely receive formal education or training to manage. The response of paramedics to IPV is likely to be directed by their individual knowledge, attitudes, and preparedness; all of which are currently unknown. This study aimed to measure paramedic students' knowledge, attitudes, and preparedness to manage IPV patients, and provides baseline data to inform the development of contemporary curricula. **Methods:** We surveyed a cohort of paramedic students from two Australian universities using the Modified Physician REadiness to Manage Intimate partner violence Survey (PREMIS). Internal consistency of previously identified scales was calculated and multiple linear regression was used to measure the association between previous training, knowledge, attitudes, and preparation. **Results:** We received 260 surveys (80.5% response rate). Results show that actual knowledge, perceived knowledge, and preparedness to manage IPV patients were low. Students with previous training reported higher perceived knowledge ($p < .05$) and preparedness ($p < .01$). Participants reported low self-efficacy, confidence, and preparation to manage IPV patients and demonstrated mostly neutral attitudes toward women and patients. **Conclusions:** Results indicate students require increased IPV education. Education should improve knowledge and preparedness to recognize and refer IPV patients, as well as change neutral and inappropriate attitudes. Incorporating such education and training into the paramedic curricula may improve the preparedness of practitioners, resulting in an improved response to IPV patients. **Key words:** intimate partner violence; paramedic; emergency medicine; medical education

PREHOSPITAL EMERGENCY CARE 2017;21:750–760

INTRODUCTION

Intimate Partner Violence (IPV) is a significant contributor to morbidity and mortality for women worldwide.[1] Defined as abuse transpiring between people in an intimate relationship, it occurs when one partner uses physical, sexual, or psychological abuse to control another.[2] While IPV can occur in all forms of relationships, the vast majority of the most damaging violence is perpetrated by men and borne by women[3] and the root causes of IPV occurring in this context is theorized to be distinct from other forms of violence.[3] Due to the disproportionate impact and distinctive causes the majority of research has focused on the male-perpetrator, female-patient context. This does not imply that IPV occurring in other contexts is less damaging or less important, but rather that efforts to reduce violence must be targeted toward their unique etiologies.

The most recent Australian figures report that one in six women will experience physical or sexual violence and one in four will experience emotional abuse

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from a current or past partner in their lifetime.[4] In contrast only 5% of males over the age of 18 report experiencing physical or sexual violence, and 14% emotional abuse, from a current or past partner.[4] These figures are relatively consistent with those from other developed countries, including the United States.[5] Intimate partner violence can have a significant impact on the physical and mental health[6] and has been associated with detrimental effects to children and indeed society as a whole.[3,7]

Governments worldwide have committed to the elimination of IPV,[8] and leading health organizations have recognized the need for a priority response to IPV from all healthcare agencies, particularly through increased and improved education and training.[9,10] There is a lack of published reliable data showing the frequency with which paramedics encounter IPV patients. Nonetheless, international paramedic survey data suggests that paramedics believe they frequently encounter IPV.[11–13] As front-line healthcare providers paramedics are often one of the first points of contact with the healthcare system for many IPV patients[14] paramedics are in a unique position to recognize and refer patients to ongoing care and support and potentially even positively impact health outcomes.[10]

Despite their potential as first responders, it is rare for paramedics to receive any formal education or training in the appropriate recognition and referral of IPV patients.[12,14] Cohorts of students may receive education on an ad hoc basis, or from other sources, but this is not consistent. Furthermore, while paramedics could "assume" an appropriate response and recognize and refer IPV patients to care and support based on their own initiative, there are no comprehensive, evidence based guidelines to direct their management of these patients. Therefore, when paramedics do encounter IPV they are likely to manage patients based on their individual knowledge, attitudes, and preparedness (KAP), which have never been reported on. While there is no research available specific to paramedics, by drawing on research conducted with other healthcare professions it is clear that the knowledge, attitudes, and preparedness of healthcare practitioners can influence their response to IPV.[16–18] Recent Australian research has identified the need for research into front line healthcare worker's education and training needs around IPV.[18]

In Australia emergency ambulance services now require new operational paramedics to complete an accredited bachelor degree qualification. This means the majority of an Australian paramedic's formal education now occurs at university, which would be the optimal time to initiate IPV education. Nonetheless, specific education on the identification and management of IPV patients is currently not part of the standard Australian paramedic curricula (though may be offered as part of standalone educational interventions which is anecdotally rare). Additionally no Australian ambulance service utilizes comprehensive, evidence based guidelines to direct paramedic management of IPV patients, nor are we aware of any IPV educational interventions teaching the recognition and referral of IPV patients having been delivered to Australian paramedics. A description of the current levels of KAP to manage IPV patients of paramedic students would inform the development of educational packages to recognize and refer IPV patients.

This study aims to measure the current KAP of Australian paramedic students. Results will provide the first comprehensive data available anywhere in the world for paramedic student populations and will inform the development of the paramedic curricula with respect to IPV.

Methods

Participants

Recruitment was performed between September and December 2015 at two Australian universities, which are identified as University A and University B. Participants consisted of students in the first, second, and third years of a three-year paramedic bachelor degree. University A additionally offered both a single paramedicine degree as well as a double degree in nursing and paramedicine; we used the variable "course" to delineate the difference.

Recruitment was performed following the final lecture scheduled for the year. All students attending the lecture were eligible to take part in the study. The lead author of this study, who was unknown to students briefed them and then offered a paper-based or online survey accessible from the internet from any device (e.g., smart phones, laptops, tablets). Students were able to leave completed surveys in the lecture theatre for collection. Participation was voluntary and anonymous and study authors were blinded to which students completed the survey.

Instrument

This study used The Physician REadiness to Manage Intimate partner violence Survey (PREMIS), which was developed to measure the KAP of United States physicians.[19] The authors suggested that the tool could be used to measure the education needs of a cohort, as well as a post-test for educational interventions. Since its creation, it has been used extensively and shown good validity and reliability for many of its internal sub-scales.[19,20] The tool has since been altered for use with allied healthcare students and renamed the

Modified PREMIS and has been tested in the US with nurses, social workers and dentists, again demonstrating good psychometric properties.[21,22] We could not locate any studies using the PREMIS with Australian healthcare student cohorts.

While the PREMIS surveys are currently among the most comprehensive instruments available, they are limited in in their ability to measure clinical readiness, as they lack any skills based assessment. Additionally, the psychometric properties of the Modified PREMIS have not been tested within Australia or with paramedic students, which is the setting for this study, however previous validation with US nursing populations[21] provides evidence for preliminary suitability in this instance.

This study utilized the Modified PREMIS[21] making slight alterations by changing the wording of "health care practitioner" to "paramedic," and removing 4 questions that dealt with elder and child abuse as we focused on IPV rather than family violence in general. These modifications are unlikely too, but may impact on the validity and reliability of the instrument.

The instrument measured background demographics, perceived and actual knowledge, perceived preparation to manage IPV patients, attitudes, and personal IPV experience in a 5-part, 85-item survey. Items were answered on a combination of multiple choice and 7-point Likert scales. Note that while the Modified PREMIS reported on 6 attitude scales, we were only able to report on 5 as the four omitted questions resulted in the "legal requirements" scale having only 1 item.

We used the same scoring method as described by Connor et al., in their original PREMIS paper,[19] with changes to reflect omitted questions. As per Connor et al.,[21] we created a dichotomous variable named "previous IPV training," which categorized participants into those with any previous training (the "some" group) and those without any previous training (the "none" group). In addition, we created a dichotomous variable named "lifetime IPV experience" that categorized participants into those who have experienced IPV personally or witnessed it in their family, and those who had not. Both variables were used to measure for an effect on outcome scores for knowledge and preparedness.

Data Analysis

The lead investigator encoded responses directly into SPSS version 18[23] that was used to conduct analysis. Random checks of 10% of the surveys ($n = 26$) were conducted by one of the investigators to ensure accuracy without uncovering any errors. Descriptive statistics were reported and internal consistency was measured using Cronbach's alpha coefficient for each previously identified scale. We used multiple linear regression to measure the association of previous training with actual knowledge, perceived knowledge, and perceived preparation while controlling for potential confounding variables. Additionally, we examined high and low percentage correct answers on each item to identify any commonly incorrect answers. Where participants omitted questions resulting in missing data we used listwise deletion and noted the adjusted n.

Ethics approval was granted by Human Research Ethics Committees at both University A and B.

Results

We received 260 complete or nearly complete surveys that comprised a response rate of 80.5% of eligible students ($n = 323$ currently enrolled students), which was achieved by allowing students time at the completion of the lecture to complete the survey and hand it in on the spot. All surveys were used in the analysis and missing data has been noted in the results. The response rate from University B (89.9%) was higher than University A (77.5%). Response rates for first and third year students were 71.3% and 70.3%, respectively, and second year students was 100%. A total of 192 students completed paper based surveys, while 68 completed online surveys. Note that some enrolled students did not attend the lecture and, therefore, were ineligible for the survey.

Approximately 60% of the respondents were female, which is representative of the gender ratios in each university, and the median age was 21 (IQR 20–24) years old. Of the respondents 31.9% were in first year, 42.3% were in second year, and 25.8% were in third (final) year. A third of students reported having completed a previous health related degree or worked in the healthcare sector. Two thirds reported no previous training in domestic violence, with 31.0% reporting watching a video or attending a lecture as their only training, and only 8 (3.1%) reported completing skills-based sessions (see Table 1 for respondent demographics).

Internal Consistency of Scales

Cronbach's alpha coefficient was used to test internal consistency and found that both perceived knowledge and perceived preparation sub-scales demonstrated high reliability. Of the attitude scales only preparation demonstrated high reliability (>.70), while alcohol/drugs demonstrated medium reliability (.05–.70), and the remainder demonstrated low reliability (.30–.50).[24] Our results demonstrated lower reliability than the original PREMIS[19] for all but the perceived knowledge scale, but were relatively consistent with the Modified PREMIS,[21] except for the self-efficacy scale. Table 2 details these internal consistency results.

TABLE 1. Survey respondent demographics.

		University A		University B		Total	
		n	%	*n*	%	*n*	%
Total Records		189	100.0	71	100.0	260	100.0
Gender	Male	78	41.3	27	38.0	105	40.4
	Female	111	58.7	43	60.6	154	59.2
	Missing	—	0.0	1	1.4	1	0.4
Age band	17–19	40	21.2	14	19.7	54	20.8
	20–29	109	57.7	42	59.2	151	58.1
	30–39	14	7.4	6	8.5	20	7.7
	40–49	6	3.2	4	5.6	10	3.8
	Missing	20	10.6	5	7.0	25	9.6
Year	1	83	43.9	—	0.0	83	31.9
	2	57	30.2	53	74.6	110	42.3
	3	49	25.9	18	25.4	67	25.8
Course	Single	150	79.4	71	100.0	221	85.0
	Double	38	20.1	—	0.0	38	14.6
	Missing	1	0.5	—	0.0	1	0.4
Previous training	None	120	63.5	49	69.0	169	65.0
	Video	37	19.6	11	15.5	48	18.5
	Lecture	25	13.2	7	9.9	32	12.3
	Skills training	4	2.1	4	5.6	8	3.1
	In-depth	—	0.0	—	0.0	—	0.0
	Other	1	0.5	—	0.0	1	0.4
	Missing	2	1.1	—	0.0	2	0.8
Personal IPV experience	Yes	28	14.8	15	21.1	43	16.5
	No	153	81.0	49	69.0	202	77.7
	Missing	8	4.2	7	9.9	15	5.8
Lifetime IPV experience	Yes	69	36.5	28	39.4	97	37.3
	No	110	58.2	36	50.7	146	56.2
	Missing	10	5.3	7	9.9	17	6.5

Knowledge Attitudes and Perceived Preparation

Other studies using the Modified PREMIS have utilized mean scores for scales, however our data were non-normally distributed based on Shapiro-Wilk's test ($p < .05$), therefore medians were calculated for perceived and actual knowledge, perceived preparation, and 5 of the attitude scales identified in the original PREMIS.[19]

TABLE 2. Internal consistency.

				Cronbach's alpha		
		n	No. items	This study	Modified PREMIS	Original PREMIS
	Perceived knowledge	248	14	.97	.97	.96
	Perceived preparation	248	10	.95	.97	.96
Opinions	Victim autonomy	233	3	.35	.36	.37
	Preparation	236	5	.81	.89	.85
	Alcohol/drugs	242	3	.57	.48	.70
	Victim understanding	231	6	.35	.46	.69
	Self-efficacy	240	3	.49	.80	.69

Note: Some participants did not answer every question and therefore the *n* for each scale varied.

Actual knowledge was scored based on 18 items, the possible score range of which was 0–38. The median score for our sample was 23 (IQR 18–26), which equates to 60.5% (IQR 47.3–68.4%) correct answers.

Perceived knowledge was scored on a 7-point Likert scale (1 = "nothing" to 7 = "very much"). The median score was 2.43 (IQR 1.93–3.50), meaning students felt they knew between "very little" (2) and "a little" (3) about IPV.

Perceived preparation was scored on a 7-point Likert scale (1 = "not prepared" to 7 = "quite well prepared"). The median score was 2.82 (IQR 1.90–3.60), meaning they felt between "minimally" (2) and "slightly" (3) prepared.

Attitudes were scored on a 7-point Likert scale (1 = "strongly disagree" – 7 = "strongly agree"). Fifteen items were reverse coded meaning the preferred score for each item was 7. Median scores for each item ranged between 3 and 7. Aggregate median scores were generated for the 5 attitude scales, all of which ranged between 3 and 6.

See Appendices 1–4 for item level responses.

Previous Training

To examine the effect of previous training on scale scores an independent samples t-test was attempted; however, demographic profiles for participants with

TABLE 3. Regression outcome of previous IPV training with actual knowledge, perceived knowledge, and perceived preparation.

	Unstandardized Coefficients	95% CI		Sig
Actual Knowledge	0.606	−0.973	2.186	p > .05
Perceived Knowledge	**0.611**	**0.295**	**0.927**	**p < .01**
Perceived Preparation	**0.438**	**0.108**	**0.768**	**p < .05**

Note: significant results are in **bold**.

and without previous training were dissimilar. Therefore, a multiple linear regression was utilized, including the potential confounding variables age, gender, course, year, and lifetime IPV experience. Model diagnostics indicated that assumptions of linear regression were satisfied. Missing data effected 41 records, therefore the sample for the regression was $n = 219$. As can be seen from Table 3 even when controlling for potential confounders previous training was significantly associated with higher perceived knowledge and perceived preparation but not with higher actual knowledge.

Personal Experience with IPV

Of the cohort 22.7% of women ($n = 35$) and 7.6% of men ($n = 8$) reported personally experiencing IPV, and 36.1% ($n = 94$) of our sample reported witnessing IPV directed at a family member. For our generated variable "lifetime IPV experience" 33.3% of men ($n = 35$) and 43.5% of women ($n = 67$) reported experiencing IPV personally or directed to a family member.

DISCUSSION

Results from this study show that our cohort of Australian paramedic students has low actual knowledge, low perceived knowledge, and feel largely unprepared to manage IPV patients. Results for attitude items showed mostly neutral responses and some respondents held some negative attitudes toward women and patients.

Knowledge, Attitudes, and Preparedness

Internal consistency results indicate that knowledge and preparedness scales demonstrate high reliability, which supports the interpretability of these findings. Many of the attitude scales demonstrated medium or low reliability, and therefore attitudinal items should be interpreted with caution; although as the first available data in this cohort it provides a basis for future comparison.

For actual knowledge the median score of our cohort (60.5%) compares with scores reported for U.S. dentists and nurses and is around 10% lower than the score reported for U.S. physicians.[19,25,26] As knowledge questions cover basic knowledge in the recognition and management of IPV patients (see Appendix 1), these results suggest that students acquire some basic knowledge, but require further teaching.

Our cohort's median score for perceived knowledge expressed as a percentage was 34.7%, indicating that actual knowledge (60.5%) was higher than perceived knowledge. This was in contrast to previous U.S. studies conducted in final year undergraduate dentist and nurse cohorts, who reported relatively even results, although both studies also reported participants with higher rates of previous training.[25,26] This could imply that students lack confidence in the knowledge that they do have, which may make them reluctant to talk about IPV with patients even when they do suspect its presence.[15] This is further evidenced through attitude items that showed that participants did not feel knowledgeable, confident, or skilled enough to talk to patients about IPV.

Potentially the higher than expected actual knowledge scores in this cohort may have occurred due to knowledge being gleaned from sources other than formal IPV education (e.g., other units referring to IPV, media reporting, or general population domestic violence campaigns). Recently in Australia, and particularly in Victoria, the issue of domestic violence (including IPV) has received much higher media attention than usual, given the Australian of Year for 2015 was a Victorian domestic violence campaigner,[27] and there was a much publicized Royal Commission into domestic violence undertaken by the state government.[28] Nonetheless, it remains unclear how increased media attention on domestic violence would impact on paramedic KAP, particularly given evidence that some media outlets frame high profile IPV cases with victim blaming and sexualization of violence.[29] Further research on the impact of the media as a source of information for IPV is needed.

Item analysis showed that students generally lacked sufficient knowledge in the theoretical background to IPV, identifying IPV patients, questioning techniques, documentation, and legal requirements. Interestingly, all of these topics were specifically identified in the World Health Organization's (WHO) recommended educational topics for frontline healthcare providers.[9,10] It should be noted that paramedics were not specifically identified by the WHO as a frontline health service; however, they are known to encounter IPV patients[12,14] and are in a position to identify and refer patients to support services.

Attitudinal items demonstrated that participants had poor self-efficacy, confidence, and preparation, which is consistent with results for the perceived preparation

scale. Poor self-efficacy has been cited by many healthcare providers as a key barrier for talking with patients about IPV, as their lack of confidence makes them afraid to ask.[17] This may lead to missed opportunities for recognition and referral, placing women at risk of ongoing abuse. Willingness to talk to patients about IPV is particularly important for paramedics as there is evidence that IPV patients are frequently left at home by paramedics.[30] As patients may not come into contact with further healthcare professionals there may be a missed opportunity to referral them to appropriate support services. Therefore, if paramedics continually neglect to talk to patients about IPV, there is a risk they may become a barrier for patients to access help, thereby perpetuating the abuse and its negative effects.

Items measuring attitudes toward women and patient autonomy demonstrated participants had generally neutral attitudes (neither agree nor disagree). Such attitudes may be inadequate as qualitative data indicates that female patients want healthcare professionals to demonstrate a supportive, non-judgmental and empathetic approach to discussing IPV,[16] and it is unlikely this can be achieved without supportive attitudes to women and positive attitudes to IPV.

There were examples of poor attitudes toward women and patients by some students. For example some students reported believing that IPV patients do not have the right to choose if paramedics intervene ($n = 101$, 38.8%, stating agree to strongly agree), that women who chose to step out of traditional roles are a major cause of IPV ($n = 111$, 42.7%, stating agree to strongly agree), and that patients are unable to make appropriate decisions about how to handle their situation ($n = 130$, 50.0%, agreeing this was a true statement). Similar results have also been reported with U.S. allied health student cohorts.[26] Poor attitudes toward women have been cited as a cause of IPV in itself.[3,31] Paramedics who hold poor attitudes toward women and patients may be less likely to ask about IPV or to ask in an inappropriate way, which may actually cause additional harm.[10,16] This reinforces a need to address poor attitudes toward women among paramedic students as well as further research around the interaction between such attitudes and paramedic behaviors.

Note that we did not stratify results by year level as there was no difference in previous training or attendance on IPV cases between years and therefore no basis for this comparison. Future research seeking to determine the impact of education on results may benefit from such comparisons.

Previous Training

Results for previous training were higher than expected, as the only formal instruction in intimate partner violence students received that we were aware of was an online course offered to students as part of a community health unit, and only 29 of our respondents reported taking part in this. It is unclear where students received their training, or if this question was misunderstood. Future research systematically examining the paramedic syllabus in a number of institutions, which allows students to elucidate on the source of their perceived education, may be of benefit in understanding how students come to perceive they have received education.

Previous research has shown that IPV training can improve actual knowledge in allied healthcare populations[32]; yet, our regression analysis found that the presence of previous training did not significantly improve actual knowledge scores. This does not necessarily indicate that paramedic students cannot be trained, rather that the most prevalent form of training that has been reported on, attending a lecture or watching a video, appears to have been ineffective, which is unsurprising based on the findings of previous reviews.[32,33] The provision of IPV education to healthcare students is in its infancy and is known to be complex,[34] and therefore conclusions cannot be drawn on the effectiveness of education for paramedic students until there is an opportunity to undertake and evaluate robust educational interventions. There is some preliminary evidence that paramedics can be trained to recognize IPV patients, such as a U.S. study that found paramedics were able to use a domestic violence screening tool with moderate accuracy,[13] although further research is warranted due to this being a single pilot study with small sample size.

Conversely, our regression model demonstrated an association between previous training and significantly improved perceived knowledge and perceived preparation, implying that training made students feel more knowledgeable and prepared even though they had no significant improvement in actual knowledge. Similar findings have been reported in at least one other study with nurses,[35] which suggests that outcome measures are necessary to ensure that education is having a beneficial impact on participants, which will hopefully lead to benefits for patients.

Personal Experience of IPV

In respect to personal experience of IPV Australian statistics show that around 16% of women and 5% of men will experience physical or sexual abuse, and 25% of women and 14% of men will experience emotional abuse from a current or past partner (of any gender) at some point in their life.[4] While it is not possible to compare our results directly to the national averages as we measured physical, sexual, and emotional violence together, our students reported personal experiences of violence that should be considered in any educational activities.

This matter warrants further investigation as it is unknown if a paramedic's personal experience of IPV will influence workplace behaviors, such as their willingness or reluctance to discuss IPV with patients. Additionally, as IPV is known to be associated with increased incidence of mental health conditions, such as depression, anxiety, and post-traumatic stress disorder,[36] exposing paramedics who may already be personally experiencing IPV to additional vicarious trauma, both through training and on the job, may impact on their own wellbeing. This highlights the need to ensure that if education is undertaken, it is offered and managed appropriately and coupled with appropriate support services for paramedics and students wishing to address their own IPV experiences.

Implications for Future Practice

Currently, there are no published, evidence-based IPV educational packages aimed at paramedics that have been shown to be effective in teaching the necessary KAP specific to paramedic practice. Results from this study indicate that such education is necessary, and therefore we make the following recommendations based on our results.

Students would benefit from education on IPV, including known risk factors and injury patterns, referral options, legal requirements, documentation, and how to speak with patients about IPV. Education should aim to build confidence in speaking to patients about IPV and provide skills practice opportunities with expert educators. Our results demonstrated that student attitudes surrounding self-efficacy and confidence were insufficient, and that a small number of paramedic students hold neutral or negative attitudes when it comes to women and patient autonomy. Education should address such misperceptions. While this study utilized an Australian paramedic student cohort our results demonstrated that even an allied health student population receiving high quality education can still have deficiencies in their KAP. National and international ambulance services, as well as other allied health professions, may benefit from examining the KAP of their own student populations to ensure they are properly preparing them for IPV patients. We also recommend that if education were to take place it should encompass ongoing research as to the efficacy of the education, the impact of attitudes on practice, as well as the impact of education on paramedics and patient healthcare outcomes. Finally, we recommend that future research should consider if educational interventions could encompass the broader spectrum of domestic violence, for example including management of male and LGBTI patients, without detracting from the context presented in this article.

Limitations

This study was limited by its small sample size, and the exclusion of some enrolled students who did not attend the lecture which may lead to non-responder bias. The response rate and sample size was excellent for the population being studied; however, we recognize that there are between 7000–8000 paramedic students in Australia[37] and much wider sampling would be needed to draw firm conclusions. We were unable to locate demographic data on Australian paramedic students; therefore, it is unclear if this sample would be representative. We also acknowledge the limitations of instruments using Likert scales, particularly responders being unwilling to choose extreme answers and the influence of previous questions must also be acknowledged. Additionally, limitations include the use of self-reporting measures and questions requiring recall, as well as the use of an instrument that had not been validated for use in this population. Furthermore, as a portion of student paramedic education takes place during placements with operational ambulances and other health services, as well as the impact of other sources of information such as social-media and media outlets, it is difficult to account for how this highly individual education may impact on KAP. Due to our modifications from the Modified PREMIS we could not reconstruct the legal requirements scale and as our data were not normally distributed we relied on medians rather than means that made comparability with other studies difficult. Finally, there is significant debate at present around the method and wording of questions measuring the presence of IPV[38] and we recognize that our method has limitations.

CONCLUSIONS

The results in this study suggest that Australian paramedic students may require improved KAP to better manage IPV patients, although the current level of KAP would constitute a suitable base upon which to build. Education should teach students the necessary skills and inspire confidence to recognize and refer IPV patients to an appropriate agency, as well as attempt to improve attitudes to women and IPV patients. The introduction of education may result in more appropriate management of IPV patients that could improve patient access to care and support.

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APPENDIX 1. PERCENTAGE CORRECT FOR ACTUAL KNOWLEDGE ITEMS. NOTE ALL CORRECT ANSWERS ARE HIGHLIGHTED GREY

Actual Knowledge Section Part 1
Note multiple answers are allowed for some questions

Question	%
What is the strongest *single* risk factor for becoming a victim of intimate partner violence?	
Age (>30yrs)	0.0
Partner abuses alcohol/drugs	39.6
Gender - female	20.4
Family history of abuse	21.9
Don't know	13.8
Which *one* of the following is generally true about batterers/perpetrators?	
They have trouble controlling their anger	30.0
They use violence as a means of controlling their partners	58.8
They are violence because they drink or use drugs	7.7
They pick fights with anyone	1.2
Which of the following are warning signs that a patient may have been abused by his/her partner?	
Chronic unexplained pain	48.5
Anxiety	86.5
Substance abuse	61.2
Frequent injuries	90.0
Depression	76.9
Which of the following are reasons an IPV victim may not be able to leave a violent relationship?	
Fear of retribution	82.7
Financial dependence on the perpetrator	81.5
Religious beliefs	57.7
Children's needs	86.5
Love for one's partner	60.4
Isolation	70.4
Which of the following are the most appropriate ways to ask about IPV?	
"Are you a victim of intimate partner violence?"	85.4
"Has your partner ever hurt or threatened you?"	76.5
"Have you ever been afraid of your partner?"	16.9
"Has your partner ever hit or hurt you?"	39.6
Which of the following is/are generally true?	
There are common, non-injury presentations of abused patients	63.8
There are behavioral patterns in couples that may indicate IPV	78.8
Specific areas of the body are most often targeted in IPV cases	45.4
There are common injury patterns associated with IPV	66.9
Injuries in different stages of recovery may indicate abuse	57.7

Actual Knowledge Section Part 2

Please label the following descriptions of the behaviors and feelings of patients with a history of IPV with the appropriate stage of change:	%					
	Pre-contemplation	Contemplation	Preparation	Action	Maintenance	Termination
Begins making plans for leaving the abusive partner	2.7	12.7	65.8	13.5	0.0	0.8
Denies there's a problem	79.6	6.5	2.3	1.5	1.9	3.5
Begins thinking the abuse is not their own fault	6.5	75.0	7.3	3.1	2.7	0.4
Continues changing behaviors	5.0	10.8	12.7	31.5	33.8	0.8
Obtains order(s) for protection	1.9	2.3	1.5	38.1	23.5	26.9

Actual Knowledge Section Part 3

Mark the following as true, false or don't know	True	False	Don't Know
Alcohol consumption is the greatest single predictor of the likelihood of IPV.	24.6%	41.9%	31.9%
There are no good reasons for not leaving an abusive relationship	21.2%	63.1%	13.8%
Reasons for concern about IPV should not be included in a patient's patient care record if s/he does not disclose the violence.	12.3%	63.8%	21.9%
When asking patients about IPV, paramedics should use the words "abused" or "battered."	6.5%	60.4%	30.8%
Being supportive of a patient's choice to remain in a violent relationship would condone the abuse.	16.9%	46.9%	33.8%
Victims of IPV are able to make appropriate choices about how to handle their situation.	20.0%	42.7%	34.2%
Health care providers should not pressure patients to acknowledge that they are living in an abusive relationship.	39.2%	23.5%	35.4%
Victims of IPV are at greater risk of injury when they leave the relationship.	21.2%	30.8%	45.8%
Strangulation injuries are rare in cases of IPV.	12.7%	33.8%	51.2%
Allowing partners or friends to be present during a patient's history and physical exam ensures safety for an IPV victim	16.2%	48.5%	33.5%
Even if the child is not in immediate danger, paramedics in Victoria are mandated to report an instance of a child witnessing IPV	53.1%	13.5%	31.5%

Appendix 2. Median Perceived Knowledge Scores by Item

How much do you think you know about:	Median	25th Percentile	75th Percentile
Your legal reporting requirements for IPV	2	1	3
Signs or symptoms of IPV	3	2	4
How to document IPV on a PCR	2	1	3
Referral sources for IPV victims	2	1	3
Perpetrators of IPV	2	1	4
Relationship between IPV and pregnancy	2	1	3
Recognizing the childhood effects of witnessing IPV	3	2	4
What questions to ask to identify IPV	3	2	4
Why a victim might not disclose IPV	3	2	5
Your role in detecting IPV	3	2	4
What to say and not say in IPV situations with a patient	3	2	4
Determining danger for a patient experiencing IPV	3	2	3
Developing a safety plan with an IPV victim	2	1	3
The stages an IPV victim experiences in understanding and changing their situation	2	1	3
Perceived knowledge scale	**2.43**	**1.93**	**3.50**

Appendix 3. Median Perceived Preparation Scores by Item

How prepared do you feel to:	Median	25th Percentile	75th Percentile
Ask appropriate questions about IPV	3	2	4
Appropriately respond to disclosures of abuse	3	2	5
Identify IPV indicators based on patient history, and physical examination	3	2	4
Assess an IPV victim's readiness to change	3	2	4
Help an IPV victim assess his/her danger of lethality	2	2	4
Conduct a safety assessment for the victim's children	2	1	4
Help an IPV victim create a safety plan	2	1	3
Document IPV history and physical examination findings on a PCR	3	2	4
Make appropriate referrals for IPV	2	1	4
Fulfil state reporting requirements for IPV	2	1	3
Perceived preparation scale	**2.70**	**1.90**	**3.60**

APPENDIX 4. MEDIAN ATTITUDE SCORES BY ITEM

For each of the following statements please respond on the scale between Strongly Disagree (7) and Strongly Agree (1):	Median	25th Percentile	75th Percentile
If an IPV victim does not acknowledge the abuse, there is very little that I can do to help (R)	5	4	5
I would ask all patients about abuse in their relationships	3	2	4
I can make appropriate referrals to services within the community for IPV victims	4	3	5
I am capable of identifying IPV without asking my patient about it (R)	4	4	5
I do not have sufficient training to assist individuals in addressing situations of IPV (R)	3	2	4
Patients who abuse alcohol or other drugs are likely to have a history of IPV	4	4	5
Victims of abuse have the right to make their own decisions about whether paramedics should intervene	5	4	5
I feel comfortable discussing IPV with my patients	4	3	5
I don't have the necessary skills to discuss abuse with an IPV victim who is:			
Female (R)	4	3	5
Male (R)	3	3	5
from a different cultural/ethnic background (R)	3	3	5
If victims of abuse remain in the relationship after repeated episodes of violence, they must accept responsibility for that violence (R)	7	5	7
I am aware of legal requirements in Victoria regarding reporting of suspected cases of IPV	3	1	4
Paramedics do not have the time to assist patients in addressing IPV (R)	6	5	7
I am able to gather the necessary information to identify IPV as the underlying cause of patient illnesses (e.g., depression, migraines)	4	3	4
If a patient refuses to discuss the abuse, paramedics can only treat the patient's injuries (R)	4	3	5
Victims of abuse could leave the relationship if they wanted to (R)	4	4	5
Paramedics have a responsibility to ask patients about IPV	5	4	5
Alcohol abuse is a leading cause of IPV (R)	4	3	4
Victims of abuse often have valid reasons for remaining in the abusive relationship	4	4	5
Screening for IPV is likely to offend those who are screened (R)	4	3	5
I am able to gather the necessary information to identify IPV as the underlying cause of patient injuries (e.g., bruises, fractures, etc.)	4	3	5
Women who choose to step out of traditional roles are a major cause of IPV (R)	6	4	7
Paramedics do not have the knowledge to assist patients in addressing IPV (R)	4	3	5
I can match therapeutic interventions to an IPV patient's readiness to change	4	3	4
I understand why IPV victims do not always comply with paramedic recommendations	5	4	5
Use of alcohol or other drugs is related to IPV victimization	5	4	5
I can recognize victims of IPV by the way they behave (R)	4	4	5
Victim autonomy Scale	**4.67**	**4.00**	**5.00**
Preparation Scale	**3.60**	**2.80**	**4.40**
Alcohol/drugs Scale	**4.00**	**4.00**	**4.33**
Victim understanding Scale	**4.67**	**4.33**	**5.00**
Self-efficacy Scale	**3.33**	**3.00**	**4.00**

Note: (R) indicates medians have been reversed due to reverse coded questions.

The knowledge, attitudes and preparedness to manage intimate partner violence patients of Australian paramedics – A pilot study

Simon Sawyer, Dr Angela Williams, Auston Rotheram, Associate Professor Brett Williams

Abstract

Introduction

Australian ambulance services are currently attempting to improve their capacity to respond to intimate partner violence (IPV) patients, a leading cause of morbidity and mortality for women. Leading health organisations have called for increased training for frontline healthcare workers, however there is a paucity of literature on the current preparedness of Australian paramedics. A description of preparedness of Australian paramedics to manage IPV patients has the potential to inform curricula development.

Methods

We surveyed a cohort of qualified Australian paramedics using the modified Physician REadiness to Manage Intimate partner violence Survey (PREMIS).

Results

We received 28 completed surveys (16.5% response rate), that revealed most respondents (89.3%) had encountered IPV patients while working as a paramedic, yet only 1 participant reported comprehensive education or training on the management of such patients. Participants reported low knowledge and preparedness to manage IPV patients. Participant attitudes were poor for self-efficacy, confidence and preparation, and generally neutral for items regarding attitudes towards women and IPV patients.

Conclusions

This study adds to mounting evidence that paramedics frequently encounter IPV patients, have insufficient education and training, and are not prepared to manage such patients. While the results of this study should be interpreted with caution due to a low response rate and small sample, it appears that Australian paramedics would benefit from targeted educational packages that provide the necessary knowledge to recognise and refer patients, modify inappropriate or insufficient attitudes, and prepare paramedics to effectively manage IPV patients.

Introduction

Australian ambulance services have an integral role to play in preventing and reducing violence towards women, with a key focus on the recognition and referral of intimate partner violence (IPV) patients[1]. Intimate partner violence refers to abuse transpiring between people who are, or were formerly, in an intimate relationship and can take the form of economic, psychological or emotional abuse, controlling behaviours, as well as physical or sexual violence[2]. While IPV occurs in all population subgroups, the vast majority of the most damaging violence is perpetrated by men and born by women[3].

The most recent Australian figures show that 17% of women over the age of 18 had experienced physical or sexual violence and 25% emotional abuse from a current or past partner since the age of 15[4]. In contrast only 5% of males over the age of 18 had experienced physical or sexual violence, and 14% emotional abuse from a current or past partner since the age of 15[4]. Women experiencing IPV report poorer overall health and have greater risk of developing mental health conditions[5, 6]. On average more than one Australian woman is killed each week by a current or past intimate partner[7], and the effects on children can be severe and long lasting[6]. Due to the significant impact and high prevalence of IPV the Australian Government has developed a *National Plan to Reduce Violence against Women and their Children*[8], and more recently the Royal Commission into Family Violence has recommended increased education and training for frontline healthcare workers[9].

No Australian ambulance service has published comprehensive data on how often they attend IPV patients, however self-reporting measures demonstrate paramedics believe they frequently respond to IPV patients[10, 11]. Paramedics are often the first to attend IPV incidents involving emergency services[12] and their frontline interactions with IPV patients have the potential to impact on patient engagement with the healthcare sector and the efficacy of future care[13]. Early recognition of abuse through screening has been a key element of improving the healthcare response to IPV[14], however screening is often not

performed effectively due to barriers such as lack of knowledge and training, confidence and preparedness[13]. Qualitative research shows that women are accepting of screening by healthcare professionals as long as it is performed in a non-judgemental and empathetic manner, and the practitioner is confident, skilled and knowledgeable[13]. Therefore the knowledge, attitudes and preparedness of practitioners can have a pivotal role in the overall success of their response to IPV.

Most new paramedics employed by one of the eight ambulance services operating in Australia are now required to complete a certified undergraduate degree, however the standard curricula does not currently include mandatory education on IPV. Qualified paramedics report very low rates of IPV education and training and little is known about their current knowledge and attitudes[10, 15, 16]. The need for IPV education within the healthcare sector has been well established[17], but there is also a need to examine how such training for paramedics could benefit the patient experience and health outcomes. In order to do so current knowledge, attitudes and preparedness (KAP) to manage IPV patients of Australian paramedics needs to be measured to identify any practice gaps which could potentially be addressed through strategies such as improved education.

The aim of this study was to explore the KAP of a cohort of Australian paramedics. Results will comprise the first attempt to collect and report on such data in a paramedic cohort, and have the potential inform future educational and curricula needs for paramedics in Australia.

Method

Study Design

We utilised a survey design. Data collection took place between September and December 2015 at an Australian university offering a Bachelor conversion degree to qualified paramedics. Recruitment was performed by emailing all currently enrolled students with an invitation to participate, as well as placing a link to the survey on the main online bulletin board. The online survey was accessible from any device which could access the internet (e.g., smart phones, laptops, tablets, PCs). Participation was voluntary.

Participants

Participants were taken from a convenience sample of currently practicing paramedics who were enrolled in a Bachelor degree conversion course. Participants were from Victoria, New South Wales, Queensland and The Northern Territory.

Instrumentation

The Physician Readiness to Manage Intimate Partner Violence Survey (PREMIS)[18] was developed to measure the KAP to manage IPV patients in United States physician populations and has since been adapted for use with allied healthcare students and practitioners[19]. The Modified PREMIS has since been used with US allied healthcare populations including medical, dental, nursing and social work students[19-21]. Only one study has reported on the psychometric properties, finding the instrument demonstrated high internal consistency within some IPV constructs (Cronbach's a >.7) but low with others (<.5), its construct validity was shown to be quite varied with a high significant correlation between perceived and actual knowledge (r = .859), but no significant correlation between actual knowledge and perceived knowledge (r = .064) or preparation (r = .058)[19].

The Modified PREMIS survey is among the most comprehensive measures of KAP available for allied healthcare populations, however it does not measure overall clinical readiness and lacks any skills based assessment, which are acknowledged limitations. Whilst the psychometric properties of the Modified PREMIS have never been measured with Australian allied healthcare cohorts, previous validation with allied health cohort in the United States provides evidence for its preliminary suitability in this instance.

The Modified PREMIS[18] was utilised in this study after making slight modifications to the items by altering the wording of 'health care practitioner' to 'paramedic'. This study focused on IPV and therefore 4 questions on family violence (specific to child abuse and elder abuse) were removed.

The instrument measured background demographics, perceived and actual knowledge, perceived preparation to manage IPV patients, attitudes around women, patients and IPV, and personal IPV experience in a five part, 85 item survey. It is acknowledged that while the Modified PREMIS reported on six attitude scales, only five were used in this study as the four omitted questions resulted in the 'legal requirements' scale having only one item.

The same scoring method as described in the original PREMIS[18] was used, with changes to reflect omitted questions. In addition, as per Connor et al.[21] a dichotomous variable named 'lifetime experience of IPV' was created which categorised participants into those who have experienced IPV personally or witnessed it in their family, and those who had not.

Data analysis

To conduct analysis SPSS version 18 was used. Participant descriptive statistics were generated and high and low percentage correct answers were examined on each item to identify any commonly incorrect answers.

Ethics approval was granted by the Human Ethics Board, Monash University.

Results

In total 28 surveys were returned form participants (16.4% response rate). While most surveys were returned complete and all surveys were used in the study, some contained random missing data[22] where the participant had not answered one or more items. Where missing data impacted statistical analysis we noted the adjusted *n*.

Participants were 35.7% female, with a median age of 40 (IQR 34-46) which is comparable to a previously reported median age for Australian paramedics[23]. Among the sample 75.0% worked as 'advanced life support' paramedics, and 82.1% worked in a state ambulance service. Of the participants 67.9% reported having previous IPV training, with most attending a lecture or watching a video. Almost all of the respondents reported encountering IPV at work (*n*=25, 89.3%), and only 19.1% were aware if their employer had a policy on domestic violence. See Table 1 for the full demographic profile.

Table 1. Survey respondent demographics

		Total	
		n	%
Total Records		**28**	**100%**
Gender	Male	17	60.7%
	Female	10	35.7%
	Missing	1	3.6%
Age band	20-29	3	10.7%
	30-39	8	28.6%
	40-49	9	32.1%
	50-59	3	10.7%
	Missing	5	17.9%
Paramedic level	Basic Life Support	7	25.0%
	Advanced Life Support	21	75.0%
	Missing	-	0.0%
Where do you work	State Ambulance Service	23	82.1%
	Private Ambulance Service	2	7.1%
	Military	6	21.4%
	Private Company	4	14.3%
	Missing	-	0.0%
Work Location	VIC	2	7.1%
	NSW	11	39.3%
	QLD	7	25.0%
	NT	5	17.9%
	Missing	3	10.7%
Previous training	None	19	67.9%
	Video	6	21.4%
	Lecture	2	7.1%
	Skills training	1	3.6%
	In-depth	-	0.0%
	Other	-	0.0%
	Missing	-	0.0%
Personal IPV experience	Yes	10	35.7%
	No	15	53.6%
	Missing	3	10.7%
Lifetime IPV experience	Yes	15	53.6%
	No	9	32.1%
	Missing	4	14.3%

Note: “where do you work?” question allowed multiple responses

Knowledge, Preparation and Opinions

Other studies using the Modified PREMIS have reported mean scores for scales, however as our data were non-normally distributed based on Shapiro-Wilk’s test ($p<.05$), therefore medians were calculated for each sub-scale.

Actual knowledge was scored based on 18 items with a possible score range of 0-38. The median score for our sample was 25 (IQR 21-28), which equates to 65.8% (IQR 55.3 – 73.7%) correct answers.
Perceived knowledge was scored on a 7 point Likert scale (1 = “nothing” – 7 = “very much”). The median score was 2.79 (IQR 2.43-3.86), meaning they felt they knew between “very little” (2) and “a little” (3) about IPV.
Perceived preparation was scored on a 7 point Likert scale (1 = “not prepared” – 7 = “quite well prepared”). The median score was 2.79 (IQR 2.43-3.86), meaning they felt between “minimally” (2) and “slightly” (3) prepared.

Attitudes were scored on a 7 point Likert scale (1 = “strongly disagree” – 7 = “strongly agree”). Fifteen items were reverse coded, after which the preferred score for each item was 7. Median scores for each item ranged between 3 and 7. Aggregate median scores were generated for the five opinion scales, all of which ranged between 3 and 4. Participants reported low self-efficacy, confidence and preparedness to manage IPV patients, and attitudes towards women and patients were generally neutral, meaning they neither agreed nor disagreed with attitude items. Notably some participants expressed some negative attitudes towards women and patients.

See Appendices 1-4 for individual item results.

Previous training

Of the respondents 67.9% (*n*=19) reported no previous training, while 28.6% (*n*=6) reported watching a video or attending a lecture, and only 1 respondent reported having attended skills based training.

Personal experience

Of the respondents 29.4% (n= 5) of males and 60.0% (n=6) of females reported personally experiencing IPV against themselves. Additionally 53.6% (n=15) of respondents reported witnessing IPV in their family.

Frequency of encountering IPV

Of the respondents 89.3% (*n*=25) believed they had encountered an IPV patient while at work. Estimates of the number of IPV patients encountered ranged between 2 and 1000, with just over 57.1% (*n*=16) of the respondents reporting between 2 and 12 cases, 25.0% (*n*=7) reporting between 75 and 300, and 7.1% (*n*=2) reporting 1000 cases. Notably 10.7% (*n*=3) reported that they did not believe they had attended an IPV patient, all of whom had served between 6 and 10 years as a paramedic.

Discussion

This study aimed to explore the KAP to manage IPV patients of a cohort of Australian paramedics. These preliminary results suggest paramedics may lack the necessary KAP to properly recognise and manage IPV patients. These findings may indicate that the Australian paramedic curriculum is not properly preparing students to respond appropriately to IPV patients, which could result in future practitioners who are unable to appropriately recognise and refer IPV patients to care and support. Key findings and implications will be discussed.

Knowledge, Attitudes and Preparedness

The median value for the actual knowledge scale (65.8%) should be considered low as most of the items measuring knowledge referred to essential knowledge necessary to recognise and refer IPV patients accurately and appropriately. This result is unsurprising as two thirds of participants reported no previous education or training with respect to IPV, and those that had received training had only attended a lecture or watched a video, both of which have been shown to be largely ineffective as educational methods due to shortcomings such as the inability to practice skills[24]. Results were relatively consistent with similar allied healthcare populations such as nurses[20], suggesting that this knowledge deficiency is not limited to paramedicine, and were also consistent with Australian paramedic undergraduate students[25], indicating findings may not be limited to practicing paramedics and may stem from a deficiency in the curriculum.

The median score for perceived knowledge expressed as a percentage is 39.9%, which is considerably lower than actual knowledge. This would imply that our cohort of paramedics did not feel confident in their knowledge. This may result in paramedics not feeling confident enough to discuss IPV with patients even when they do have reason to suspect it, which has been shown to be a major barrier for healthcare practitioners to respond to IPV[26]. This is further evidenced by the perceived preparation scale which showed that participants felt only ‘slightly’ prepared to manage IPV patients. It would seem appropriate, therefore, that specific IPV training be implemented which empowers participants to feel confident in their ability to recognise and manage IPV, which has been previously called for by the World Health Organization[27].

With evaluation of item-level responses it is clear that participants would benefit from education surrounding the theoretical background to IPV, identification of IPV, how to question patients, documentation and legal requirements, all of which form part of recommended curricula for frontline healthcare workers[27, 28] and would be necessary to ensure a sensitive and effective response to patients.

Median scores across the five attitude subscales ranged between 3.70 and 4.83. These scores roughly reflected the corresponding mean scores when the PREMIS was initially used with US physicians[18], other allied healthcare populations[19-21], and Australian paramedic students[25]. The uniformity of results in attitude subscales across healthcare disciplines may be a reflection of general community attitudes, and highlights the difficulties inherent in changing or improving attitudes. Previous reviews have shown there is very little empirical evidence that the attitudes of healthcare practitioners can be changed or improved in regards to IPV[24]. Therefore this finding should not be construed as a deficiency unique to paramedicine and should be the subject of future research.

Overall participant attitudes concerning their own self-efficacy and preparation were poor, which might be expected given the lack of comprehensive training and education. Interestingly qualified paramedics actually scored lower in self-efficacy items than paramedic students given the same instrument[25]. This may suggest once paramedics begin to encounter IPV patients their self-efficacy decreases as they feel their training is insufficient. Previous research has shown feeling unprepared and having a lack of resources (such as protocols) can impact on the willingness of practitioners to screen patients[26]. Therefore there is a risk that by not properly preparing and providing adequate resources to paramedics they will become reluctant to discuss IPV with patients, and may even begin to intentionally ignore signs and symptoms of IPV to avoid conversations they find difficult or confronting.

Items concerning attitudes towards women and patients were mostly neutral which may be considered insufficient as positive attitudes towards women and patient autonomy have been reported as essential to an appropriate approach to patients[13]. This is because IPV patients desire to be believed and to be treated in a compassionate and non-judgemental manner[13], and therefore it is important that paramedics have appropriate attitudes. It is unclear due to a lack of research if the absence of positive attitudes will impact on patient approach, however as this has the potential to negatively impact patients and provides opportunities for more research in this area.

Notably some participants held some inappropriate attitudes, such as, believing that patients are not able to make appropriate choices about their situation and that patients do not have the right to choose if paramedics intervene. This belief was also found in a population of Australian student paramedics[25]. Such attitudes are problematic as they indicate similar beliefs to those that are theorised to lead to the use of violence within relationships, namely believing it is acceptable to use power and control to coerce another person into following a course of action they haven't chosen for themselves[2]. There is a potential that any misapplication of power and control arising out of these attitudes will have negative impacts on patient outcomes[13], regardless of whether the paramedic believes that they are acting in the patient's best interests.

Previous training

The majority of participants (67.9%) had not undergone structured IPV training and only one respondent reported undertaking skills based training, which adds further evidence that paramedics rarely receive comprehensive IPV education[10]. This general lack of education found in the paramedic samples studied may indicate deficiencies in the paramedic curriculum and there is a need to review the content of paramedic courses to ascertain if alterations are necessary. Adequate training is important as previous research has shown that untrained and unprepared practitioners are less likely to recognise and refer IPV patients to care and support[26], resulting in missed opportunities to connect patients with services that may assist them to reduce future harm.

Frequency of encountering IPV

Despite mounting evidence that paramedics frequently encounter IPV patients[10, 11] it is difficult to draw firm conclusions as precise IPV data are not collected by Australian ambulance services. Results from this study confirm those of a previous self-reporting measure delivered to 50 Australian paramedics, where it was found that 90% of paramedics reported encountering at least 1 case of suspected IPV in the last year, with the average number of cases being 3.66[10].

These are significant findings as patients do not often present with obvious or traumatic symptoms[29] and as paramedics generally lack sufficient education they may be unlikely to suspect and ask about IPV in many cases. Hence such self-reported measures maybe potentially under-reporting the true frequency of paramedics encountering IPV, and increased education could therefore result in much higher rates of reporting. It is believed that reporting of IPV is low, due to the high barriers to disclosure which include untrained practitioners not asking patients about IPV, asking inappropriately, or displaying behaviours and attitudes which make patients less likely to disclose[30]. Therefore by improving education it may improve

accuracy of reporting from paramedics which could improve overall reporting thus creating a more accurate picture of the scale of the issue.

Personal Experience of IPV

Of the respondents 26.7% of males and 55.6% of women reported experiencing IPV to their persons, which is around three times the rate experienced by the general population[4]. Our question about personal IPV experience was not directly comparable with Australian population statistics however, as we asked about physical and emotional violence together. Also due to the low response rate it is possible that results are skewed towards paramedics with a previous history of IPV who may have had a higher interest in responding to the study.

This topic warrants further investigation as personal experience of IPV may influence workplace behaviours, such as willingness or reluctance to discuss IPV with patients[26]. Additionally mental health conditions such as depression, anxiety and PTSD are known to be associated with IPV[31], therefore there is a risk to paramedic wellbeing by exposing those with personal IPV experience to additional vicarious trauma in education and on the job. Thus if ambulance services do adopt IPV protocols it would be germane that they provide appropriate educational delivery options, as well as ensuring support services are available to paramedics.

Implications for future practice

Despite the sampling limitations, results from this pilot study indicated Australian paramedics encounter IPV frequently, do not have the necessary KAP to manage IPV patients, and rarely have adequate training.

Structured training should be incorporated into the Australian paramedic curricula that provides paramedics with the required knowledge to recognise and refer IPV patients, improves inappropriate and insufficient attitudes, and properly prepares them to manage these patients.

Additionally, should further research confirm that paramedics are personally overrepresented in IPV statistics there is a need to explore potential causative factors, as well as ensure paramedic wellbeing before introducing education and clinical guidelines.

Limitations

Our study was significantly limited by the small sample size which may not be representative of the broader paramedic population. Our recruitment method may also have biased results towards participants with an interest in the topic. Furthermore, as our participants were degree conversion students they may differ significantly from paramedics who have completed an undergraduate degree which is the norm for paramedics in Australia.

Additional limitations include the use of an instrument which has not been validated for use in this population, the limitations of Likert scales (particularly patients being influenced by previous questions and being unwilling to respond to the extremes), and numerous items requiring long term recall and self-reported answers.

Conclusions

Despite study limitations our results add further evidence that paramedics frequently encounter IPV patients, rarely receive adequate training, and do not have adequate knowledge, attitudes and preparedness to manage IPV patients. There is a clear need to conduct further research in this population to confirm that any identified educational deficiencies are addressed and that paramedics are able to provide an appropriate response to IPV patients. By improving education paramedics may be more likely to recognise and respond appropriately to IPV patients, which may improve outcomes. Improved education and training in IPV would most likely be of significant benefit to patients and paramedics and should be undertaken as a priority for the profession.

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Appendix 1 – Percentage correct for actual knowledge items

Question	% correct	% incorrect
What is the strongest *single* risk factor for becoming a victim of intimate partner violence?	21.4%	78.6%
Which *one* of the following is generally true about batterers/perpetrators?	75.0%	25.0%
Which of the following are warning signs that a patient may have been abused by his/her partner?		
Chronic unexplained pain	60.7%	39.3%
Anxiety	78.6%	21.4%
Substance abuse	64.3%	35.7%
Frequent injuries	82.1%	17.9%
Depression	78.6%	21.4%
Which of the following are reasons an IPV victim may not be able to leave a violent relationship?		
Fear of retribution	82.1%	17.9%
Financial dependence on the perpetrator	85.7%	14.3%
Religious beliefs	67.9%	32.1%
Children's needs	85.7%	14.3%
Love for one's partner	67.9%	32.1%
Isolation	78.6%	21.4%
Which of the following are the most appropriate ways to ask about IPV?		
"Are you a victim of intimate partner violence?"	89.3%	10.7%
"Has your partner ever hurt or threatened you?"	75.0%	25.0%
"Have you ever been afraid of your partner?"	7.1%	92.9%
"Has your partner ever hit or hurt you?"	39.3%	60.7%
Which of the following is/are generally true?		
There are common, non-injury presentations of abused patients	53.6%	46.4%
There are behavioural patterns in couples that may indicate IPV	64.3%	35.7%
Specific areas of the body are most often targeted in IPV cases	60.7%	39.3%
There are common injury patterns associated with IPV	57.1%	42.9%
Injuries in different stages of recovery may indicate abuse	78.6%	21.4%
Label the following descriptions of the behaviours and feelings of patients with a history of IPV with the appropriate stage of change:		
Begins making plans for leaving the abusive partner	53.6%	46.4%
Denies there's a problem	82.1%	17.9%
Begins thinking the abuse is not their own fault	78.6%	21.4%
Continues changing behaviours	28.6%	71.4%
Obtains order(s) for protection	50.0%	50.0%
Alcohol consumption is the greatest single predictor of the likelihood of IPV.	35.7%	64.3%
There are no good reasons for not leaving an abusive relationship	42.9%	57.1%
Reasons for concern about IPV should not be included in a patient's patient care record if s/he does not disclose the violence.	71.4%	28.6%
When asking patients about IPV, paramedics should use the words "abused" or "battered."	60.7%	39.3%
Being supportive of a patient's choice to remain in a violent relationship would condone the abuse.	57.1%	42.9%
Victims of IPV are able to make appropriate choices about how to handle their situation.	28.6%	71.4%
Health care providers should not pressure patients to acknowledge that they are living in an abusive relationship.	46.4%	53.6%
Victims of IPV are at greater risk of injury when they leave the relationship.	25.0%	75.0%
Strangulation injuries are rare in cases of IPV.	25.0%	75.0%
Allowing partners or friends to be present during a patient's history and physical exam ensures safety for an IPV victim	71.4%	28.6%
Even if the child is not in immediate danger, paramedics in Victoria are mandated to report an instance of a child witnessing IPV	0.0%	100.0%

Appendix 2. Median perceived knowledge scores by item

How much do you think you know about:	Median	25th Percentile	75th Percentile
Your legal reporting requirements for IPV	3	2	4
Signs or symptoms of IPV	4	3	5
How to document IPV on a PCR	3	2	4
Referral sources for IPV victims	3	2	3
Perpetrators of IPV	3	2	4
Relationship between IPV and pregnancy	2	2	3
Recognizing the childhood effects of witnessing IPV	3	2	4
What questions to ask to identify IPV	3	2	4
Why a victim might not disclose IPV	4	3	5
Your role in detecting IPV	4	2	4
What to say and not say in IPV situations with a patient	3	2	4
Determining danger for a patient experiencing IPV	4	3	4
Developing a safety plan with an IPV victim	2	2	3
The stages an IPV victim experiences in understanding and changing their situation	2	2	3
Perceived knowledge scale	**2.43**	**1.93**	**3.50**

Appendix 3. Median perceived preparation scores by item

How prepared do you feel to:	Median	25th Percentile	75th Percentile
Ask appropriate questions about IPV	4	3	5
Appropriately respond to disclosures of abuse	5	3	5
Identify IPV indicators based on patient history, and physical examination	4	3	5
Assess an IPV victim’s readiness to change	2	2	4
Help an IPV victim assess his/her danger of lethality	3	2	4
Conduct a safety assessment for the victim’s children	4	2	5
Help an IPV victim create a safety plan	2	1	3
Document IPV history and physical examination findings on a PCR	4	2	5
Make appropriate referrals for IPV	3	2	5
Fulfil state reporting requirements for IPV	3	2	4
Perceived preparation scale	**3.20**	**2.45**	**4.20**

Appendix 4. Median attitude scores by item (reverse coded items in grey)

For each of the following statements please respond on the scale between Strongly Disagree (7) and Strongly Agree (1):	Median	25th Percentile	75th Percentile
If an IPV victim does not acknowledge the abuse, there is very little that I can do to help (R)	5	5	5
I would ask all patients about abuse in their relationships	3	2	3
I can make appropriate referrals to services within the community for IPV victims	4	3	5
I am capable of identifying IPV without asking my patient about it (R)	5	4	5
I do not have sufficient training to assist individuals in addressing situations of IPV (R)	3	1	3
Patients who abuse alcohol or other drugs are likely to have a history of IPV	4	3	5
Victims of abuse have the right to make their own decisions about whether paramedics should intervene	5	4	5
I feel comfortable discussing IPV with my patients	5	4	5
I don't have the necessary skills to discuss abuse with an IPV victim who is:			
Female (R)	4	3	5
Male (R)	4	3	6
from a different cultural/ethnic background (R)	4	3	5
If victims of abuse remain in the relationship after repeated episodes of violence, they must accept responsibility for that violence (R)	7	5	7
I am aware of legal requirements in Victoria regarding reporting of suspected cases of IPV	4	2	5
Paramedics do not have the time to assist patients in addressing IPV (R)	6	5	7
I am able to gather the necessary information to identify IPV as the underlying cause of patient illnesses (e.g., depression, migraines)	4	3	4
If a patient refuses to discuss the abuse, paramedics can only treat the patient's injuries (R)	4	3	5
Victims of abuse could leave the relationship if they wanted to (R)	5	4	6
Paramedics have a responsibility to ask patients about IPV	5	4	6
Alcohol abuse is a leading cause of IPV (R)	4	3	4
Victims of abuse often have valid reasons for remaining in the abusive relationship	5	4	6
Screening for IPV is likely to offend those who are screened (R)	4	3	5
I am able to gather the necessary information to identify IPV as the underlying cause of patient injuries (e.g., bruises, fractures, etc.)	4	3	5
Women who choose to step out of traditional roles are a major cause of IPV (R)	6	5	7
Paramedics do not have the knowledge to assist patients in addressing IPV (R)	4	3	5
I can match therapeutic interventions to an IPV patient’s readiness to change	3	3	4
I understand why IPV victims do not always comply with paramedic recommendations	5	5	5
Use of alcohol or other drugs is related to IPV victimization	5	3	5
I can recognize victims of IPV by the way they behave (R)	5	4	5
Victim autonomy Scale	**4.83**	**4.17**	**5.00**
Preparation Scale	**3.70**	**3.00**	**4.50**
Alcohol/drugs Scale	**4.17**	**3.67**	**4.33**
Victim understanding Scale	**4.83**	**4.58**	**5.17**
Self-efficacy Scale	**3.67**	**3.17**	**4.00**

Note: (R) indicates medians have been reversed due to reverse coded questions

Principal findings and conclusions

These two studies found additional evidence that paramedics believe they frequently encounter IPV patients, that they rarely receive any significant education on IPV, and that neither Australian paramedics nor paramedic students appear to have sufficient KAP to manage IPV patients. These findings were relatively consistent with findings for other AHP groups in the US[82, 83], which is unsurprising as the participants of the US studies also reported low levels of IPV education.

The results of these two studies found students and paramedics demonstrated low actual knowledge, perceived knowledge, and perceived preparedness to manage IPV patients, and that for the student cohort previous training was not associated with higher actual knowledge ($p>.05$). This is supported by findings from the attitude scales which found that students and paramedics have low self-efficacy, confidence and preparation to manage IPV patients, indicating they do not believe they are being properly prepared. As most participants reported not receiving any significant education these finding are unsurprising. Potentially students are learning some of the skills necessary to respond to IPV patients, such as communication skills for sensitive issues, however due to not receiving formal IPV education students are unable to recognise the applicability of these skills with IPV patients. A thorough review of the paramedic curricula with reference to the key skills required to adequately address IPV would assist in determining if it was a deficiency in the curricula, or an issue of clarifying the role of paramedics in responding to IPV, such as when to use which skills. It is possible that paramedic educators themselves are unsure as to what should be taught and how, and therefore future research should also attempt to determine not only what is being taught, but how it is being taught, to ensure learning outcomes are met.

Further research is also needed to demonstrate the effectiveness of educational interventions on improvements for paramedics in KAS with respect to IPV. Currently there are no published accounts of robust attempts to use educational interventions to improve these outcomes, and such research should be prioritised. Should this not be addressed it may result in future practitioners who are unable to effectively recognise the signs and symptoms of IPV or act inappropriately upon discovering IPV, which may have negative implications for patients.

A secondary finding to this study was that both paramedics and paramedic students appeared to report high rates of personal experience of IPV. Australian statistics show that around 16% of women and 5% of men will

experience physical or sexual abuse, and 25% of women and 14% of men will experience emotional abuse from a current or past partner (of any gender) at some point in their life[14]. We found that in the student sample 22.7% of women and 7.6% of males reported experiencing IPV (either physical or emotional), and in the paramedic sample 60.0% of women and 29.4% of men reported personally experiencing IPV (either physical or emotional). While there are limitations to our study based on our definition of IPV this remains a significant finding which warrants further investigation, as this may have serious implications for future practice. Namely it is unknown if a paramedic's personal experience of IPV will influence workplace behaviours such as their willingness or reluctance to discuss IPV with patients. Previous research has shown that having a previous experience of rape is linked with greater empathy for videotaped rape patient consultation[84, 85], that nurses with personal experience of IPV who encounter IPV patients have reported increased frustration and anger[86], and that past IPV experience can increase practitioner determination to screen[87]. Research on paramedics would be useful to determine the associations between personal IPV experience and workplace behaviours. Additionally as IPV is known to be associated with increased incidence of mental health conditions[88], exposing paramedics who may already be personally experiencing IPV to additional vicarious trauma, both through training and on the job, may impact on their own wellbeing and systems should be in place to support paramedics.

While the paramedic study adds evidence that paramedics are likely to encounter IPV in practice, the methodological limitations prevent firm conclusions. For example the data is an indication of what paramedics believe they see, rather than the actual presence of IPV in paramedic patient samples. Further studies could attempt to draw data from actual case presentations, however this may not be possible as it is difficult for paramedics to collect accurate data at present due to them often being uneducated, and it appears unlikely that they routinely ask about or document IPV, even when case findings indicate the potential for IPV. Data could be drawn from studies which require paramedics to routinely enquire about IPV, however it is unknown if women would be willing to disclose IPV to paramedics, and if paramedics do begin to talk to patients about IPV then they will need clear guidance on what to do when a patient does disclose, and currently there is no guideline for paramedics to respond. A study in Australian GP clinics used a simple self-report questionnaire which could be handed to patients and returned via post to estimate prevalence, and ambulance services may consider utilising such methodology in their own populations to discretely enquire about IPV[89].

Despite these issues it is recommended that education should be initiated which teaches students and paramedics the necessary skills and inspires confidence to recognise and refer IPV patients to care and support. A comprehensive review of previous educational interventions delivered to AHP groups would provide recommendations from which the current curricula could be updated, and this is the subject of Chapter 3.

Chapter 3

A REVIEW OF IPV EDUCATIONAL INTERVENTIONS DELIVERED TO ALLIED HEALTHCARE PRACTITIONERS

Chapter 3 – A review of IPV educational interventions delivered to allied healthcare practitioners

Declaration for Thesis Chapter 3

Publications linked to chapter
Sawyer S, Coles J, Williams A, Williams B. A systematic review of intimate partner violence educational interventions delivered to allied health care practitioners. Medical Education. 2016;50(11):1107-21.

Declaration by candidate
In the case of Chapter 3, the nature and extent of my contribution to the work was the following:

Nature of contribution	Extent of contribution (%)
Lead author responsible for study design, literature review, data collection, and writing of manuscript. Responsible author who accepts overall responsibility for the publication	70%

The following co-authors contributed to the work:

Name	**Nature of contribution**
Brett Williams	Study design, literature review, editing of manuscript
Jan Coles	Study design, editing of manuscript
Angela Williams	Study design, editing of manuscript

The undersigned hereby certifies that the above declaration correctly reflects the nature and extent of the candidate's and co-author's contribution to this work.

Candidate's signature: [redacted] Date: 7th January 2018

Main supervisor's signature: [redacted] e: 13th January 2018

Background and context

A key component of the healthcare sector's response to IPV has been to encourage the improvement of the education of practitioners[8, 70, 71]. This is because an effective response requires practitioners with the right mix of KAS, including an understanding of the theoretical basis of IPV, appropriate attitudes to IPV and women, and the skills to accurately recognise and refer patients to care. Such a response is needed as the ability to recognise the signs and symptoms of IPV allows for greater discovery[90], and the manner in which IPV is discussed is among the most important aspects of the response from practitioners[55].

Despite the calls for increased education there is little evidence for what actually constitutes an effective IPV educational intervention[67]. Indeed few studies have shown strong empirical evidence of the link between educational interventions and outcomes such as improvements in knowledge, attitudes, skills or behaviours (KASB)[66, 67]. Therefore there is a need to review the current literature base to determine if there are reproducible aspects of successful educational interventions which can inform future interventions. Such findings may concern what content is included, effective modes of delivery, and which outcomes are able to be achieved.

While paramedics and each individual healthcare profession maintains their own unique clinical skills and operational contexts their responses to IPV are largely the same, that is recognising and referring patients, and as such the majority of educational requirements will be uniform. Therefore it is possible that insight derived from each individual AHP setting will be relevant to other contexts. This study will add to the literature by describing the effects of IPV education on the KASB of individual AHP groups. The types of interventions being used, their content and the method of delivery will all be considered. Results will provide evidence-based insight for future researchers delivering educational interventions.

Aims of this chapter

1. To explore the impact of educational interventions on the KASB of AHP.
2. To generate evidence-based recommendations on the content, mode of delivery, and outcome measurement for future educational interventions.

A systematic review of intimate partner violence educational interventions delivered to allied health care practitioners

Simon Sawyer,[1] Jan Coles,[2] Angela Williams[3,4] & Brett Williams[1]

CONTEXT Intimate partner violence (IPV) is a significant cause of morbidity and mortality in women worldwide. Numerous health organisations have called for increased education for health care practitioners who encounter IPV patients and the first clinical guidelines for health services responding to IPV were recently published. This renewed focus has created a need to examine the current evidence for IPV education so that it may inform the next generation of educational interventions.

OBJECTIVES This study was designed to examine the effects of IPV educational interventions on the knowledge, attitudes, skills and behaviours of allied health care practitioners (AHCPs).

METHODS We conducted a systematic search of multiple databases up to the end of May 2015. We selected studies that included IPV educational interventions for AHCPs and that measured knowledge, attitude, skill or behavioural outcomes. Studies were evaluated based on methodological quality, education context and outcome measurement.

RESULTS We found 2757 articles from which 18 were selected for inclusion. Study participants included nurses, dentists, social workers and paramedics. Educational interventions ranged widely in length, delivery format and topics covered. Findings indicate that improvements in some knowledge, attitudes, skills and behaviours are associated with education, although the lack of high-quality studies indicates that conclusions should be treated with caution.

CONCLUSIONS Future studies should be conducted using rigorous methodology and validated instruments to measure evidence-based outcomes and should target a wider range of AHCPs. Recommendations are provided on education content and delivery, study methodology and outcome measurement based on insights gained from selected studies.

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Discuss ideas arising from the article at www.mededuc.com discuss.

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INTRODUCTION

Intimate partner violence (IPV) is a globally prevalent cause of mortality and morbidity that disproportionately impacts women.[1] Global prevalence figures show that one in three women will experience IPV at some point in their lives.[2] It is known to have serious, broad and long-lasting impacts on the physical and mental health of women[3] and their children,[4] and is primarily perpetrated by men.[1]

Both the World Health Organization (WHO) and the National Institute for Health and Care Excellence (NICE) recently released their first guidelines for health services responding to IPV.[5,6] Both agencies emphasise the urgent need to increase the education of frontline health care practitioners who may encounter IPV patients, and provide some recommendations around the content and delivery of such education.

The need for an education-based response, as opposed to a systems response, is shown by numerous qualitative studies which find women who experience abuse want a non-judgemental response from health care professionals that demonstrates understanding and sensitivity to the complexities of IPV.[7] Invariably, the key to disclosure, and therefore to the referral of patients, comes not from *what* health care staff say but from *how* they say it, which requires a deeper understanding of IPV. Therefore, although systems change models provide useful frameworks to allow for an improved response, any attempt to increase the recognition and referral of patients by untrained and uneducated practitioners will be unlikely to succeed.

To date there is little evidence of what actually constitutes effective IPV education for physicians or allied health care practitioners (AHCPs), nor for how education can translate to improved patient health care outcomes.[8] Standardised guidelines and training packages for health care workers might facilitate a coordinated response; however, occupation-specific interventions are still necessary to allow the members of individual professions to adopt a response relevant and appropriate to their unique skill sets and operational parameters.[5] Additionally, the recent arrival of the first evidence-based guidelines has generated a need to evaluate published IPV education research from all allied health care professions so that it may inform the next generation of educational interventions.

Two previous systematic reviews of educational interventions delivered to health care professionals have been performed, although no study has examined AHCPs in isolation. The first, conducted by Davidson *et al.*[9] in 2001, found a general lack of scientific rigour and consistency in the education programmes and outcome measurements, as well as major methodological deficiencies which prevented any meaningful conclusion. The authors identified the role that training could have in reducing harm and called for an increased focus on IPV education research in health care.[9]

The second review, conducted by Zaher *et al.*[8] in 2014, focused on randomised controlled trials in physician cohorts and found that although studies were generally able to improve knowledge and behaviours, the wide variance among interventions and outcomes measured prevented any meaningful comparison. However, the authors[8] did find that studies that combined education with systems support mechanisms, such as protocols, expert advisory services and multi-agency coordination, were the most beneficial, although this was based on a limited number of physician studies and it is not clear if findings will be generalisable to AHCP populations.

Notably, neither of the previous systematic reviews found reliable evidence of the effect of educational interventions on patient health care outcomes, which is a major deficiency of the literature base.

Subjects of IPV are highly likely to seek treatment from AHCPs, such as nurses, dentists, physiotherapists, social workers, psychologists, pharmacists and paramedics.[3] However, the bulk of medical education research has focused on physician populations, whose roles and education needs potentially differ from those of AHCPs.[6] Whereas many AHCPs will not provide direct counselling or treatment for IPV, they are in an ideal position to recognise the signs of IPV and refer patients to expert care, legal services and advocacy groups. Therefore, it is essential that education research is evaluated within all health care practitioner groups to ensure each profession is able to mount a coordinated and effective response. This study will add to the literature by generating an outcome-focused review of the effects of IPV education on the knowledge (K), attitudes (A), skills (S) and behaviours (B) of individual AHCP groups. Results will provide evidence-based insight for future researchers delivering educational interventions to AHCPs.

METHODS

We planned and conducted this review in adherence to the PRISMA (*p*referred *r*eporting *i*tems for *s*ystematic reviews and *m*eta-*a*nalyses) standards of quality for reporting systematic reviews.

Research question

Do IPV educational interventions affect the knowledge, attitudes, skills or behaviours of AHCPs?

Search strategy

We used search terms related to health personnel, education and IPV (Appendix S1). Our search was conducted for periods between the earliest database records available to 30 May 2015. Databases searched included the Allied and Complementary Medicine (AMED) database, the Cochrane Central Register of Controlled Trials (CCRCT), the Cochrane Database of Systematic Reviews, the Cumulative Index to Nursing and Allied Health Literature (CINAHL), EMBASE, Ovid MEDLINE, MEDLINE In-Process, Scopus and PsycINFO. We also searched using key terms in grey literature sources including Google Scholar, TRIP and Open Grey, as well as in the reference lists of included studies. The characteristics of the literature search are summarised in Fig. 1.

Inclusion criteria

We identified original research studies published in English that evaluated the impacts of IPV educational interventions on the KASB of AHCPs.

The target population was initially defined as including any health care practitioner requiring a university health or science degree. However, while we were in the process of conducting the literature search, a systematic review examining the effects of education on physicians[8] was published and hence we decided to exclude physicians from our review as we would not have been able to add significant new knowledge. Therefore, data extraction was conducted to include all health care practitioners and studies with physician populations were subsequently removed during the exclusion process.

Educational interventions were defined as any learning activity that provided information on IPV and measured KASB pre- and post-intervention. We defined IPV as abuse directed at an individual by a current or past intimate partner.[1] Note that research priority has often been given to educational interventions preventing violence against women because the vast majority of interpersonal violence is recorded against female patients. Therefore, the majority of educational interventions assume female patients; however, we did not limit our inclusion criteria in this respect.

There are no uniform definitions of KASB for use in medical education and hence we created our own three definitions as follows: *knowledge* was defined as information on a topic; *attitudes* were defined as beliefs or opinions on a subject; *skills* were defined as the demonstration of an ability to perform actions, and *behaviours* were defined as the actual use of a skill.

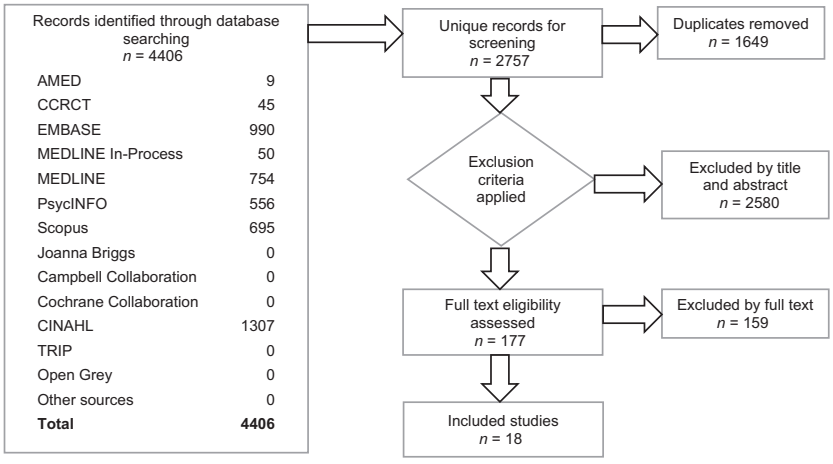

Figure 1 PRISMA (*p*referred *r*eporting *i*tems for *s*ystematic reviews and *m*eta-*a*nalyses) outcomes

Data abstraction

The lead author performed the initial screening and two authors conducted an eligibility assessment of full-text articles. Primary reasons for excluding articles were that their populations contained physicians or other non-allied health participants (e.g. administration staff), and that the educational intervention did not describe, reference or examine KASB.

Analysis

We used the Medical Education Research Study Quality Instrument (MERSQI)[10] to measure study methodological quality. The MERSQI uses study design, sampling methods, validity of measurement instruments, data analysis and Kirkpatrick level[11] of outcomes to score articles on a scale of 5–18, on which higher scores indicate higher methodological quality. The MERSQI is a scale specifically developed to evaluate medical education studies, and has been shown to have excellent inter-rater reliability and high criterion validity, and has demonstrated strong associations with 3-years citation rates and journal impact factor.[10] Studies were scored independently by two authors (SS, BW) and then compared. Conflicting scores on five studies were settled by discussion.[10]

Additionally, each article was examined based on Kirkpatrick's model, which describes the four levels of educational impact as: (i) learner satisfaction or reaction; (ii) knowledge or learning outcomes; (iii) performance or behaviour, and (iv) patient outcomes.[11] According to Kirkpatrick's model, education researchers should aim to continually enhance education programmes and measurement with the ultimate aim of improving and evaluating patient outcomes. Although Kirkpatrick's model may not be useful in determining individual study quality, it is a useful tool to measure the progress of an emerging body of research that aims to eventually impact patient outcomes.[12]

RESULTS

Study characteristics

Eighteen studies were included in the final analysis (Table 1).[13–30] The AHCP groups represented included practising and student nurses (including public health, midwifery, emergency department, inpatient, home visit and obstetrics nurses), dentists and social workers, as well as practising paramedics. The vast majority of studies had been conducted in the USA; however, some had been carried out in other countries, including Turkey, the UK, Australia, Canada and Sri Lanka. Included studies were conducted between 1992 and 2015. Sample sizes were small in most studies: the majority had fewer than 50 participants and only five had more than 100.

Educational interventions varied in length, ranging from 15-minute continuing medical education (CME) sessions to a university course delivered over 10 weeks. Modes of delivery varied between online and face-to-face methods, with some utilising interactive workshops comprising lectures, discussions and skills practice sessions. Most studies generated unique content for education programmes, and common topics discussed included a general overview of IPV, signs and symptoms of abuse, screening and questioning methods, referral options, documentation and local legislation. No study specifically stated if the content was intended for female or male patients; however, given the literature reviews, it appears that all studies assumed that patients would be female (although this does not necessarily mean their methods would not be applicable in male patients).

Of the included studies, 14 measured knowledge outcomes,[13–26] 11 measured attitudes,[13,15,17–21,23,27–29] two measured skills,[16,23] and four measured behaviours.[17,18,26,30] Most studies measured more than one outcome, although no study measured all four KASB outcomes. Table 2 shows outcome measures by study.

Eleven studies measured the effect of the intervention on learning outcomes (Kirkpatrick Level 2)[13–15,19–21,24,25,27–29] and seven measured impact on behaviour (Level 3).[16–18,22,23,26,30] No study attempted to measure patient health care outcomes (Level 4).

A wide variety of instruments were used, with many authors creating their own or modifying an existing instrument. Reporting of instrument validity and reliability was inconsistent. Measurement follow-up intervals were most commonly pre- and immediately post-intervention, although some studies measured at 3, 6 or 18 months.

Table 1 Description of included studies

Study Country Outcomes	Population	Intervention description	Study design; measurement instrument(s) (validation reported)	Findings	MERSQI score	Kirkpatrick level
Bokunewicz & Copel (1992)[27] USA A	*n* = 18 Emergency department nurses	60-minute lecture with video	Pre/post-test design; 6-item instrument based on Ewing & Aubrey (1987)[39] (no validation)	Significant improvements in A ($p < 0.01$)	9.5	2
Boursnell & Prosser (2010)[26] Australia KAB	*n* = 19 Practising and student nurses *n* = 601 case sheets	1-hour video presentation with support materials	Pre/post-test design; authors created 8-item self-report measure (no validation) with case sheet audits	Increased self-rated K and A at 1 and 6 months Increased B (documentation of asking about children) No statistical analysis reported	6.5	3
Danley *et al.* (2004)[13] USA KA	*n* = 174 Year 3 and 4 dental students and faculty	15-minute online tutorial	RCT; authors created 24-item instrument (no validation)	Overall significant improvements in K for most items ($p < 0.05$) Overall no significant improvements in A (p-value not reported)	11	2
Davila (2006)[14] USA K	*n* = 20 Public health nurses	4-hour interactive workshop	Pre/post-test design; Doepel Domestic Violence Survey[36] (no validation)	Small non-significant increases in mean K scores ($p = 0.107$)	10	2
Everett *et al.* (2013)[15] USA KA	*n* = 65 Year 1 dental students	1-hour lecture	Pre/post-test design; authors created 8-item instrument (no validation)	Significant increases in K ($p < 0.001$) Significant increases in most A ($p < 0.05$)	11	2
Forgey *et al.* (2013)[16] USA KS	*n* = 8 Army civilian social workers	3-day workshop	Pre/post-test design; authors created 20-item instrument for K (not described, no validation), authors created rating scale for S (no validation)	Non-significant increases in K ($p = 0.059$) Improvements in some S categories (no statistical analysis)	10	3
Hsieh *et al.* (2006)[17] USA KAB	*n* = 174 Practising dentists	15-minute online tutorial	RCT; 24-item instrument (no validation)	Significant increase perceived K ($p < 0.0001$) and most B items (intention to practise, $p < 0.0001$) No significant effect on most A scales ($p > 0.05$)	11	3
Janssen *et al.* (2002)[30]	*n* = 300 Obstetrics	Five 1-hour CME sessions	Pre/post-test design; case sheet audits	Increased documented screening rate from	12*	3

Table 1 (Continued)

Study Country Outcomes	Population	Intervention description	Study design; measurement instrument(s) (validation reported)	Findings	MERSQI score	Kirkpatrick level
Canada B	nurses			42.1% pre-intervention to 53.8% at 4 months, 60.7% at 6 months, and 62.1% at 18 months No statistical analysis performed		
Jayatilleke *et al.* (2015)[18] Sri Lanka KAB	*n* = 408 Public health midwives	4-day interactive workshop	Pre/post-test design; authors created 20-item instrument (not described, internal structure and content validation reported)	Significant increases in K and B at 6 months ($p < 0.001$) Significant improvement in some B at 6 months (identification $p < 0.001$, discussion of IPV with all suspected patients $p < 0.01$)	14.5	3
McAndrew *et al.* (2014)[19] USA KA	*n* = 25 Year 4 dental students	1-hour online tutorial based on RADAR	Pre/post-test design; modified PREMIS[35] (internal structure reported)	Significant improvements in one of eight A scales (perceived preparation $p = 0.007$), perceived K ($p = 0.007$), and actual K ($p = 0.007$)	12	2
McMahon *et al.* (2013)[28] USA A	*n* = 179 Masters of Social Work students	Elective university course	Non-randomised two-group design; authors created instruments (internal structure reported)	Significant increases in A (myths $p < 0.002$, attitudes $p < 0.03$, beliefs $p < 0.008$, and efficacy $p < 0.017$)	11.5	2
Plunkett (2010)[20] USA KA	*n* = 24 Nurses and Social Work student	1-day interactive lecture	Pre/post-test design; author created instrument (internal structure reported)	Increase in perceived K (no statistical analysis performed) Significant increases in A in three of three scales post-test and at 6 months ($p < 0.0005$)	9	2
Salmon *et al.* (2006)[21] UK KA	*n* = 70 Midwives	7.5-hour workshop	Pre/post-test design; authors created 38-item instrument (no validation)	Significant increase in K post-test ($p < 0.001$) and at 6 months ($p < 0.005$)	11.5	2

Table 1 (Continued)

Study Country Outcomes	Population	Intervention description	Study design; measurement instrument(s) (validation reported)	Findings	MERSQI score	Kirkpatrick level
				Significant increase in most A scales post-test and at 6-months ($p < 0.001$)		
Schoening *et al.* (2004)[29] USA A	$n = 52$ In-patient nurses	1- or 3-hour workshop	Pre/post-test design; Public Health Nurses' Response to Women Who Are Abused Scale (internal structure reported)	Mixed results with no overall significant increase in A ($p > 0.05$)	10.5	2
Wallace (2009)[23] USA KAS	$n = 26$ Nursing students	Elective university course delivered over 10 weeks	Non-randomised two-group design; Doepel Domestic Violence Survey[36] (no validation reported)	Significant increase in A ($p < 0.01$) Non-significant improvements in K and S ($p > 0.05$)	8.5	3
Wallace (2014)[22] USA KA	$n = 40$ Final year nursing students	Online tutorial or lecture delivery	Pre/post-test design; PREMIS[35] (no validation reported)	Significant improvements in perceived K ($p < 0.0001$), with no significant change to actual K for either group ($p = 0.2691$ online, $p = 0.1829$ tutorial) Mixed result in A scales, no overall summary provided	9	3
Weiss *et al.* (2000)[24] USA K	$n = 19$ Paramedics	3-hour CME	Pre/post-test design; authors created 12-item instrument (no validation reported)	Significant improvements in K ($p < 0.05$)	10	2
Yildiz *et al.* (2014)[25] Turkey K	$n = 49$ Emergency department nurses	90-minute interactive workshop	Pre/post-test design; authors created 21-item instrument (no validation reported)	Significant improvements in K at immediate and 3-months post-tests ($p < 0.0001$)	11	2

* Adjusted MERSQI score due to non-applicable scoring sections (see reference Reed *et al.*[10]).
K = knowledge; A = attitudes; S = skills; B = behaviours; CME = continuing medical education; MERSQI = Medical Education Research Study Quality Instrument; PREMIS = Physician Readiness to Manage Intimate Partner Violence Patients; RADAR = *R*outinely screen female patients, *A*sk direct questions, *D*ocument your findings, *A*ssess patient safety, *R*eview options and refer as indicated; RCT = randomised controlled trial.

Table 2 Outcome measures by study

	Knowledge				
	Actual	**Perceived**	**Attitudes**	**Skills**	**Behaviours**
Bokunewicz & Copel (1992)[27]			Yes		
Boursnell & Prosser (2010)[26]	No				No
Danley *et al.* (2004)[13]		Yes	No		
Davila (2006)[14]	No				
Everett *et al.* (2013)[15]	Yes		No		
Forgey *et al.* (2013)[16]	No			No	
Hsieh *et al.* (2006)[17]	Yes		No		No
Janssen *et al.* (2002)[30]					Yes
Jayatilleke *et al.* (2015)[18]	Yes		Yes		Yes
McAndrew *et al.* (2014)[19]	Yes	Yes	No		
McMahon *et al.* (2013)[28]			Yes		
Plunkett (2010)[20]	No		Yes		
Salmon *et al.* (2006)[21]	Yes		Yes		
Schoening *et al.* (2004) [29]			No		
Wallace (2009)[23]	No		Yes	No	
Wallace (2014)[22]	No	Yes			
Weiss *et al.* (2000)[24]	Yes				
Yildiz *et al.* (2014)[25]	Yes				

Yes = statistically significant improvements; No = no statistically significant improvements.
Cells that are blank indicate that no attempt was made to measure outcomes.

Study quality

The majority of studies used a single-sample pre- and post-test design. There were two non-randomised two-group and two randomised controlled trials. Very few studies were carried out at more than one institution. All studies but two performed statistical analyses on outcomes. MERSQI scores ranged between 6.5 and 14.5; the average score of 10.5 indicated that most studies displayed methodological limitations which may have impacted results.

DISCUSSION

This systematic review suggests that IPV educational interventions delivered to AHCPs are associated with improvements in some aspects of KASB. However, results were inconsistent and the limitations of the studies included mean that no firm conclusions can be drawn. We will discuss the key findings and knowledge gaps, and make suggestions for future studies.

Summary of included articles

Methodological characteristics

A number of the included studies have significant methodological limitations. Common problems identified with the MERSQI tool included small sample sizes, use of non-validated instruments, lack of control groups, and the absence of long-term follow-up. A recent review using the MERSQI tool found that the average score for published medical research was 10.7,[31] and therefore most studies included in this review were of similar methodological quality (average score: 10.5); however, they scored considerably less than the highest possible score of 18, indicating methodological limitations may have impacted results.

Groups of AHCPs

The AHCP groups covered were nurses, dentists, social workers and paramedics. Key features of studies from each population will now be discussed.

A 3-hour CME-style educational intervention aiming to improve the general IPV knowledge of a sample of 46 US paramedics found significant improvements, although the instrument used in the study was not validated and items did not cover a wide range of knowledge.[24] Paramedics potentially encounter IPV patients frequently and improving their response could benefit patients.[32,33] Therefore, this practitioner group warrants greater research.

Two studies examined social workers.[16,28] The first found non-significant improvements in the knowledge and some history-taking and risk assessment skills of eight civilian social workers based in the US military after a 3-day workshop using simulated patient encounters.[16] The second study demonstrated improvements in the attitudes of 24 Masters of Social Work students following a semester-long elective university subject.[28] However, the instrument used to measure these changes was not made available and hence it is difficult to assess how appropriately or thoroughly these were measured. Social workers are likely to encounter IPV patients[6] and so further study would benefit this profession.

Four studies measured student and professional dentist populations.[13,15,17,19] Three of the studies used online delivery methods and found that knowledge, some attitudes and intention to practise could be improved with even short (15-minute) interventions.[13,17,19] Similar results were found with an hour-long didactic lecture delivered to 65 dental students.[15] However, only one of the four studies utilised a previously validated measure,[19] none measured beyond immediately post-intervention, and no study measured skills or actual behaviours and thus it is unknown if the intervention had any effect on ongoing practice or competency.

Nonetheless these studies provide a good demonstration of how an AHCP group can implement an evidence-based programme to improve its members' response to IPV patients and that such a programme can be occupationally tailored and appropriate, generate willing practitioners and be favourably received by patients.[17]

Eleven studies examined student or professional nurse cohorts.[14,18,20–23,25–27,29,30] The nursing studies demonstrated that knowledge, and limited attitudes and behaviours, can be changed with educational interventions.

Three studies examining midwife cohorts found increases in knowledge, improved attitudes around self-confidence, responsibility and perceived barriers,[18,21] and increased documentation and screening rates.[30] Two of the studies demonstrated that changes were maintained at 6 months.[21,30] Because there is an increased risk for IPV in pregnancy,[3] midwives are likely to encounter subjects of IPV and therefore increased midwife education may be of benefit to patients.

Additionally, two studies[25,27] examined emergency department nurses, another nursing specialisation in which practitioners are highly likely to encounter IPV patients. One study found improvements in some attitudes of 18 participants who watched a 60-minute video,[27] and another found improvements in knowledge up to 3 months post-delivery of a 90-minute interactive workshop to 49 participants.[25] However, these studies used small sample sizes and non-validated instruments and hence their conclusions should be treated with caution.

Nurses are an ideal professional group to launch a coordinated response to IPV because their broad-ranging skill sets and contact points mean that they encounter patients from all life stages and backgrounds.[6]

Notably absent AHCP groups from this review included musculoskeletal practitioners, such as physiotherapists, and mental health clinicians, such as psychologists, both of which warrant further investigation as they are highly likely to encounter IPV patients.[3,5] As each AHCP group has a unique skill set, the results from the included studies may not be generalisable to other non-studied populations. Therefore, investigations with a wider range of AHCP groups are warranted.

Educational intervention characteristics

There was vast disparity among the articles included in terms of the length, content and method of delivery of educational interventions. Although most studies cited the topics covered in their interventions, only one study made its full education package available for assessment.[19] Therefore, it was not possible to determine if the content of interventions impacted on results. Future studies should consider providing more detailed descriptions or references to teaching content and methods to allow comparisons of efficacy.

The majority of the studies included in this review were conceived and conducted before the WHO and NICE guidelines[5,6] were published (in 2013 and

2014, respectively). Now that clear guidelines are available, future studies should attempt to design and deliver content that adheres to these recommendations, which specify that education should include all of the following content: background topic knowledge (e.g. definitions, key statistics, relevant legislation); recognition of IPV (e.g. recognising signs and symptoms of IPV); safety assessment and planning; communication and clinical skills (e.g. how and when to ask about IPV, how to respond to disclosure, how to collect forensic evidence); documentation; referral options, and attitudes. Insight gained from the studies included in this review may aid future research that attempts to meet the WHO[5] and NICE[6] recommendations.

Attempts to improve general knowledge (e.g. IPV definitions, statistics, signs and symptoms, legislation, and documentation) were usually successful, if not always significantly. Therefore, future studies should consider devoting more effort to less studied and potentially more complicated topics such as interpersonal skills and attitudes.

Around half of the included studies stated that they attempted to teach communication techniques; however, given that the length of most of the interventions was less than 3 hours, it seems unlikely that they dealt with this topic in a thorough manner. Evidence clearly shows that communication is an essential skill[7] and therefore it is worrying that this topic was not referred to more often. Future studies would benefit from clearly defining communication methods and techniques, providing practice opportunities and robustly evaluating learning.

Only one study referred to safety assessment and planning,[30] which may derive from the fact that most education programmes assume this task will be undertaken by an expert referral agency. Not all patients who disclose violence will be referred or will follow through with the referral and therefore this should be considered an essential skill for practitioners and should be included in future interventions.

Although 11 studies measured attitudes,[13,15,17–21,23,27–29] these were rarely referred to as an education topic and again it is difficult to assess the extent to which they were addressed in the studies that did so. This is a significant oversight as the effects of attitudes on other areas of education are currently unknown in many AHCP populations. For example, attitudes may prevent recognition and referral as practitioners may lack self-confidence or self-efficacy, or they may hold poor attitudes towards women that affect their communication. Therefore, future studies should incorporate education covering positive attitudes.

All included studies appeared to assume that subjects of IPV would be female (although many did not specify this), which is expected as the burden of violence borne by women accounts for the majority of the most damaging violence and therefore attracts the most research. Nonetheless, IPV also affects male subjects and occurs in same-sex relationships, and therefore future research should consider including material focused on these populations.

There did not appear to be any correlation between length of education and outcomes. One 10-week course[23] and another 3-day course[16] had no significant effect on the knowledge of participants, yet several 1-hour courses reported improvements in either the perceived or actual knowledge of participants.[13,15,17,19] Therefore, the studies included indicate that short CME-style interventions may be all that is required for an effective intervention, although this cannot be concluded without a greater number of higher-quality studies. Potentially, the length of the intervention will have an effect on the number of topics covered and ability to engage participants in discussion and simulated practice, yet it does not appear that increasing the length will necessarily improve the outcomes.

Four studies utilised an online delivery method,[13,17,19,22] but although this method appears to be associated with improved knowledge and attitudes around self-efficacy and responsibility, only one study utilised a previously validated instrument[19] and no study measured outcomes over time or measured impact on skills or actual behaviours. Therefore, it is not clear if improvements gained from online interventions will translate to increased recognition and referral of IPV patients.

Face-to-face methods of delivery have shown similar associations with improvements in knowledge and attitudes, and have also been associated with improvements in some behaviours and skills.[16,28,30] Studies using interactive, mixed-methods interventions (e.g. a short didactic lecture followed by a group discussion and skills practice sessions) appear to be more effective in generating a wider range of results,[16,18,23,30] which is also shown in other populations.[8] However, few studies utilised robust designs and so further evidence is warranted.

A significant limitation of the online method is that skills cannot be easily practised and refined by expert instructors, a facility which, conversely, represents a major strength of the face-to-face method, which many studies report that participants found useful.[16,18,20,23] Therefore, potentially the online method may be best used to deliver 'pre-reading' before face-to-face sessions in which participants can engage in group discussion to address any issues or questions, and are given time to practise skills.

Outcome measures

Eleven studies measured the impact of the intervention on learning only (Kirkpatrick Level 2)[13–15,19–21,24,25,27–29] and seven examined the impact on performance (Kirkpatrick Level 3).[16–18,22,23,26,30] As all of the studies included were small and often pilot studies, it would be extremely difficult to measure the effect beyond performance outcomes. Even large-scale studies conducted with general practitioners have only just begun to study patient health care outcomes.[34] Nonetheless, the included studies demonstrate associations between educational interventions and learning, and there are indications that behavioural outcomes are also possible. Therefore, based on Kirkpatrick's model, future studies should seek to consolidate methods of improving learning, while also attempting to advance progress towards performance outcomes.

Despite the positive indications of the findings of most studies, the measurement of outcomes was potentially insufficient as a result of the use of non-validated instruments, lack of control groups, and lack of follow-up over time. Only five studies reported the internal validity of the scales they used,[18–20,28,29] only three utilised scales for which content validity had been reported previously,[18,19,22] and no studies reported on relationships to other variables. This is not surprising as we were able to identify only two instruments for which internal validity or test–retest reliability had been reported previously,[35,36] and neither instrument measured the full spectrum of KASB or had been tested in a wide variety of health care populations.

Only six studies measured results over time[18,20,21,25,26,30] and hence the permanence of any increases is largely unknown. This is a significant limitation of the design of many studies, which makes it difficult to draw conclusions as to the validity of their results. Future studies should consider measuring outcomes immediately and at 3-month, 6-month and 12-month intervals to determine the longevity of any improvements and assess the need for intermittent refreshing of course content.

Despite these limitations, the studies included produced several noteworthy outcomes, which we will now discuss.

Knowledge

Fourteen of the 18 included studies[13–26] aimed to improve the knowledge of participants and most studies reported significant improvements. It would appear that most AHCPs are willing and able to learn knowledge such as signs of IPV, questioning techniques, documentation and referral. However, few studies measured longitudinal increases.

Only one study attempted to measure the effect of knowledge on other outcomes and used Spearman's rho to show that at baseline and at a 6-month follow-up, increased IPV knowledge positively correlated with perceived responsibility and self-confidence, and negatively correlated with perceived barriers.[18] The links between IPV knowledge and improvements in attitudes, skills or behaviours are yet to be made, and therefore future studies should attempt to measure interactions as findings may allow improved or wider impacts from education.

Although a thorough analysis of the instruments used is beyond the scope of this review, we note that often knowledge items pertained to general IPV knowledge (i.e. isolated facts and statistics), rather than the knowledge required to recognise or refer patients (e.g. signs of IPV, documentation requirements, referral options). Future studies should ensure the robust evaluation of knowledge in order to avoid creating practitioners who are judged as competent yet do not have the knowledge necessary to perform tasks as desired, as was illustrated in one study in which participants demonstrated a significant improvement in their perceived but not in their actual knowledge.[22] The creation and use of valid and reliable measures would help to prevent these issues.

Attitudes

Included studies showed that attitudes surrounding self-efficacy (e.g. 'I am able to identify IPV') and self-responsibility (e.g. 'It is my role to recognise and refer IPV patients') could be changed with even short interventions.[17] Conversely, only one study was able to change victim-blaming attitudes

(e.g. 'Victims of abuse can leave if they want to').[28] However, this intervention took place over an entire university semester, during an elective unit, with a population of Masters of Social Work students, rather than in a CME setting as per other comparable studies.[28] Furthermore, this study[28] did not describe the instrument it used and therefore its results cannot be thoroughly assessed.

Few studies attempted to distinguish between the full range of attitude subscales. The term 'attitude' is broad and, with respect to IPV, can encompass such domains as general attitudes towards women or victims, self-efficacy and responsibility, and occupational roles. Indeed, many of these domains have been cited by AHCPs as barriers to responding to IPV in qualitative research.[37] The interaction between individual IPV attitude subscales and knowledge, skills and behaviours is poorly understood and therefore more research is required in this area.

Skills

Two studies measured changes in skills.[16,23] However, one utilised a 10-question multiple-choice instrument rather than testing ability to actually perform skills.[23] The second study was undertaken with social workers and used simulated patient encounters.[16] This study found improvements in history taking and safety planning.[16] Although results were somewhat mixed, they did show improvement from simulated practice, which is similar to the findings of other research.[38]

Several studies included in this review incorporated practice sessions into their design and many noted that participants commented favourably and stated that such sessions helped to build participants' confidence.[16,18,20,23] This is a key feature of a successful intervention because feelings of being unprepared or undertrained to respond are commonly cited as barriers to responding to IPV.[37] Ideally, future studies should incorporate skills practice and evaluation with the opportunity for individual feedback and ongoing support to ensure competency.

Skills that require practice may include identifying the IPV subject, asking questions and giving appropriate responses, undertaking safety planning and referral, and completing documentation.

Behaviours

The studies included show that some behaviours can be modified with education; however, no study performed a thorough evaluation. Three of the four studies measuring behaviours measured only intention to practise[17] and rate of documentation of screening,[26,30] with two finding significant improvements. The fourth study examined identification rates and improvements in the content of patient discussions of IPV.[18]

Ideally, future studies should utilise a comprehensive evaluation of desired behaviours, including the performance of tasks such as screening, documentation and referral, as well as a measure of the quality of the skills performed, such as in the appropriateness of questioning and reactions, completeness of documentation, appropriateness of referrals and safety planning, and level of patient follow-up.

One other interesting finding noted in many studies concerned the high prevalence of personal experience of IPV in participants. This is an important finding because we do not know how personal experience might affect the behaviours of AHCPs. For example, they may be reluctant to talk about IPV with patients as a result of their own experiences or, conversely, personal experiences may increase their confidence or determination to discuss IPV and to help others. Additionally, discussion of IPV with patients may carry a risk for inducing vicarious trauma in AHCPs who have personal IPV experience and therefore this warrants further investigation. Potentially there will be a need to offer assistance to staff to help them deal with their own experiences before they undertake IPV education programmes.

Limitations of this review

The limitations of this review include a lack of high-quality studies measuring consistent outcomes over extended periods, the ambiguity of education content in most studies, the exclusion of studies that included AHCPs but also included physicians or other staff, the use of only English-language articles, a lack of unpublished study inclusion and the use of a non-validated search strategy. Additionally, all of the studies included appeared to assume female patients and therefore male patient-focused education, as well as same-sex relationship IPV, was not addressed. We also recognise the potential for researcher bias, for which we attempted to control using a protocol that included a blinded manuscript review by two researchers and the objective MERSQI tool. Future systematic reviews should combine physician and AHCP groups to ensure that findings reflect the need for cohesion and cooperation

between physician and AHCP groups when responding to IPV patients in the broader health care context.

Implications for future research

The included studies demonstrate a positive association between educational interventions and improved KASB in AHCPs, which is supported by other reviews.[8,9] There is a clear need to generate further high-quality research on educational effectiveness before any firm conclusions can be made. Clear guidelines around expected responses to IPV from individual AHCP associations would aid this.

The included studies can provide insight and direction for future researchers in a manner we have detailed throughout this manuscript. Specifically, future studies in this area should focus on delivering interventions that cover the full spectrum of the education content recommended in the WHO and NICE guidelines.[5,6] Future studies should ensure adequate sample sizes, the evaluation of all of KASB, and the measurement of outcomes to at least 12 months post-intervention, and should attempt to validate both the interventions and any instruments used. Additionally, it is imperative that researchers publish details of course content and delivery methods to allow for greater analysis and the dissemination of effective interventions. We recognise that such studies will be necessarily complex and lengthy undertakings, but there is sufficient evidence to justify such attempts and the benefits to IPV patients and other researchers can be expected to be significant.

Moving forward there is a need to: (i) generate an evaluation template that defines the necessary KASB outcomes to be achieved from educational interventions, and that is useable with a wide variety of AHCPs and provides for the inclusion of evaluation on occupation-specific instruction; (ii) develop and validate measures and protocols to assess KASB and other indicators of programme effectiveness, and (iii) increase the number of high-quality educational interventions that demonstrate effectiveness. The periodic repetition of reviews such as this will allow for continued assessment and therefore improvement of educational interventions.

Attempts should also be made to evaluate patient health care outcomes because there is currently no compelling empirical evidence that AHCP educational interventions provide any practical benefits to patients or population health. We recognise that such evidence will be difficult to obtain, particularly given the relative infancy of IPV education, the need for multi-agency cooperation and investment, and the potential for individual patient cases to require years if not decades to yield improvements. Therefore, future research would benefit from increased multi-agency coordination and support. Governments and AHCP bodies invested in improving the health and well-being of women and children, and indeed of society in general, should prioritise such actions.

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SUPPORTING INFORMATION

Additional Supporting Information may be found in the online version of this article:

Appendix S1. Search terms

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Principal findings and conclusions

This research reported on in this chapter found that while there is evidence of a positive association between educational interventions and improved KASB of AHP, further high quality research on educational effectiveness is required before any firm conclusions can be made. This study yielded several findings which can inform the next generation of educational interventions.

This review found that most studies were successful in improving the knowledge of their participants. This is a positive finding, as improvements in knowledge will be an important step in improving attitudes, skills and behaviours.

There was no reliable evidence that educational interventions are effective at modifying attitudes, which is a significant gap in the literature given that it is believed that the attitudes of healthcare practitioners can impact on their ability to appropriately discuss IPV with patients[55]. It will be important to study this further, as it is currently unclear if the attitudes of paramedics will impact on their ability to respond appropriately to IPV, or if it is possible to change attitudes through educational interventions delivered during training or post qualification.

With regards to improvements in skills this review found that participants often reported wanting the opportunity to practice skills, such as talking to patients about IPV, with experts. The need to improve confidence in skills is highly relevant as a lack of confidence and training has been cited as a key barrier to screening for healthcare professionals[78]. Therefore it is recommended that educational interventions contain the opportunity for skills practice with expert trainers.

This review also found that educational interventions can be effective when delivered both online and face to face, though there is no evidence for outcomes other than increasing knowledge with online methods. There is an opportunity to deliver some content online, which may help streamline education, though it appears that online delivery may not be sufficient to achieve all outcomes, particularly improvement in skills. Future research should investigate the potential for online delivery of content to paramedics which could ensure a more consistent and efficient delivery.

Currently there are no published reports of evidence based educational packages designed for paramedic participants, and therefore further research which aims to improve the knowledge of paramedics though such packages is needed.

An invited commentary for this paper from the Journal of Medical Education stated that research such as this will be instrumental in creating evidence-based packages, and that while education will be tailored to the individual professions, the findings are relevant across professions[91]. This provides evidence for the applicability of our research to a wide range of healthcare professions, and demonstrates that studies stemming from paramedic researchers can impact on broad medical challenges such as the response to IPV.

Another key finding derived from this review was that there appeared to be limited choices for outcome measures to determine the effectiveness of educational interventions. From the paramedic context there is little to no evidence that the outcomes measures that are currently available would be robust measures. Therefore there is also a need to develop new, or modify existing, outcome measures so that the effectiveness of educational interventions can be properly measured, which is the subject of chapter 4.

Specific to the prehospital environment only one study included in the review assessed the impact of education on paramedics, and the study only measured the impact on actual knowledge. It would be difficult to assess the impact of education on paramedics as there is currently no guidelines on how they should be responding to IPV patients, therefore it is unclear exactly what needs to be taught. Therefore in order to create paramedic specific education there is a need to determine how paramedics should be responding which is the subject of chapter 5.

Chapter 4

AN OUTCOME MEASURE TO ASSESS IPV EDUCATION

Chapter 4 – A psychometric assessment of an outcome measure to assess IPV education

Declaration for Thesis Chapter 4

Publications linked to chapter
The psychometric properties of an intimate partner violence education outcome measure delivered to allied healthcare students. American Journal of Preventative Medicine (submitted). 2017

Declaration by candidate
In the case of Chapter 4, the nature and extent of my contribution to the work was the following:

Nature of contribution	Extent of contribution (%)
Lead author responsible for study design, literature review, data collection, statistical analysis and interpretation, and writing of manuscript. Responsible author who accepts overall responsibility for the publication	70%

The following co-authors contributed to the work:

Name	**Nature of contribution**
Brett Williams	Study design, statistical analysis and interpretation, editing of manuscript
Jan Coles	Study design, editing of manuscript
Angela Williams	Study design, editing of manuscript

The undersigned hereby certifies that the above declaration correctly reflects the nature and extent of the candidate's and co-author's contribution to this work.

Candidate's signature: [redacted] Date: 7th January 2018

Main supervisor's signature [redacted] ate: 13th January 2018

Background and context

Based on the results of Chapters 1 and 2, as well as the wider literature base, there is an urgent need to develop educational interventions capable of teaching paramedics and paramedic students how to appropriately respond to IPV. The same is likely to be true for many other allied health professions. In order to ensure the efficacy of such education there is therefore also a need to develop new, or modify existing, instruments to assess outcomes measures.

Currently there is an overall lack of published data on the psychometric properties of the various instruments designed to measure outcomes from IPV education when delivered to a wide range of AHP, and therefore it is difficult to draw conclusions on the effectiveness of previous educational interventions which could inform future interventions. Therefore there is a need to rapidly assess the currently available instruments to provide evidence of their suitability.

The PREMIS is an outcome measure created for use with physicians in the US[81], which has since been adapted for use with AHP and allied healthcare students (AHS) and called the Modified PREMIS. The Modified PREMIS has demonstrated acceptable reliability in some aspects when delivered to AHS in the US[81, 92-94], but has never had its psychometric properties measured in Australian populations, or with paramedics.
While the scale has limitations and other measures are available, the Modified PREMIS has the benefit of measuring a wide range of attributes, including KAP to manage IPV patients. As a leading measure this instrument should be assessed for its suitability for use with AHP and AHS.

This study will report on the psychometric properties of the PREMIS when delivered to an Australian AHS cohort. Within Australia it is usual for most AHS to complete a Bachelor degree before practicing in their profession, and this would be a beneficial time to begin their IPV education. Therefore measuring the psychometric properties of the Modified PREMIS in AHS cohorts will provide useful data. The results of this study will provide evidence of the validity and reliability of the PREMIS when used in Australian AHS populations, and will allow proper estimation of its benefit in measuring educational interventions delivered to these populations.

Aims of this chapter

The measure the psychometric properties of an outcome measure of IPV when delivered to a cohort of Australian AHS.

The psychometric properties of an intimate partner violence education outcome measure

Simon Sawyer, Jan Coles, Angela Williams, Brett Williams

Abstract

Background

The need for increased education on intimate partner violence (IPV) for allied healthcare practitioners has been well established. Most Australian allied healthcare practitioners are educated at university, where educational interventions could be delivered to students. Specific IPV outcome measurement instruments demonstrating sound psychometric properties would enable accurate evaluation of educational interventions to ensure effectiveness.

Methods

The psychometric properties of the Modified Physician REadiness to Manage Intimate partner violence Scale (Modified PREMIS) were measured when delivered to a cohort of Australian allied healthcare students (AHS) in 2015, performing principal component analysis, and evaluating dimensionality, internal consistency, and test-retest reliability in 2017.

Results

In total 260 responses were received, participants were primarily paramedicine students (85.0%) with the remainder double degree nursing and paramedicine students (15.0%). Actual and Perceived Knowledge and Perceived Preparation sub-scales demonstrated variable validity and reliability. Principal component analysis of opinion items revealed a 5-factor solution, with identified sub-scales demonstrating mostly low internal consistency (Cronbach's alpha between .47 and .80). Correlations between sub-scales demonstrated few significant correlations above r = .3 which may indicate problems with construct validity. Medium to high test-retest reliability was found for sub-scales with spearman's rho values between .63 and .88.

Conclusions

The scale did not demonstrate robust psychometric properties and some items may not be appropriate for use with Australian AHS groups. Pending revisions and subsequent psychometric appraisal the instrument should be used with caution; however an updated instrument may contribute as a valuable tool for IPV educational research and this paper provides several findings which may be of use when revising the scale.

Introduction

The recent release of the first ever comprehensive recommendations for the global healthcare curriculum regarding intimate partner violence (IPV)[1, 2] has increased the need for effective educational interventions with robust outcome measures. Defined as abuse between people currently or formerly in an intimate relationship, IPV occurs when a person uses physical, sexual, psychological or any other form of abuse to control or otherwise harm their partner[3]. Intimate partner violence is a leading contributing factor to mortality and morbidity for women worldwide, with the World Health Organisation estimating that 1 in 3 women will experience IPV at some point in their life[4]. Intimate partner violence is associated with numerous physical and mental health conditions in women[5] and their children[6] and therefore bears a significant burden of the health of society.

Allied healthcare practitioners would be highly likely to encounter IPV patients in their practice[5], and may be a good resource to recognise and refer women to care and support, which is a key strategy to reduce overall harm and violence[7]. Qualitative research has shown that women feel comfortable being asked about and discussing IPV with healthcare professionals, provided the practitioner is knowledgeable, non-judgemental and uses a sensitive and empathetic manner[8]. Therefore education and training which generates skilled practitioners capable of effectively recognising IPV patients and providing an appropriate response is needed[2].

New allied healthcare practitioners in Australia are commonly required to undertake an accredited Bachelor degree in their respective disciplines in order to practice. Therefore the majority of their education occurs at university, which would be an ideal place to initiate IPV education. It would be appropriate to design and deliver educational interventions to allied healthcare students (AHS) so that they are taught the knowledge, attitudes and skills to respond appropriately to IPV patients, which has been identified as an important step forward for medical education[9].

There is a lack of data showing the effectiveness of educational interventions delivered to allied healthcare practitioners and AHS[10]. One of the key barriers to measuring education is the scarcity of outcome measures which have been shown to have robust psychometric properties when delivered to a wide variety of allied healthcare groups. Due to this lack of robust outcome measures there is a potential that ineffective

educational interventions are being delivered, resulting in inadequately trained practitioners who may miss opportunities to appropriately recognise and refer patients. Therefore there is a need to rapidly assess the currently available instruments to provide evidence of their suitability.

The Physician REadiness to Manage Intimate partner violence Survey (PREMIS) is one of the few scales which have had psychometric data reported on. The PREMIS was developed to measure the knowledge, attitudes and preparedness (KAP) to manage IPV patients of physicians in the US[11]. The authors intended that the survey could be used to measure the education needs of a cohort, and could be used to measure the effectiveness of interventions. The PREMIS is the only available IPV readiness scale that measures perceived and actual knowledge, attitudes, and perceived preparedness to manage IPV patients in a single instrument. The scale is limited in that it does not measure skills, and was developed in 2006 with no subsequent updating, which is particularly relevant with the release of the first guidelines for health services in 2013 and 2014[1, 2].

There is an altered version of the PREMIS, called the Modified PREMIS, which has had alterations to the content to make it suitable for delivery to healthcare students[12]. The Modified PREMIS has been used with US allied healthcare populations including medical, dental, nursing and social work students[12-14]. Only one study has reported on the psychometric properties, finding the instrument demonstrated high internal consistency within some IPV constructs (Cronbach's alpha >.7) but low with others (<.5), and potentially poor construct validity as demonstrated by high significant correlations between perceived and actual knowledge ($r = .85$), but no significant correlation between actual knowledge and perceived knowledge ($r = .06$) or preparation ($r = .05$)[12]. No study has reported on the test-retest reliability of the Modified PREMIS and the psychometric properties have not been reported on with Australian healthcare populations.

This study will report on the psychometric properties of the PREMIS when delivered to an Australian AHS cohort. Results will provide evidence of the validity and reliability of the PREMIS when used in such populations.

Methods

Design

The Modified PREMIS was delivered to AHS attending two Australian universities between September and December 2015. Data analysis was performed in March 2016.

Participants

Participants were AHS who had completed all lectures in the first, second, third and fourth years of their Bachelor degree. Participants consisted of paramedic students undertaking a three-year Bachelor degree, and double degree paramedic and nursing students undertaking a four-year Bachelor degree. Bachelor degrees are the standard method of educating students for future practice in most allied healthcare sectors in Australia and typically require completion of a three year course comprising theoretical and practical coursework.

Recruitment

Recruitment was performed following scheduled lectures, where students were briefed on the study by one of the authors who was unknown to them, and then they were offered a paper-based or online survey accessible from a web browser via internet capable devices. Submission of the survey was done by placing it in a pile in the lecture theatre, which was then collected by one of the research team. It was not possible to identify which students completed the survey and submission was anonymous. Students were requested to re-take the test online between 2 and 3 weeks after the initial test to measure test-retest reliability. Students undertaking the test twice were eligible to win a stethoscope valued at AUD$70.

Instrument

The Modified PREMIS[12] was used in this study. This scale was designed to measure the KAP of healthcare practitioners to manage IPV patients. The instrument measures background demographics, and contains sub-scales called Perceived Knowledge, Actual Knowledge, and Perceived Preparation to manage IPV patients, as well as items measuring opinions, and personal IPV experience in a 5 part, 85 item survey.

The Actual Knowledge sub-scale consists of 18 items and measures the number of correct responses to multiple answer and true or false questions. The Perceived Knowledge sub-scale consists of 14 items and is measured using a self-reported 7 item Likert scale (anchored by 1 = Know little and 7 = Know very

much). The Perceived Preparation sub-scale consists of 10 items in this study and is measured using a self-reported 7 item Likert scale (anchored by 1 = Not prepared and 7 = Quite well prepared). The opinions section of the Modified PREMIS contains 28 items measuring a variety of different ideas using 7 point Likert scale (anchored by 1 = Strongly disagree and 7 = Strongly agree).

The Modified PREMIS[11] was utilised in this study after making slight alterations to the items by altering the wording of 'health care practitioner' to 'paramedic'. This study focused solely on IPV and therefore four questions specific to child abuse and elder abuse were removed.

The same scoring method as described in the original PREMIS[11] was used, with changes to reflect omitted questions. Reverse scoring was performed on some opinion items. In addition, as per Connor et al.[14], a dichotomous variable named 'lifetime experience of IPV' was created which categorised participants into those who have experienced IPV personally or witnessed it in their family, and those who had not.

Respondent data was reported on in a previous article[15].

Data analysis

To conduct analysis SPSS version 18 was used. The Modified PREMIS contains sub-scales which were calculated using syntax supplied in the original PREMIS package[11]. Principal component analysis (PCA) was used to evaluate the psychometric properties of the opinion items as this instrument has not been tested before in this population[16]. The Kaiser-Meyer-Olkin (KMO) measure was used to define sampling adequacy, with a score above .70 considered adequate[17]. Bartlett's test for sphericity was estimated to test the null hypothesis that no variables are significantly correlated. The variable to case ratio was measured, with acceptance set and met at a minimum of 10:1[18]. The minimum r value for correlations between items was set at .3, which is considered the minimum correlational size to indicate an effect[19].

Cronbach's alpha coefficient was used to assess internal consistency within identified sub-scales as a measure of reliability. Spearman's rank coefficients were calculated between existing and new sub-scales identified through PCA, which was used as an indication of construct validity. Test re-test reliability was measured using Spearman's correlations.

As per Rubin[20] where missing data were encountered surveys with items missing completely at random were retained and surveys with non-random or greater than 10 missing items were excluded.

Ethics approval was granted by a Human Ethics Research Committee.

Results

Demographic properties of this sample are presented in Table 1. Females accounted for 59.2% of the respondents, which was equal to the ratio of females to males undertaking the course. The mean age for our sample was 23.1 years old (SD 6.0). First year students accounted for 31.5% of respondents, second year students 37.3%, third year students 23.1% and fourth year students (which were all double degree students studying both paramedicine and nursing) 8.1%. Of the respondents 32.1% reported having completed a previous health related degree or having worked in the healthcare sector. Most students (65.0%) reported no previous training in domestic violence, with 30.8% reporting watching a video or attending a lecture as their only training, and only 8 respondents (3.1%) reporting completing skills-based sessions.

A total of 260 respondents provided complete or near complete surveys in the initial run which comprised a response rate of 80.5% of eligible students (n=323 currently enrolled students), which was achieved by allowing students time at the completion of the lecture to complete the survey and hand it in immediately.

Following a two-week period a convenience sample of 18 of the previous respondents provided data to conduct test-retest reliability (6.9% of the initial run sample). The test-retest sample was similar in sex, was slightly older (mean age 25.4 years old), and was more predominantly 1st year. They had similar amounts of previous training and previous personal and lifetime experience with IPV.

Analysis of returned surveys found that all participants had completed the majority of questions, with only random missing data found. Where missing data impacted on the calculation of sub-scales pairwise deletion was used and the adjusted *n* was noted[20].

Table 1. Respondent demographic profile

		University A		University B		Total		Test-retest	
		n	%	n	%	n	%	n	%
Total Records		**189**		**71**		**260**	**100.0%**	**18**	**100%**
Sex	Male	78	41.3%	27	38.0%	105	40.4%	6	33.3%
	Female	111	58.7%	43	60.6%	154	59.2%	12	66.7%
	Missing	-	0.0%	1	1.4%	1	0.4%	-	0.0%
Age band	17-19	40	21.2%	14	19.7%	54	20.8%	6	33.3%
	20-29	109	57.7%	42	59.2%	151	58.1%	7	38.9%
	30-39	14	7.4%	6	8.5%	20	7.7%	4	22.2%
	40-49	6	3.2%	4	5.6%	10	3.8%	1	5.6%
	Missing	20	10.6%	5	7.0%	25	9.6%	-	0.0%
Year	1	82	43.4%	-	0.0%	82	31.5%	13	72.2%
	2	44	23.3%	53	74.6%	97	37.3%	1	5.6%
	3	42	22.2%	18	25.4%	60	23.1%	4	22.2%
	4	21	11.1%	-	0.0%	21	8.1%	-	0.0%
Course	Paramedic	150	79.4%	71	100.0%	221	85.0%	15	83.3%
	Paramedic and Nursing	38	20.1%	-	0.0%	38	14.6%	3	16.7%
	Missing	1	0.5%	-	0.0%	1	0.4%	-	0.0%
Previous training	None	120	63.5%	49	69.0%	169	65.0%	12	66.7%
	Video	37	19.6%	11	15.5%	48	18.5%	2	11.1%
	Lecture	25	13.2%	7	9.9%	32	12.3%	3	16.7%
	Skills training	4	2.1%	4	5.6%	8	3.1%	1	5.6%
	In-depth	-	0.0%	-	0.0%	-	0.0%	-	0.0%
	Other	1	0.5%	-	0.0%	1	0.4%	-	0.0%
	Missing	2	1.1%	-	0.0%	2	0.8%	-	0.0%
Personal IPV experience	Yes	28	14.8%	15	21.1%	43	16.5%	3	16.7%
	No	153	81.0%	49	69.0%	202	77.7%	15	83.3%
	Missing	8	4.2%	7	9.9%	15	5.8%	-	0.0%
Lifetime IPV experience	Yes	69	36.5%	28	39.4%	97	37.3%	8	44.4%
	No	110	58.2%	36	50.7%	146	56.2%	10	55.6%
	Missing	10	5.3%	7	9.9%	17	6.5%	-	0.0%

Factor analysis

Factor analysis was performed on the opinion items to allow comparison with previous psychometric studies. Other items were not included as they were considered stand-alone scales. A principal component analysis (PCA) was conducted on the 28 opinion items using varimax rotation as this assumes no correlation between the variables[16]. The Kaiser-Meyer-Olkin measure verified the sampling adequacy for the analysis, the result was a KMO = .78, described as 'meritorious' according to Kaiser and above the acceptable limit to conduct factor analysis[17]. Bartlett's test of sphericity indicated that correlations between items was sufficiently large for PCA, $x^2(210) = 1437.509$, $p<.000$. Variable to case ratio was 9:1, which was below ideal sample size though still eligible for PCA[16].

An initial analysis was run to obtain eigenvalues for each component in the data. Nine components had eigenvalues over Kaiser's criterion of 1 and in combination explained 64.23% of the variance. The scree plot demonstrated inflections that would justify retaining five factors[21]. A Parallel Analysis was performed which showed only five factors with eigenvalues exceeding the corresponding criterion values for a randomly generated data matrix of the same size (28 variables x 260 respondents)[22]. Given the large sample size, the results of the parallel analysis and the convergence of the scree plot five factors were retained in the final analysis. Seven items not loading on the five factors were removed from the final solution resulting in 21 items being retained.

The five-factor solution explained a total of 57.03% of the variance. Component 1, named Capabilities contributed 21.39% with factor loadings ranging between .419 and .720. Component 2, named Skills and Training contributed 12.81% with factor loadings ranging between .603 and .904. Component 3, named Attitudes contributed 9.0% with factor loadings ranging between .497 and .707. Component 4, Alcohol and Drugs contributed 7.25% with factor loadings ranging between .666 and .793. Component 5, named Drugs and Autonomy contributed 6.80% with factor loadings ranging between .488 and .764. To aid in the interpretation varimax rotation was performed. The rotated solution demonstrated the presence of a complex solution, with two of the 17 items loading on multiple factors. Table 2 shows the factor loadings after rotation.

Table 2. Rotated component matrix from PCA

Identified Scale	Item	Capabilities	Skills	Attitudes	Alcohol/drugs	Autonomy	h_2	r_{it}	Mean	SD
Capabilities	I am able to gather the necessary information to identify IPV as the underlying cause of patient injuries (e.g., bruises, fractures, etc.)	.720					0.536	0.54	3.88	1.18
	I can match therapeutic interventions to an IPV patient's readiness to change	.697					0.554	0.56	3.38	1.23
	I am able to gather the necessary information to identify IPV as the underlying cause of patient illnesses (e.g., depression, migraines)	.694					0.637	0.60	3.55	1.17
	I am capable of identifying IPV without asking my patient about it	-.688					0.565	0.59	4.48	1.16
	I can make appropriate referrals to services within the community for IPV victims	.677					0.604	0.50	4.15	1.35
	I can recognize victims of IPV by the way they behave	-.631					0.652	0.61	4.45	1.22
	I feel comfortable discussing IPV with my patients	.419				-.404	0.619	0.35	3.90	1.29
Skills and Training	I don't have the necessary skills to discuss abuse with an IPV victim who is from a different cultural/ethnic background		.904				0.828	0.66	3.48	1.44
	I don't have the necessary skills to discuss abuse with an IPV victim who is male		.904				0.829	0.70	3.63	1.45
	I don't have the necessary skills to discuss abuse with an IPV victim who is female		.896				0.840	0.74	3.83	1.45
	I do not have sufficient training to assist individuals in addressing situations of IPV		.603				0.662	-0.48	2.84	1.38
Attitudes	Women who choose to step out of traditional roles are a major cause of IPV			.707			0.560	0.48	5.57	1.39
	If victims of abuse remain in the relationship after repeated episodes of violence, they must accept responsibility for that violence			.680			0.545	0.41	5.97	1.31
	Paramedics do not have the time to assist patients in addressing IPV			.647			0.631	0.37	5.75	1.24
	I understand why IPV victims do not always comply with paramedic recommendations			.497			0.616	0.19	4.84	1.14
Alcohol and Drugs	Use of alcohol or other drugs is related to IPV victimization				.793		0.664	0.42	4.46	1.13
	Alcohol abuse is a leading cause of IPV				-.668		0.679	0.35	3.70	1.05
	Patients who abuse alcohol or other drugs are likely to have a history of IPV				.666		0.511	0.37	4.14	1.00
Autonomy	Victims of abuse have the right to make their own decisions about whether paramedics should intervene					-.764	0.614	0.29	4.57	1.02
	If a patient refuses to discuss the abuse, paramedics can only treat the patient's injuries					.595	0.651	0.31	3.87	1.10
	If an IPV victim does not acknowledge the abuse, there is very little that I can do to help			.455		.488	0.574	0.30	4.84	1.21
Eigen		21.391	12.611	8.991	7.251	6.787				
alpha		.80	.49	.58	.57	.48				

Notes: h_2 – Communalities; r_{it} – Item total correlation; SD – standard deviation

Correlations

Spearman's rho was used to measure correlations between the sub-scales and Hours of Training. As can be seen from Table 3. Actual Knowledge had no significant correlations at or above r > .3. The Perceived Knowledge and Perceived Preparation sub-scales demonstrated a strong significant correlation (r = .77, p<.01, 2 tailed). The Perceived Knowledge sub-scale demonstrated good significant correlations with our identified sub-scales Capabilities (r = .366), and Skills and Training (r = .403) as well as Hours of Training (r = .352). The Capabilities and Skills and Training scales demonstrated a weak but significant correlation (r = .252, p<.01, 2 tailed).

Table 3. Correlation matrix

		Actual Knowledge	Perceived Knowledge	Perceived Perpetration	Capabilities	Skills and Training	Attitudes	Alcohol and drugs	Autonomy
	Actual Knowledge	1.000							
	Perceived Knowledge	**.170****	1.000						
	Perceived Preparation	.085	**.773****	1.000					
Opinions	Capabilities	-.081	**.336****	**.288****	1.000				
Opinions	Skills and Training	.073	**.403****	**.368****	**.252****	1.000			
Opinions	Attitudes	**.299****	.102	.012	.002	-.018	1.000		
Opinions	Alcohol and Drugs	.027	.065	.033	-.002	-.013	-.060	1.000	
Opinions	Autonomy	.112	**.169****	.035	.104	.082	**.328****	-.082	1.000
	Hours of Training	**.131***	**.352****	**.236****	.085	**.182****	**.155****	-.026	**.128***

*p<.05 (2 tailed)
** p<.01 (2 tailed)

Internal consistency

Cronbach's alpha coefficient was used as a measure of internal consistency, using reverse coded items where there was a negative loading in PCA[16]. Of the sub-scales identified in our factor analysis only Capabilities displayed high internal consistency (α >0.7), Attitudes and Alcohol and Drugs displayed moderate internal consistency (α >.5), and Perceived Preparation and Perceived Knowledge displayed outstanding internal consistency (α >.9)[23]. See table 4 for internal consistency results.

Table 4. Cronbach alpha results by scale

	Scale	Number of Items	Cronbach's alpha
	Perceived Preparation	10	0.95
	Perceived Knowledge	14	0.97
Opinions	Capabilities	7	0.80
Opinions	Skills and Training	4	0.49
Opinions	Attitudes	4	0.58
Opinions	Alcohol and Drugs	3	0.57
Opinions	Autonomy	3	0.48

Test-retest

We used Pearson's correlation to measure test-retest reliability with the 18 participants who retook the scale. As can be seen from Table 5 Perceived Preparation and Knowledge and Actual Knowledge demonstrated strong[24] significant (p>.01) correlations with an r value between .81 and .90, and therefore high test-retest reliability. The sub-scales identified by the PCA demonstrated good correlations, and therefore good reliability, with r values between 0.63 and .89.

Table 5. Test re-test results

		Baseline mean	SD	2-week follow-up mean	SD	Mean difference	Pearson's correlation
	Perceived Preparation	2.92	1.19	2.68	1.07	-0.24	0.90**
	Actual Knowledge	20.76	5.65	25.35	5.41	2.59	0.81**
	Perceived Knowledge	2.73	1.13	2.75	1.07	0.02	0.82**
Opinions	Capabilities	4.02	0.63	4.02	0.55	0.0	0.89**
	Skills and Training	3.04	1.08	2.83	1.09	-0.21	0.68**
	Attitudes	5.52	0.83	5.78	0.95	0.26	0.71**
	Alcohol/Drugs	4.23	0.43	4.00	0.77	-0.23	0.63**
	Autonomy	4.96	0.69	4.70	0.55	-0.26	0.70**

** p>.01

Discussion

This study comprises the first published data on the psychometric properties of the Modified PREMIS when delivered to Australian AHS. Results indicate the scale did not demonstrate robust psychometric properties, and PCA on opinion items delivered a solution that was considerably different to previous results in US physicians and AHS cohorts[11, 12]. Following will be a discussion of key results and implications for future practice.

Principal Component Analysis

Our PCA of the opinion items generated a very different outcome to previous factor analysis of the items in US nursing, dental, social worker and medical students, and of the original PREMIS delivered to US physicians[11, 12]. This is most likely due to several factors, including that the scale was created a decade ago, in a different country, within a different social context, and that previous validation was performed using mostly different medical populations (paramedic students have not been previously measured). Our sample comprised of approximately 60% female participants, which was consistent with the sample in

Connor *et al.'s* study[12], while Short *et al.'s* sample was 76% male[11]. No previous research has examined sex differences in results of the Modified PREMIS, however as women are more likely to experience IPV[3] this may impact on their opinions and influence PCA results.

Identified sub-scales

The Capabilities sub-scale describes items that indicate how the student felt about their capabilities to identify IPV patients, discuss IPV with them, and provide referrals where necessary. There is strong evidence showing that patients want healthcare practitioners to feel confident and capable to discuss IPV[8], and evidence that an individual's self-efficacy can impact on the likelihood they will be willing to discuss IPV with a patient[25]. Therefore this sub-scale may be useful in determining the impact of training by measuring how confident and capable the participant feels.

The Skills and Training sub-scale describes items that indicate if the student felt they had the skills to discuss IPV with patients of different sexes and cultural backgrounds. Feeling uncomfortable with different sexes and cultural backgrounds is again a major barrier for healthcare practitioners to discuss IPV with patients[25]. Therefore efforts to improve education may benefit from incorporating specific training on cultural awareness, and this sub-scale may be useful in determining the effectiveness of such education.

Noticeably in the skills subscale all items were negatively worded, potentially indicating a trend for responding to negatively worded items in a uniform manner, rather than responding to the item itself. It is noted that some items would have been difficult to answer without having practiced those skills in the past, for example *'I do not have sufficient training to assist individuals in addressing situations of IPV'* would be difficult for a student to answer without either seeing this done by another paramedic or without attempting it themselves. Future iterations of the scale may benefit from wording such items in a theoretical context, for example *'I do not feel that I have been sufficiently trained to assist individuals in addressing situations of IPV'*. This wording would allow both students who have and have not tested their skills to answer the question in the same way.

The Attitudes sub-scale describes items that refer to attitudes towards women and patients as well as an item around time constraints for paramedics in discussing IPV. Previous qualitative research has shown that IPV patients desire an empathetic and non-judgemental approach from healthcare practitioners and

that attitudes towards women and IPV may impact on their ability to provide this[8]. Furthermore there is evidence that feeling like there is a lack of time to properly address IPV has been noted as a barrier for healthcare practitioners[25]. Therefore this scale may be useful to determine the effectiveness of education on improving the attitudes of participants.

Five items that were not retained dealt with very similar concepts as those in the Attitudes sub-scale. For example one item not retained read *'Victims of abuse could leave the relationship if they wanted to'* which is very similar in context to some retained items. Potentially such items that put complex issues into simplistic statements were difficult for students to respond to. In this example it is unclear if the item implies that patients have no choice but to remain in an abusive relationship (i.e. they are being forced) or if it is implying that patients are making a choice to stay and the item is making a judgement on their decision (i.e. they choose to stay, which is wrong). Future revisions may benefit from examining how such items are worded and assess for comprehension in target populations.

The same Drugs and Alcohol sub-scale was found in both previous psychometric studies on the PREMIS and Modified PREMIS[11, 12], indicating that there is a uniformity of attitudes towards the association between IPV and drug or alcohol abuse found in the samples. It is unclear why this scale alone was exactly replicated between each study, however as the wording of the items deal exclusively with associations between alcohol, drugs and IPV, this may simply indicate that participants were responding to these items as a single construct, without considering the subtle differences between the items. Future revisions may benefit from the inclusion of these items, which appear robust, though we recommend careful analysis to ensure participants fully understand their meaning.

The Autonomy sub-scale described items that refer to opinions around the right of IPV patients to choose to acknowledge or discuss their abuse. The right of the patient to maintain control of their situation, and to make decisions without judgement is a central tenant of a patient centred care approach, which is the favoured approach to responding to IPV[2]. Likewise as discussed above the attitudes of the healthcare practitioner may impact on their approach to the patient, and inappropriate attitudes such as the belief that the patient must acknowledge the abuse to be helped can contribute to uninformed responses that may even cause harm[8]. The Attitudes sub-scale identified in this study may be of use when examining the impact of education on participant attitudes to autonomy.

Non-retained items

In addition to the sub-scales identified, it must be noted that seven attitudinal items were not retained in the PCA due to poor loadings, meaning that just over one fifth of items were removed, which may have a considerable impact on the usability of the scale in this population. Items not retained referred to similar constructs as found in the Capabilities, Skills, Attitudes and Autonomy sub-scales. Noticeably many of these items contained concepts which arguably require some prior knowledge of the paramedic workforce, such as *"paramedics do not have the knowledge to assist patients in addressing IPV"*. Future revisions may benefit from rewording such items to focus on the respondent only, or to avoid topics that students would be unlikely to have knowledge of.

Validity

Associations between sub-scales

We found that the significant correlations between the sub-scales identified in PCA were at best weak, and sub-scales that could be expected to correlate often did not, indicating there may be issues with the validity of the instrument when delivered to Australian AHP students.

The Actual Knowledge scale had no significant correlations with other sub-scales, which casts doubt as to the validity of either the Actual Knowledge scale, the identified sub-scales, or both. Both previous studies performing the same correlation measures between subscales and Actual Knowledge found very similar results[11, 12]. It could reasonably be expected that the Actual Knowledge sub-scale would positively correlate with Hours of Training yet this did not occur. It is known that the training which the participants undertook (watching a video or attending a lecture) are often found to be ineffective[10] and potentially the reason for a lack of correlation was that the training did not actually improve the students' knowledge. Alternatively it is possible that the lack of correlation was due to some of the multiple choice questions being easily guessed. It is also possible that due to the scale being created a decade ago participants are more aware of IPV and its manifestations, particularly in Australia where recently there has been a dramatic increase in media attention given to family violence and women's rights[26].

The Perceived Knowledge and Perceived Preparation sub-scales both correlated strongly together, which again was found by previous studies[11, 12]. The Perceived Knowledge and Preparation sub-scales also

demonstrated weak but significant correlations with some sub-scales. This provides some evidence for the construct validity for the Perceived Knowledge and Perceived Preparation sub-scales, though it could be expected that they would correlate with more sub-scales.

Potentially future revisions could examine the potential to combine Perceived Knowledge and Perceived Preparation into a single scales, as many items deal with similar constructs. For example asking respondents to state how knowledgeable or prepared they are to conduct safety planning could potentially be achieved with a single item. Future revisions would benefit from more clearly defining terms such as *preparedness* and examining if perceived knowledge and preparation can be incorporated into a single scale.

Another potential cause for the lack of correlation between Actual Knowledge, Perceived Preparation and Perceived Knowledge sub-scales could lay in the lack of consistency between items. For example there are three items in each of the Perceived Preparation and Perceived Knowledge scales which deal with state reporting requirements, however there is no item which measures this in the Actual Knowledge sub-scale. It is possible that the lack of correlation is due to the lack of consistency between the scales, which future revisions should consider.

Content validity

In the initial creation of the PREMIS in 2006 the authors performed content validation by having the items reviewed by a group of seven IPV educators[11]. The content has not since been updated. Recently in 2013 and 2014 the first guidelines were released which provided expert recommendations on content of educational interventions delivered to healthcare practitioners[1, 2]. In light of the new expert recommendations it would seem that there is a need to review and potentially revise the content of the PREMIS to ensure it remains current. We did not perform this as it was beyond the scope of this review and therefore we cannot make comment on the content validity, however we do strongly recommend that future studies utilising the PREMIS perform this task, or at least take this into account when disseminating their results.

Reliability

Test-retest

Analysis using Pearson's correlation showed that the instrument demonstrated strong to very strong reliability in all scales when delivered 2 weeks apart. This provides good evidence of its reliability over time. It may be beneficial to retest participants over longer time periods to examine for how long they retain the necessary skills and knowledge, though this was beyond the scope of this study. Of particular interest would be decline in Actual Knowledge, Perceived Knowledge and Perceived Preparation over time to help determine appropriate refresher training intervals, as well as changes in opinions once participants encounter and address IPV with patients in their future practice.

Internal consistency

The internal consistency of the Modified PREMIS was excellent for Perceived Preparation and Perceived Knowledge sub-scales, but lower for the identified opinion sub-scales. It is noted however that subscales scoring lowest also had the lowest number of items, which may have impacted results[16].

As discussed above the high internal consistency between Perceived Preparation and Perceived Knowledge may have been due to students seeing these as the same construct. As there is a potential for overlap of a single underlying concept further revision may find it necessary to remove some redundant items. Potential flaws in the opinion items have been discussed above, additionally with respect to internal consistency we note that the scale was originally intended for practicing GPs and was not intended for students, and there may be issues related to the reliability of items reworded to be used with non-practicing students. For example the item *'I feel comfortable discussing IPV with my patients'* may need to be altered to *'I feel comfortable with the expectation that I will discuss IPV with my patients'* or similar. Attempts to revise the Modified PREMIS may benefit from creating items specifically aimed at student groups.

Implications for future practice

Results from this study indicate that the Modified PREMIS did not demonstrate robust psychometric properties in an Australia AHS cohort and individual items may require revision before further use in these populations. It is recommended that the scale should be revised and updated for Australian AHS populations to reflect the advancements in IPV educational research. Potential revisions have been discussed throughout this paper, and additionally revisions may be benefit from reference to the new

international guidelines, which were disseminated a decade after this tool was originally created. Pending a revision and further psychometric analysis the Modified PREMIS may be a useful instrument to assess educational interventions in AHS.

Limitations

This study was limited by its relatively small sample size, the lack of a wider variety of AHS groups, and from not carrying out a review of the content validity in light of recent guidelines. Additionally this study was limited by the exclusion of some enrolled students who did not attend the lecture which may lead to non-responder bias. Due to our modifications from the Modified PREMIS we could not utilise the legal requirements scale.

Conclusions

This study found that the Modified PREMIS did not demonstrate robust psychometric properties when delivered to Australian AHS, and should be revised before further use. The instrument may benefit from revisions based on the recently released clinical guidelines to ensure it reflects the required knowledge and preparedness to recognise and refer IPV patients. Efforts to design and measure the psychometric properties of a revised instrument should be prioritised as it is essential that robust measures are made available to ensure participants of educational interventions are learning the necessary KAP. The use of robust scales to guide the development of effective evidence based educational packages may be critical to the healthcare sector's ability to adequately support IPV patients.

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Principal findings and conclusions

Our analysis of the Modified PREMIS found that the scale demonstrated mostly poor psychometric properties, though some sections appear to have performed well. The Perceived Knowledge and Perceived Preparation scales demonstrated mostly sound psychometric properties, with high internal consistency (Cronbach's alpha of .97 and .95 respectively), and test-retest reliability (Pearson's correlations of .81 and .90 respectively). The Actual Knowledge scales and scales identified through PCA demonstrated poor psychometric properties, with medium to low internal consistency (Cronbach alpha between .48 and .80), low correlations ($r < .3$) with other subscales which may indicate poor construct validity, and medium to high test-retest reliability (Spearman's rho between .63 and .88). Therefore the instrument may require updating or revising the items to ensure they are relevant for Australian healthcare student populations before further use in this population.

The results of this study notwithstanding, this scale has the potential to be one of the most useful for measuring Australian paramedic preparedness to manage IPV, particularly given there is currently no alternative scale demonstrating evidence of robust psychometric properties for Australian paramedics. With modifications and pending future confirmation of its psychometric properties this scale may have the potential to measure the success of educational interventions which aim to increase the KAP of paramedics to respond to IPV.

It may be useful to revise the items of the Modified PREMIS to better reflect current evidence and guidelines. The PREMIS itself was created in 2006 in the US and was originally intended for physicians. While the items in the scale are both relevant and useful, there have been significant theoretical advances in the response to IPV since its creation. Both the WHO and NICE have published guidelines for the healthcare sector to respond to IPV, which include a thorough review of the current literature resulting in recommendations for response including educational requirements, attitudinal alignment and organisational and occupational support requirements[70, 71]. We recommend any research attempting to revise this scale for use in Australian AHPs should take this into account.

Additionally it must be acknowledged that the Modified PREMIS does not measure the ability to perform skills, particularly the ability to effectively engage in discussion of IPV with patients. This is a major limitation of educational outcomes measurement capabilities, particularly given many healthcare practitioners report a lack of confidence in their ability to discuss IPV is a major barrier[78], and it is known that patients desire

practitioners who are confident, skilled and knowledgeable[55]. The measurement of skills such as discussing IPV with patients is difficult and may be beyond the scope of outcome measures such as the Modified PREMIS. Potentially new measures could be created using standard patient encounters and assessment by expert trainers which has shown some success in the past[95]. Future research should consider the most appropriate and useful methods of incorporating skills assessment into outcome measures.

Actual Knowledge, Perceived Knowledge, and Perceived Preparation were all reported as low for both Paramedic and Student samples in Chapter 2. The validity of the findings of these scales may be unclear, however the findings of Chapter 2 indicated that the items in these scales could benefit from revision to better align them with current educational needs theories, and to ensure they are reliable for use with current Australian paramedic populations. However it would be likely that revision of the Actual Knowledge scale would result in lower scores, as the findings of Chapter 2 indicated that the scale did not cover as wide a range of knowledge questions as necessary, and that the questions it did contain were potentially too easy. Revision of the Perceived Knowledge and Perceived Perception scales could impact scores in a variety of ways. For example it is likely that items will require significant revision to bring them into line with the current educational needs theories and to ensure that they are valid for use with students. Clearer questions targeting specific knowledge and preparation needs may result in Australian paramedic and paramedic student populations answering they feel less prepared and knowledgeable, due to questions addressing specific areas which better demonstrate their lack of preparedness. Alternatively clearer items may allow respondents to answer with more confidence due to greater understanding of the items and their purpose, resulting in higher Perceived Knowledge and Perceived Preparedness.

Opinion items are likely to undergo substantial revision, which would cast significant doubt over the validity and reliability of the findings reported in Chapter 2. It is possible that some findings related to simple concepts such as preparedness would remain accurate, however these findings should be used with extreme caution due to the findings of this chapter. Therefore the results of this chapter must be taken into consideration when interpreting the results of Chapter 2. While it is likely that Australian paramedics and paramedic students are poorly prepared to manage IPV patients, the extent of their preparedness and the specific strengths and weakness of their preparation are less clear.

It is recommended that the Modified PREMIS should not be used in Australia with AHS populations before performing a review of the scale. Should future modifications of the Modified PREMIS result in a robust measure the instrument may become a valuable tool which would improve the ability to assess education and preparedness, and may enhance the ability of the paramedic profession to prepare to respond appropriately to IPV.

Chapter 5

A CONSENSUS-BASED METHOD FOR PARAMEDICS TO RESPOND TO IPV

Chapter 5 – A consensus-based method for paramedics to respond to IPV

Declaration for Thesis Chapter 5

Publications linked to chapter
Paramedics as a new resource for women experiencing intimate partner violence. Journal of Interpersonal Violence (under review); 2017.

Declaration by candidate
In the case of Chapter 5, the nature and extent of my contribution to the work was the following:

Nature of contribution	Extent of contribution (%)
Lead author responsible for study design, literature review, data collection, statistical analysis and interpretation, and writing of manuscript. Responsible author who accepts overall responsibility for the publication	80%

The following co-authors contributed to the work:

Name	**Nature of contribution**
Brett Williams	Study design, editing of manuscript
Jan Coles	Study design, editing of manuscript
Angela Williams	Study design, editing of manuscript

The undersigned hereby certifies that the above declaration correctly reflects the nature and extent of the candidate's and co-author's contribution to this work.

Candidate's signature: [redacted] Date: 7th January 2018

Main supervisor's signature [redacted] ate: 13th January 2018

Background and context

Currently there is little direction specific to paramedics for how they should be responding to IPV patients. The response of all healthcare practitioners is largely informed by policy documents which are derived from holistic strategies aiming at reducing overall violence against women[8]. At present a key strategy to improve the response of the healthcare system is to increase education in the competent recognition and referral of IPV patients[8, 70, 71]. Much of the education that paramedics and other AHPs require will comprise of universally applicable knowledge, such as the theoretical basis for IPV, legality, and documentation, however there is still a need to ensure that the unique operational contexts and skill sets of individual professions is taken into account. There is a need to tailor education to individual professions, which can be achieved by first defining how each profession should be responding, which can be determined by examining how and why IPV patients utilise their services. By developing such guidelines it will then be possible to design educational interventions that can teach the required KAS.

No previous research has examined the prehospital context to determine the most appropriate response for paramedics to respond to IPV. Indeed it would be difficult to create any evidence-based recommendations due to the lack of evidence drawn from this context. The response of paramedics at present needs to be drawn from evidence pertaining to similar contexts, such as EDs and GP clinics, as well as expert recommendations. The creation of prehospital guidelines will require input from a wide range of experts, healthcare practitioners, and key stakeholders, who might provide direction for future practice from which evidence could be drawn

It is common for Australian paramedics, as well as those operating internationally, to utilise clinical practice guidelines to direct their management of patients. Guidelines are often created in consultation with the relevant medical experts and then provided to paramedics along with the necessary training. Paramedics are expected to follow these guidelines when treating patients, unless there is an appropriate reason why they should deviate, which if significant will often attract a review. A guideline created by experts would be an appropriate form of guidance for paramedics to respond to IPV.

This chapter describes the development of the first guidelines for paramedics to recognise and refer IPV patients. The guideline makes use of evidence drawn from other contexts as well as expert opinion. This study will provide practical recommendations which can be adopted by appropriately trained paramedics and ambulance services, and allow evidence from the prehospital environment to be generated, which can lead to

further refining of the guideline. While this guideline was developed in Victoria, Australia, international evidence and best practice recommendations were employed so there is a high potential it could be modified for use worldwide with modifications for local referral services.

Aims of this chapter

To create a guideline to direct the response of paramedics to IPV patients

Paramedics as a new resource for women experiencing intimate partner violence

Simon Sawyer, Jan Coles, Angela Williams, Brett Williams

Abstract

Background

Intimate partner violence (IPV) has a major impact on the health and wellbeing of women. The need for a coordinated response from healthcare professions encountering IPV patients is well established and guidelines for individual healthcare professions are needed. Paramedics are believed to frequently encounter IPV patients and this study aims to create a guideline to direct their response based on expert opinion.

Method

A clinical guideline for paramedics was created using current evidence and recommendations from health agencies. A panel of family violence researchers and service delivery experts such as physicians, family violence support agencies and police commented on the guideline via a Policy Delphi Method to obtain consensus agreement.

Results

A total of 42 experts provided feedback over three rounds resulting in 100% consensus. Results include clinical indicators to recognise IPV patients in the prehospital environment, a description of how paramedics should discuss IPV with patients, recommended referral agencies and pathways, and appropriate documentation of case findings.

Conclusions

This study has created the first comprehensive, consensus-based guideline for paramedics to recognise and refer IPV patients to care and support. The guideline could potentially be modified for use by ambulance services worldwide and can be used as the basis for building the capacity of paramedics to respond to IPV, potentially leading to increased referrals to care and support for women experiencing IPV.

Background

Intimate partner violence (IPV) is one of the most common and most damaging forms of violence against women worldwide(World Health Organization, 2013a). Defined as abuse transpiring between people currently or formerly in an intimate relationship, it occurs when a person uses physical, sexual, psychological or any other form of abuse to control or otherwise harm their partner(World Health Organization, 2014). While the relationship of the patient to the perpetrator and their respective genders can vary, evidence shows that the vast majority of the most damaging violence is perpetrated by men and borne by women(Krug EG, Dahlberg JL, Mercy JA, Zwi AB, & Lozano R, 2002).

Global prevalence figures show that at least one in three women will experience IPV at some point in their lives(World Health Organization, 2013a), which is also true for Australia, where this study was performed. The effect of IPV on the wellbeing of women and children can be profound, with female IPV patients reporting poorer overall health, increased incidence of mental health issues, and poorer perinatal and reproductive outcomes(Black, 2011). Intimate partner violence has been shown to be associated with an increased risk for alcohol or drug abuse, self-harm and suicidality, as well as increased risk taking behaviours(Black, 2011). Additionally, as many as 38% of all murders of women globally are committed by an intimate partner(World Health Organization, 2013a). Therefore IPV is a highly prevalent issue which significantly impacts on the health and wellbeing of women.

Leading health organisations have called for increased education for all healthcare professionals encountering IPV patients, with an emphasis on training in recognition and referral(National Institude for Health and Care Excellence, 2014; World Health Organization, 2013b). The paucity of IPV education delivered to health care practitioners(Simon Sawyer, Coles, Williams, & Williams, 2016) has been cited as a major barrier for healthcare practitioners to discuss IPV with patients(Sprague et al., 2012). While there is evidence screening appears to increase discovery of IPV, at present there is conflicting evidence that increased screening rates lead to increased referrals or improved healthcare outcomes(Bair-Merritt et al., 2014; Taft et al., 2013). Nonetheless the theoretical link between increased education and improved patient outcomes has led many healthcare professions to introduce IPV education for their practitioners to recognise and refer IPV patients, a task which could be assisted by occupationally-specific guidelines reflecting the individual occupational skill sets and practice settings(World Health Organization, 2013b).

An increasing body of literature shows that paramedics frequently encounter IPV(Allert CS, Chalkley C, Whitney JR, & Librett A, 1997; Mason, Schwartz, Burgess, & Irwin, 2010; Simon Sawyer, Coles, Williams, Lucas, & Williams, 2017; Simon Sawyer, Coles, Williams, & Williams, 2017; Simon Sawyer, Parekh, Williams, & Williams, 2014), yet it appears rare for paramedics or paramedic students to receive education on IPV recognition and referral(Simon Sawyer, Coles, Williams, Lucas, et al., 2017; Simon Sawyer, Coles, Williams, & Williams, 2017; Simon Sawyer et al., 2014). As a healthcare workforce who regularly attend to patients in their homes, paramedics have an opportunity to witness signs of IPV other healthcare practitioners would not normally observe. Paramedics are often the first and sometimes the only healthcare agency that assess patients following an IPV-related emergency health event(Mason et al., 2010). There is also evidence that IPV patients are less likely than other patient groups to be

transported to ED by paramedics(Husni, Linden, & Tibbles, 2000). Therefore, if paramedics are not able to recognise and refer IPV patients in the prehospital environment it may result in missed opportunities to disrupt the cycle of violence. Should paramedics be trained to recognise and refer patients they could become a key resource for patients to be referred to care and support similar to emergency departments (EDs)(Wilbur, Noel, & Couri, 2013).

While research indicates the need for paramedics and ambulance services to improve their response to IPV(S. Sawyer, Coles, Williams, & Williams, 2015), there are currently no comprehensive, evidence-based guidelines directing paramedic management of IPV patients, and there is a paucity of published data available to guide their development. To guide the initial paramedic response guidelines must be created from what evidence and recommendations are currently available. The creation of such initial prehospital guidelines requires input from a wide range of care experts and stakeholders, who might provide direction for future practice from which evidence could be drawn. This study describes the development of the first guideline for paramedics to recognise and refer IPV patients. While this guideline was developed in Victoria, Australia, we made use of international evidence and best practice recommendations and designed the guideline to be potentially modifiable for use in any ambulance service worldwide. The aim of this study is to present the first consensus-based guideline for paramedics to respond to IPV patients.

Method

Creation of an initial guideline

The World Health Organization (WHO) has released clinical guidelines for healthcare practitioners to manage IPV patients(National Institude for Health and Care Excellence, 2014; World Health Organization, 2013b). These guidelines were developed after a comprehensive review of the evidence and were intended to guide the response of the broader health system. Using these guidelines we adapted the theory and actions relevant to paramedic practice to create a draft, occupationally specific guideline. Relevant theory and actions were defined as those which:

1. Could be reasonably and effectively undertaken in the prehospital environment without requiring the purchase of costly equipment or specialist training not routinely available to paramedics; and
2. Were necessary to begin prehospital (i.e. there was a benefit to the patient for the action to be performed prehospital as opposed to at a later time); and
3. Would likely be of benefit to the patient; and
4. Would be unlikely to cause harm to the patient

Many of the WHO's recommendations were intended for use by definitive care experts or agencies with specific training and capabilities not routinely available to paramedics, and were therefore not relevant to paramedicine. We did identify a number of recommendations that paramedics could undertake for the benefit of the patient and other agencies (see Table 1).

Table.1 WHO recommendations adapted into the paramedic guideline

General recommendations

- A guideline should be used to direct the actions of paramedics
- Any guideline should follow a woman-centred care approach
- Paramedics should document cases with adherence to legal requirements (particularly when children are present)
- Paramedics should be appropriately educated and trained and should undertake assessment to ensure competency

Recognition of patients

- Identification of IPV patients should be based on evidence-based signs and symptoms

Response to patients

- Training on how to ask about IPV and how to respond to disclosure should be provided
- Screening should be performed in a private setting with confidentiality ensured

Referral of patients

- There should be a system for referrals in place and practitioners should be able to facilitate a referral where requested
- Written information should be made available to patients

Based on these results we created a draft guideline presented in the style of local paramedic guidelines (see Appendix 1). Following WHO recommendations the guideline followed a women centred approach and directed paramedics to identify the potential for IPV based on known indicators(World Health Organization, 2013b). Some indications were omitted as they required specialised testing or assessment not generally available to paramedics, such as 'the presence of sexually transmitted infections', 'hearing loss', or some complex mental health diagnoses.

The guideline advised paramedics to ensure screening was performed in a private environment with confidentiality ensured. While we advocate for proper training for paramedics on how to ask patients about IPV (as per WHO recommendations), we also elected to include an example question which paramedics could utilise with patients.

In line with WHO recommendations we included a system for facilitating referrals to appropriate resources, and gave recommendations on documentation.

This initial draft guideline was then presented to a panel of experts for validation using a Policy Delphi method.

Delphi Method

This study used a Policy Delphi Method(Linstone & Turoff, 2015) delivered online in an attempt to obtain consensus on the guideline from a panel of topic and service delivery experts from Australia. The Delphi method is commonly used for eliciting consensus opinions from experts where evidence is lacking(The RAND corporation, 1969), and has been widely used in heath studies, including studies formalising medical guidelines and recommendations(Keeney, Hasson, & McKenna, 2011).

Study participants, described below, were emailed the draft guideline and an open link to an internet browser based questionnaire containing a list of statements concerning various aspects of the guideline (see Table 3 for questionnaire contents). Participants had the option to agree, disagree, or abstain with

each statement. Agreement indicates that the participant believed no changes need to be made to the guideline. Disagreement indicates that the participant believed changes are required, in which case they were requested to provide an open text response detailing the changes they believed were necessary. Abstain is an option given so that participants who have knowledge in one area, but not others, were still able to respond in part without being forced to comment on unfamiliar topics. Participants were asked to state their name when completing the survey but could elect to complete the survey anonymously if they chose. Passwords and individual logins were not used.

At the end of each round of questioning the authors collated all responses and make revisions to the guideline based on feedback. The revised guideline and an anonymous summary of free text responses were provided to all participants by the authors, and participants were asked to repeat the survey. This continued until consensus was reached for each question, which was defined as 100% of non-abstaining participants responding ‘agree’. If consensus was not reached after four rounds, the study would have ceased and the alternative opinions would be discussed by the researchers and, if possible, conclusions drawn.

Participants

A limitation of the Policy Delphi Method is the potential bias surrounding the identification and recruitment of participants(Linstone & Turoff, 2015). To mitigate this risk we attempted to enlist a broad range of participants from a wide range of service delivery agencies, advocacy groups and research experts. For the purposes of this study, participants could be those with a high level of knowledge on the topic, such as demonstrated through previous research or work, or those with a vested interest in outcomes, such as advocacy groups, referral agencies, research bodies, or service delivery leaders(Skulmoski, Hartman, & Krahn, 2007).

Selection of experts was performed by identifying service delivery leaders via websites and other directories, and identifying topic experts through research bodies, literature reviews, and personal contacts. A snowball technique was also used, whereby participants were asked to provide details of any additional experts they believed should have been invited to take part in the study.

Ethics approval was granted by a Human Research Ethics Committee.

Results

Participants

We identified 40 potential topic and service delivery experts who were invited to take part in the study. Based on suggestions from these participants we invited an additional 8 experts. In total 42 participants took part in the study and 6 declined to take part. We had input from a wide range of participants including research experts, service delivery experts, healthcare professionals and speciality group advocates (see Table 2).

Table 2. Summary of experts included in this study (number of participants in brackets)

Topic experts:

- Prominent family violence researchers (6)
- Domestic violence advocacy groups and peak bodies (8)
- A representative from the Victorian Office of Women (1)
- A crime statistics agency (1)

Service delivery experts, including representatives from:

- A public legal service representing women experiencing domestic violence (1)
- A hospital family violence team (1)
- A men's referral services agency (1)
- Family violence educational experts (2)
- Police (2)
- The Victorian magistrates courts (1)
- Ambulance service management (1)

Healthcare profession experts:

- Paramedics (2)
- General Practitioners (2)
- Psychologists (1)
- Social workers (1)
- ED nurses (1), physicians (1) and managers (1)
- A Senior Forensic Physician (1)

Speciality group advocates including experts representing:

- The LGBTI community (1)
- Women with disabilities (1)
- Culturally and linguistically diverse communities (1)
- Aboriginal and Torres Strait Islander advocates (1)
- Advocates for the rights of children (1)
- Emergency services (2)

Delphi Process

We utilised three rounds to reach consensus (see Table 3 for consensus percentages post each round). Changes from each round included alterations to all aspects of the protocol, with the questioning method taking the longest to reach consensus.

Table 3. Percentage consensus results by round

Statement	Round		
	1	2	3
I believe it is appropriate for paramedics to ask female patients about IPV where indicated to by a set criteria	100%		
The listed signs of IPV are appropriate and I would not add, remove or change any of them	47%	100%	
The preparation requirements are appropriate and I would not add, remove or change any of them	72%	100%	
The prosed questioning method is appropriate and I would not add, remove or change any aspect of it	57%	80%	100%
The proposed response to a patient declining help is appropriate and I would not add, remove or change any aspect of it	47%	100%	
The proposed response to a patient requesting help is appropriate and I would not add, remove or change any aspect of it	81%	100%	
The referral options provided are appropriate and I would not add, remove or change any aspect of them	56%	100%	
The documentation requirements are appropriate and I would not add, remove or change any aspect of them	78%	100%	
I would not add, remove or change any other aspect of the protocol	66%	100%	
I believe that the use of this protocol by paramedics will benefit patients without significant risk of causing harm	100%		
I do **not** believe that the use of this protocol will negatively affect the provision of advocacy or service delivery services	100%		

The Paramedic Guideline

Based on feedback provided during this study modifications to the draft guideline were made until the final version was derived (See Figure 1). The final guideline was divided into four sections titled: Recognise, Respond, Refer, and Record. The *recognise* section listed indications of IPV which were deemed by our panel of experts to be relevant and useful for paramedic practice. The *respond* section described the preferred method to discuss IPV with patients, which included advice for preparing the patient and scene, broaching the subject and talking about IPV, as well as validating responses. The *refer* section provided a list of referral agencies which our experts deemed most appropriate for paramedic patients and advice for facilitating referrals. The *record* section details how paramedics should document cases involving IPV. Experts provided additional recommendations and clarification beyond the actual wording of the guideline, which is discussed below.

Figure 1. A paramedic guideline to response to women experiencing intimate partner violence

A PARAMEDIC GUIDELINE TO RESPOND TO WOMEN EXPERIENCING INTIMATE PARTNER VIOLENCE

RECOGNISE

IPV is defined as physical or sexual violence, psychological or emotional abuse, or other controlling behaviours by a current or former partner. IPV is experienced differently by individuals and therefore can present in many different ways, when assessing a patient look for the following indicators:

FEELINGS

- Patient appears depressed/withdrawn or anxious/distressed without an apparent reason
- Patient or children/dependants/pets appear fearful

BEHAVIOURS

- Suicidality or self-harm
- Alcohol or other drug abuse
- Repeated/suspicious callouts with no clear diagnosis
- Inconsistent or implausible explanations for injuries/symptoms

MEDICAL SIGNS

- Unexplained chronic symptoms (e.g., pain; gastrointestinal, or genitourinary symptoms)
- Pregnancy related complications or trauma, or delays in care

CONTROLLING PEOPLE

- Intrusive or controlling person in consultation (especially a partner or ex-partner)
- Patient (or children/dependants) unwilling to respond without approval from controlling person
- Controlling person stating the patient is ‘crazy’, ‘mad’, ‘unstable’ or other similar terms
- Withholding communication/mobility devices, access to funds/resources/services, over/under medication (especially for disabled patients)

TRAUMA

- Assault or suspicion of assault (e.g., weapons, signs of violence)
- Suspicious bruises or injuries (esp. to neck, face, breasts or genitals)
- Patient indicates someone has threatened to kill or harm them, their children or their pets
- Sexual assault (actual or attempted)

RESPOND

You may suspect IPV based on the above indicators or patients/others on scene may spontaneously disclose, if so you can talk to the patient about IPV using the following method:

1. Ensure patient is alert and clarify confidentiality. If you can’t do this and you believe there is an **immediate physical or life threatening risk** request police.
2. Ask an appropriate fear and safety question.
3. If the patient discloses abuse or states they would like you to assist them validate and reassure them before providing a referral by discussing the options in the matrix below.
   If the patient declines a referral consider mentioning they can always access help through safe steps or by calling 1800RESPECT (see below).

REFER

There are several options available to patients, referrals are done in consultation with the patient and based on their needs.
See the matrix below for referral options:

Patient need	Referral agency	How to arrange referral
Advice and advocacy Safety planning Referrals to local/specialist support and care Safe house and refuge accommodation	**safe steps**	Ph. 1800 015 188 (24 hour) (www.safesteps.org.au)
Counselling and support (online and phone)	**1800RESPECT**	Ph. 1800 737 732 (24 hour) (www.1800respect.org.au)
Protection from violence/abuse	**Police**	Request via normal procedures and remain on scene with patient
Sexual Assault	**Sexual assault counselling (Centre Against Sexual Assault)**	Ph. 1800 806 292 (24 hour)
	After hours emergency line for recent sexual assault (Sexual Assault Crisis Line)	Ph. 8345 3494 (note paramedics can call this number any time for advice)
	Police	Request via normal procedures and remain on scene with patient
Medical care	**Emergency Department**	Normal transport procedures with notification
Specialist patient services	**Aboriginal Family Violence Prevention and Legal Service Victoria**	Ph. 1800 105 303 (www.fvpls.org)
	inTouch (Multicultural Centre Against Family Violence)	Ph. 1800 755 988 (www.intouch.asn.au)
Legal Help	**Victorian Legal Aid**	Ph. 1300 792 387 (business hours)
Referral for help for male perpetrators	**Men’s Referral Service**	ph. 1300 766 491 (www.mrs.org.au)

RECORD

Documentation of cases where you see indications for IPV should include:

- The observed signs of IPV including a description of any injuries, indicative symptoms or behaviours, and any evidence or statements about who inflicted them
- Note if there were any children or other witnesses present and if they were involved at all
- If you talked with the patient about IPV or provided a referral (include a note of which referral option was used)
- If police attended the scene

L — **Listen closely with empathy and without judging**

I — **Inquire about needs and concerns**

V — **Validate them by showing you believe and understand**

E — **Enhance their safety by discussing options to protect them from further harm**

S — **Refer the patient to support agencies**

Discussion

The results of this study provide the first comprehensive, consensus-based guideline to direct the paramedic response to IPV patients. Our experts recommended changing the format of the guideline to fit into a four step process of recognise, respond, refer, and record to facilitate understanding. Following will be a discussion of the key aspects of the protocol as well as their associated evidence and relevance to the prehospital environment.

Recognise - The indications of IPV in the prehospital setting

As IPV can have such a broad impact on health and wellbeing its indications can be equally varied. Our experts recommended the use of indications that are appropriate and relevant to a prehospital context. Experts recommended indications should be grouped under subheadings in an attempt to enhance understanding and potentially improve recall, though any isolated indication could still prompt a discussion of IPV.

Feelings

Several studies have demonstrated an association between the presence of IPV and some mental health disorders (Beydoun, Williams, Beydoun, Eid, & Zonderman, 2016; Trevillion, Oram, Feder, & Howard, 2012) and fear(Campbell, 2002). Our experts commented that using diagnoses as indicators (e.g. depression or PTSD) would not be useful for paramedics as they usually cannot diagnose specific disorders, but rather are trained to recognise the symptoms. Therefore they recommended paramedics look for the *appearance* of disorders such as depression or anxiety and to use the label ‘feelings’.
Our experts noted that due to the nature of paramedic work patients will often present with agitated or depressed states which are not linked to IPV (but rather are derived from the emergency situation, e.g. the death of a loved one) and so we should include the caveat that ‘there be no apparent reason for the symptoms’. This allows the paramedics to identify that it may be appropriate for the patient to appear depressed or withdrawn due to circumstances.

Our experts ultimately agreed to include the indication of pets appearing fearful, however many commented that it may not be a reliable or useful indicator and noted the need for further research. There is evidence that violence to pets is associated with increased risk of perpetrating IPV(Walton-Moss, Manganello, Frye, & Campbell, 2005) and paramedics routinely assess patients in their home where pets can be present. Paramedics are commonly taught to assess pets (particularly dogs) for dangers, as they can attack when they perceive a threat to their owners. There is a potential that paramedics may be able to recognise unusual or fearful reactions from pets, such as retreating into corners, shaking, or cowering.

Behaviours

Our experts recommended grouping several ‘behaviours’ which are known to be associated with experiencing IPV. Studies have shown an association between IPV and alcohol and other drug abuse(Campbell, 2002; Trevillion et al., 2012), suicidal thoughts, and self-harm(Kramer, Lorenzon, &

Mueller, 2004). However at present it is unclear if this link is between the abuse itself or other variables such as presence of mental health issues(Campbell, 2002; Trevillion et al., 2012).
There was some discussion among the experts as to if a paramedic would be able to discuss IPV with a patient who was acutely alcohol or drug effected. Our experts decided to include the qualification in the response section that the patient be 'alert' but also noted this would ultimately come down to the paramedic's discretion and therefore this issue should be discussed as part of their skills training.

Medical signs

Our experts recommended grouping unexplained chronic medical symptoms, as well as pregnancy related complications under medical signs. There are known associations between experiencing IPV and many chronic health and pregnancy related complications (Black, 2011), and therefore our experts agreed these indications would be relevant and useful for paramedics.

Trauma

Our experts recommended that paramedics look for both physical injuries indicative of assault, as well as signs of violence, such as the presence of weapons or indications of a struggle. There is evidence of that IPV often leads to physical trauma(Campbell, 2002) and that many women experiencing IPV have experienced both physical and sexual violence(World Health Organization, 2013a). While there is no evidence from a paramedic context evidence from EDs shows common injuries treated post IPV include facial injuries, lacerations, and in extreme cases traumatic brain injury and strangulation(Black, 2011). As paramedics commonly respond to patients at the scene of their injury it is likely that they will be able to witness signs of violence that may not be available to other healthcare providers who assess patients in a different environment and therefore special attention should be paid to this finding.

Controlling people

Our experts recommended the inclusion of an additional indicator for the presence of controlling people. A key theoretical component of IPV perpetrated by males against women is the use of violence or fear as a means of control, which includes attempting to prevent access to help and support for the patient(World Health Organization, 2013b). Therefore the presence of an intrusive or controlling person in the consultation may indicate IPV. The experts in this study recommended also the inclusion of example behaviours that may commonly occur in the prehospital environment, such as a controlling person stating the patient is 'mad' or 'crazy', preventing them talking freely, or that the patient appears unwilling to respond without approval. Additionally, withholding communication or mobility devices, access to resources, or under or over medication is a common finding with disabled women experiencing IPV(Healey, Humphreys, & Howe, 2013).

While these indications are backed by strong evidence there is a lack of evidence to show that paramedics are able to accurately and effectively identify them in the prehospital environment. It is likely that identification and action will be influenced by the education, experience, attitudes and preparedness of individual paramedics, and there is preliminary evidence that paramedics are poorly prepared to perform these tasks(Simon Sawyer, Coles, Williams, Lucas, et al., 2017; Simon Sawyer, Coles, Williams, & Williams, 2017). Therefore our experts noted that while indicator based screening is recommended by

the WHO(World Health Organization, 2013b), paramedics should be provided with comprehensive education around recognising signs of IPV to ensure they understand the context of indications.

A further limitation of the use of these indications is the lack of evidence of how women experiencing IPV utilise ambulance services. Specifically it is unclear if women experiencing IPV utilise ambulance services as a result of specific IPV related events such as an assault, as a result of self-harm or suicidality, or if they call for seemingly unrelated events which may or may not be influenced by IPV such as exacerbations of chronic conditions or mental health issues. Future research should examine the usefulness of each indicator as well as common reasons for IPV patients calling an ambulance to strengthen the guideline.

Respond – Talking to patients about IPV in the prehospital environment

Current recommendations state that where indications of IPV are present patients should be screened by an appropriately trained healthcare practitioner(World Health Organization, 2013b). Currently paramedics are not routinely trained to provide screening for IPV and while this may become part of the paramedic skillset in the future, at present this is beyond their capabilities. Our experts recommended that paramedics should facilitate referrals to appropriately trained sources who can offer screening and other ongoing care and support. This can be achieved through a discussion with the patient.

Our experts recommended a three step process for discussing IPV with a patient. The first step is to ensure that the patient is alert and in a safe and private environment. The need for patients to be alert ensures that only patients capable of understanding and responding appropriately to questions are approached. The need to be in a private and safe environment is to ensure that the patient feels free to respond truthfully and without fear that their partner will be informed, which has been cited as a major barrier for disclosure, particularly among ED patient samples(Feder, Hutson, Ramsay, & Taket, 2006; Kramer et al., 2004). Our experts recognised that some women may wish to have a support person present (or may need to in the case of disability) and that this would prevent a discussion of IPV, however due to safety concerns until further evidence is available it was agreed that such situations should remain a limitation of the guideline at present.

As it is currently unknown how IPV patients utilise the ambulance service it is not clear how these requirements will impact on the use of the guideline. Experts recommend education provides guidance on methods to avoid these limitations, such as moving the patient or the bystanders, requesting screening be performed in ED, or in cases where the paramedic believe there is an imminent physical danger to contact police without consent, however at present it is recognised that this is a limitation of the guideline.

Once the patient is in a safe and private environment the experts in this study recommended holding an appropriate discussion with the patient. Discussions should use indirect, non-judgemental, open questions(World Health Organization, 2013b), the focus should be on fear and safety rather than the behaviours themselves, and patient should be given opportunity to use their own words and feelings to describe their experiences(World Health Organization, 2014). Previous qualitative research has shown

that healthcare practitioners often feel unprepared to discuss IPV, commonly due to a lack of training and confidence(Sprague et al., 2012). Effective skills-based education can help to prepare practitioners for this(World Health Organization, 2013b), however the experts in this study recommended paramedics are provided with an example conversation to guide the paramedic approach (see Figure 2). The experts in this study recommended that the conversation should be designed so that any aspect could be used at any point, and paramedics should be allowed to modify the discussion to suit their own style or the situational needs. While the example conversation did not form part of the guideline it should be made available to paramedics and could be utilised in education and training.

This particular area of the guideline took the longest to reach consensus. This was because of the need to ensure that the wording and tone of the conversation was open, non-judgemental, sensitive and provided ample opportunities for the patient to respond. Feedback from the experts in this study was that this aspect of the guideline would likely be the most difficult for paramedics to learn, and that training delivered by experts would be essential to ensure an appropriate manner. It is vital that education and training is able to teach this as there is a potential that paramedics could cause harm if this discussion is not conducted appropriately.

If a patient discloses IPV the experts in this study recommended using a validation statement which confirms for the patient that they have been heard and believed, that they aren't being judged, and that the paramedic will support them to access help(World Health Organization, 2014). If the patient states that abuse is not an occurring or declines a referral the experts in this study recommended that paramedics consider mentioning to the patient that they can access care at a later time by contacting common referral services.

It is recognised that a major limitation of this section of the guideline is that while it provides an appropriate method of discussing IPV, it cannot ensure that the discussion is approached in a sensitive and appropriate manner. To ensure that paramedics are able to confidently and appropriately perform this task it was recommended by our experts that they undertake skills based training delivered by an expert educator. Furthermore it was acknowledged that there is evidence to indicate that some women do not feel comfortable being asked about abuse from a healthcare practitioner that is known personally to them or the abuser(Feder et al., 2006), and this may be problematic for paramedics, particularly those working in a rural or small town setting. Again it was recommended that education of paramedics should discuss strategies for such situations.

Figure 2. Example conversation for use with paramedics

- To broach the subject first assure the patient's confidentiality, For example you might say

  'I'd like to ask a question but before I do I just want you to you know that your answers will be confidential and we won't be overheard'

- Fear and safety questions are a good way to begin a conversation. You can use your own words if you wish. An example question might be:

  "I'm wondering if what you are experiencing today might be related to feeling unsafe because someone is doing something to hurt or frighten you (or your children)" or

  "I'm wondering if your injuries were caused by someone who wanted to hurt or frighten you"

- You can leave a short pause allowing the patient to talk if they wish to, if they don't talk show them that you are concerned for them, for example you might say:

  "I'm concerned for your wellbeing and safety" or *"I want to make sure you are feeling safe"*

  Or you could offer support:

  "If you'd like I can assist you to speak to someone who can offer confidential support or advice about this, would you like to do that?"

- If the patient discloses abuse or states they would like you to assist them validate and reassure them before providing a referral. It's important that they feel that you believe them and you are supportive and non-judgemental, for example you might say:

  "Thank you for telling me this, it must have been difficult" and/or *"Everyone has the right to feel safe and I will do what I can to support you"*

<u>Refer – Options for referral in the prehospital environment</u>

The experts in this study recommended that paramedics should be able to refer patients to the most commonly accessed or required agencies, such as counselling, emergency accommodation and safety planning, advocacy and legal advice, police, and some specialist population services based on the local population demographics. Women experiencing IPV may require access to a wide range of services and advocacy agencies(García-Moreno et al., 2015), and further research should examine if the list provided is meeting the needs of ambulance patients.

Experts noted that the list of referral agencies will be specific to the available options in the location the paramedic operates in, and any ambulance service utilising this protocol will need to perform a thorough survey of the available resources. Feedback from the experts in this study indicated that for any given region it is unlikely there will be a single option, and so a wide range of agencies should be consulted to ensure that referral options are appropriate.

Paramedics can offer referrals to patients as per the contact details provided in the matrix, and experts also recommended that printed materials be made available that the paramedic can leave with the

patient if they wish and for this information to also be displayed in vehicles, which is in line with WHO recommendations(World Health Organization, 2013b).

Record – Documenting instances of IPV

Experts agreed on adopting the WHO documentation recommendations (World Health Organization, 2013b), as well as a flag which indicated if police also attended the scene as police and ambulance are believed to co-respond in many cases and greater data on this would be useful to ensure a coordinated response.

Accurate and complete documentation is a key component of any healthcare response to IPV(World Health Organization, 2013b). Proper recording of injuries and the circumstances that they were sustained in can be used by women to corroborate their story and even help identify perpetrators should they choose to take legal action(World Health Organization, 2013b).

The experts in this study highlighted the need to ensure that this documentation is kept with accordance with confidentiality and privacy legislation, as there is a potential risk to patients that their confidential disclosures could become known to third parties or even the abuser.

Implications for future practice

The response of an occupation to IPV is complex and requires careful planning and consultation. The results of this study provide the first comprehensive, consensus based guideline for paramedics to respond to IPV patients. This guideline constitutes the first steps towards creating an effective response for paramedics. It is now possible to create the necessary educational packages for paramedics, which can ensure they are able to effectively and appropriately utilise the guideline. As stated above this guideline is not appropriate for use by paramedics who have not undertaken appropriate education and training.

Ambulance services wishing to utilise this guideline must ensure their staff are adequately educated and trained, and must perform a comprehensive review of their organisational practices to ensure a holistic and complementary response with other services.

The evidence used to inform this guideline relies heavily on evidence taken from experts and from other healthcare contexts and therefore there a need to generate evidence from the prehospital environment to strengthen the guideline. This should include piloting the guideline to examine how women experiencing IPV utilise the ambulance services and if the indications of IPV are reliable in the prehospital context, if paramedics are able to accurately recognise the indications of IPV and appropriately discuss IPV with patients and provide referrals, and the impact of such actions on patient healthcare outcomes. Additionally there is a need to examine the willingness and preparedness of paramedics to engage with and support IPV patients.

Ambulance services and paramedics have a role to play in the prevention and reduction of violence against women and adoption of this guideline may improve referral rates and assist paramedics to become a resource for women experiencing IPV.

Study Limitations

This study was limited by the use of evidence drawn from contexts that are related to but potentially different to the prehospital environment, and the guideline itself was based on expert consensus rather than on direct empirical evidence. We have acknowledged throughout this paper the limitations of the guideline and recognise there will be women who are experiencing IPV who will not be captured by this guideline. No feedback was sought from IPV patients who have utilised ambulance services as this was beyond the scope of the study, which sought only to create the initial guideline. Ambulance services wishing to adopt this guideline should ensure appropriate consultation with patient stakeholders and future research should examine opinions of IPV patients when paramedics discuss IPV with them.

Conclusions

Intimate partner violence has a major impact on the health of women and there is a need to create occupationally specific guidelines. This study has generated a comprehensive, consensus-based guideline which can be used by paramedics to recognise and refer IPV patients to care and support in the prehospital environment. There is a need to generate educational packages to ensure the guideline can be utilised appropriately by paramedics and to gather further evidence that the guideline leads to increased identification and referral of women experiencing violence. The use of this guideline may increase referral rates for women experiencing violence and may help prevent further violence.

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Appendix 1 - A paramedic guideline to respond to women experiencing IPV - Draft version

Intimate partner violence recognition and referral protocol for paramedics

Status

Female potentially experiencing intimate partner violence

Assess / Consider

Does the patient's current presentation demonstrate known signs of IPV:

- Intrusive partner, ex-partner, or other potential abuser in consultations
- Symptoms of depression or anxiety
- Suicidality or self-harm
- Alcohol or Drug (prescription or non-prescription) use
- Unexplained and chronic symptoms (e.g., gastrointestinal, reproductive, genitourinary symptoms, pain)
- Adverse reproductive outcomes (e.g., unintended pregnancy or termination, delayed pregnancy care, adverse birth outcomes)
- Traumatic injury (particularly to genitals) with vague or implausible explanations
- Repeated call outs with no clear diagnosis

Action

If ***any*** signs of IPV are present **and** patient is GCS 15 consider questioning at appropriate time and place.

Remember NEVER question a patient in front of anyone else or make your suspicions known to anyone other than the patient!

Questioning: Say the following verbatim

"Sometimes when female patients call an ambulance it's related to mistreatment by a partner. If you don't feel safe at home I can arrange confidential advice, help and protection for you (and your children).
Would you like me to help connect you with someone who you can talk to about this?"

- If the patient says 'yes' validate and reassure patient then use Referral Matrix
- If the patient says 'no' or they aren't sure state they can always get confidential advice by calling 1800 RESPECT
- If the patient declines care but you are concerned about the safety of children request police attendance

Referral Matrix

Agency	Reason for referral	How to arrange referral
National sexual assault and domestic violence counselling service (1800 RESPECT)	General advice Counselling (online and phone) Referral to specialist services	Ph. 1800 737 732 https://www.1800respect.org.au/
Victoria Police	Patient or child protection Legal advice Signs of violence Harm to children Risk assessment	Ph. 000 Normal request procedures (eg DM)
Safe Steps	Emergency accommodation	Ph. 1800 015 188 http://www.safesteps.org.au/
Legal Aid	Legal advice	Ph. 1300 792 387 https://www.legalaid.vic.gov.au/
Emergency Department	Medical care	Normal transport procedures
Men's Referral Service	Help and advice for male perpetrators	Ph. 1300 766 491 https://www.mrs.org.au

Documentation

Document the following in addition to your normal PCR with the patient's consent:

- Observed signs of IPV including a description of any injuries
- If you questioned the patient and their response
- Any referrals made
- Any other relevant scene findings, observations or statements made by the patient or potential perpetrators

Principal findings and implications

The principal outcome of this chapter is the creation of a new guideline for paramedics to response IPV patients. The guideline was created with the expertise of a wide range of IPV and family violence experts, as well as evidence drawn from similar contexts such as EDs and GP clinics. The guideline itself is comprised of evidence-based signs and symptoms of IPV that are likely to be encountered in the prehospital environment, a method to discuss IPV with patients, referral options and documentation recommendations. This set of practical recommendations provides much needed direction for paramedics to appropriately respond to IPV patients.

This guideline will allow paramedics to begin to respond to IPV in an appropriate manner which is consistent with current evidence and recommendations. A key barrier for many healthcare professionals to respond to IPV is not feeling like they know how to respond properly[78], and this guideline will hopefully aid in reducing this barrier for paramedics. Furthermore should this guideline be adopted by ambulance services this will allow for evidence to be generated from a prehospital context, which can then be used to inform future guidelines. Such evidence may include the ability of paramedics to effectively learn and apply the skills necessary, patient acceptance of discussing IPV with, or disclosing to, paramedics, rates of uptake of referrals offered, and ultimately impact of patient healthcare outcomes. Finally, this guideline gives the first set of recommendations for how paramedics should be responding to IPV, and will therefore allow educational programs to be generated, as there is now clarity around the expected response and what paramedics need to be taught.

Despite the potential for this guideline to advance the education for paramedics as well as their management of IPV patients there is still significant work required before it could be successfully adopted. Firstly the guideline was created based on a combination of expert opinion and research drawn from similar contexts and it is unclear if this will be transferrable to the prehospital context. Therefore the guideline requires piloting to gather more data pertaining to the ability of paramedics to apply the guideline as intended, and patient acceptance of paramedics discussing IPV as per this guideline. Secondly before this guideline can be adopted it is necessary to provide education, and as discussed in previous chapters there are currently no comprehensive, evidence-based educational packages designed specifically for paramedics, and therefore such packages must be created and evaluated before the guideline can be used. Finally it is recognised that the ambulance services themselves must properly prepare their organisations for the implementation of such guidelines, which includes creating organisational policies, training for relevant staff, and ensuring compliance

with the specific needs of IPV patients, such as privacy and safety protocols. This has been recognised as a key barrier to the success of the introduction of IPV management practices into organisations and professions[8, 67], and therefore requires careful consideration and consultation as per the recommendations in Chapter 1.

It is possible that this guideline may increase recognition of IPV patients if adopted by ambulance services after the necessary preparation. This is particularly relevant given evidence that paramedics are often the first and sometimes only agency that respond to IPV patients in the prehospital context[58-62] and that these patients are less likely to be transported to ED[53]. Therefore if paramedics are unable to respond appropriately it may result in missed opportunities to recognise the signs of IPV and refer patients to care and support to help them end the violence. Should there be an improvement in the recognition and referral of IPV patients this may improve access for IPV patients to care and support, which may play a role in reducing overall rates of violence.

Key findings, implications and recommendations

OPPORTUNITIES TO IMPROVE THE PARAMEDIC RESPONSE TO IPV

Key findings, implications and recommendations

This thesis, including its published works, has defined the role of ambulance services and paramedics in responding to IPV, examined the educational needs of paramedics and paramedic students, assessed the use of a potential outcome measure for educational interventions, and created a new guideline to direct the paramedic response to IPV patients. The key finding of this thesis is that while paramedics appear to be highly likely to encounter IPV patients in their practice they do not currently have sufficient education, tools or resources to properly respond as individuals or as a profession. Following will be a review of the main findings of each chapter, a discussion of their implications, and recommendations to improve the paramedic response to IPV.

Key findings

Intimate partner violence has a major impact on the health and wellbeing of women and both paramedics and ambulance services have a role to play in reducing the burden of such abuse. The findings of each chapter in this thesis build upon current knowledge and can provide direction for future practice. The key findings of each chapter will be discussed below.

Chapter 1

Chapter 1 discussed that as ambulance services in Australia provide paramedics with their authority to practice they must promote an effective and appropriate response to IPV. Ambulance services should prioritise partnering and collaborating with key family violence and referral agencies, such as peak bodies, government departments, research agencies, advocacy groups, police, and other healthcare practitioner groups. Through enhanced collaboration it should be possible to guide the response of ambulance services and paramedics, ensuring they are responding appropriately and in line with overarching strategic plans.

Paramedics have a key role in to play in the early recognition and referral of IPV patients, and this could theoretically be achieved through enhanced education and training. Within Australia it is the ambulance services rather than paramedics or regulatory bodies who are responsible for generating and delivering CME, and therefore they must provide adequate resources for staff to access education and training. However it is paramedics themselves who will ultimately be responsible for achieving and maintaining competency in responding to IPV. Most ambulance services in Australia require new recruits to complete a Bachelor degree

in paramedicine, and so there is scope for universities to take the initiative to include IPV specific education into their curriculum. Ultimately it appears that strong collaboration and coordination between ambulance services, family violence peak bodies, and universities would provide the greatest scope for improving the education of paramedics and paramedic students. Family violence peak bodies can help clarify the educational needs of paramedics, while universities can build IPV specific KAS outcomes into curricula, and ambulance services can support staff to incorporate this education into future practice.

Enhanced data collection is a key strategy that ambulance services could employ to measure and potentially document improvements in their response to IPV after an education intervention. Currently there is very little published data available from the prehospital environment, which means it is difficult to ascertain the true frequency with which paramedic's encounter IPV, how and why IPV patients access the ambulance service, and what management, if any, is currently being utilised by paramedics. Therefore more wide-spread data collection would allow for greater understanding of how ambulance services and paramedics interact with patients, and provide a baseline from which service can be improved. Specific questions which improved data collection could help answer include how and why do women experiencing IPV access ambulance services, what referral options are they most in need of, and how accepting are they of paramedics discussing IPV with them. Evidence based answers to questions such as these would allow paramedics and ambulance services to tailor their response to patients and hopefully assist patients to access referrals to care and support. Key to this action will be facilitating access to data for researchers and other agencies equally committed to reducing violence against women, and as discussed above the ability of paramedics to code useful data into patient care records should be assessed.

Establishing a culture of zero tolerance to violence against women is likely to be a pivotal action that may significantly impact on the success of all other strategies. This would include appropriate marketing of the ambulance service as a resource for women experiencing violence, but also entails ensuring that each ambulance service is made up of individuals who understand why IPV occurs and who hold appropriate attitudes which strengthen action to reduce such violence. Ambulance organisations seeking to improve the capacity of their workforce to respond to IPV should prioritise actions to support staff to adopt desired attitudes and behaviours, which has been highlighted as a key strategy[96].

Chapter 2

Chapter 2 discussed research showing that an individual response to IPV requires an informed, compassionate, empathetic and non-judgemental approach. Examination of the current KAP to manage IPV patients of paramedics and paramedic students provides the first available data on individual preparedness and found paramedics are not being properly prepared. Low knowledge, perceived preparedness and poor self-confidence and self-efficacy was reported, and furthermore the presence and duration of training was not associated with improved actual knowledge in students. Education on issues such as IPV can be complex, and attention must be paid to the context with which education is delivered, such as how is it presented or examined, and future research should examine this to provide a deeper understanding of paramedic and paramedic student education.

A secondary conclusion of this chapter is that the current curricula is not preparing students to be effective practitioners capable of appropriately responding to IPV, though how this should be improved is the subject of future research. It is essential that the curricula be reviewed to ensure students, and therefore future practitioners, are properly educated in theoretical background to violence against women, how to discuss violence and respond to disclosure, referral options and proper documentation.

Additionally this study found that both paramedics and paramedic students reported high rates of personally experiencing IPV. This finding should be treated with caution as we recognise that the question we asked our participants was not directly comparable to the general population statistics, however this is a significant finding which warrants further investigation as this could have impacts on the response of ambulance services and paramedics to IPV and IPV patients.

Finally the data presented in Chapter 2 provided additional evidence that paramedics believe they frequently encounter IPV patients. While this study used a self-reporting measure which may result in biased results, this remains a significant finding as it could be reasonably expected that due to participants being mostly untrained practitioners they would be likely to only recall the more overt cases of IPV, such as major trauma or where the patient self discloses. While there is no data to show how and why IPV patients use the ambulance services it could be reasonably assumed that overt encounters may be less frequent than more covert encounters, such as where IPV is contributing to mental health conditions, self-harm presentations, or other non-traumatic

cases. Further research should be conducted which examines both how patients utilise the ambulance service as well as changes in identification or management post paramedic training.

Chapter 3

In Chapter 3 reviewed the published data pertaining to IPV educational interventions delivered to AHPs, which was the first review of this subject including AHPs in over a decade. There is little evidence at present as to what constitutes an effective educational intervention, and therefore the results of this review can inform the design of future interventions. The review found that due to a lack of robust outcome measures it was difficult to determine which interventions, or aspects of interventions, were effective, however there were several insights that could be incorporated into future research.

Firstly there is some evidence that online delivery of content can improve knowledge, which is an important finding as online delivery may be a more cost effective method to deliver some of the content[97]. We also found that participants generally want an opportunity to practice skills with an expert in order to improve their confidence and self-efficacy. Deficiencies in confidence and self-efficacy have both been shown to be major barriers to screening[78], and in the populations studied both reported low scores in these domains. Given these two findings it may be of use to combine online delivery with face-to-face follow up educational interventions to maximise effect. Additionally the needs of paramedics and paramedic students may be very different. Education directed at students may emphasise knowledge and basic skills such as identifying signs of IPV and building confidence to talk to patients, while education for currently practicing paramedics may need to emphasise more complex skills such as displaying empathy and or accessing support for the paramedics themselves to ensure their own mental wellbeing after encountering IPV patients. Future research should focus on examining the individual the needs of students and currently practicing paramedics to ensure education has maximum impact.

We also found that there is a need to generate more data on the best methods of modifying or otherwise improving participant attitudes. Our review found that while attitudes around self-efficacy and self-confidence were able to be improved, even with short interventions, only one study reported data showing an improvement in attitudes towards women and IPV patients, which is a significant deficit as such attitudes may impact on the practitioner's approach to the patient, which can have implications for the effectiveness of discussions about IPV[55].

Chapter 4

In Chapter 4 we examined the psychometric properties of a leading outcome measure for evaluating IPV educational interventions with AHP. The difficulty in improving the paramedic response to IPV lies in that there is a clear and established need to improve education and yet there is little evidence for the effectiveness of the available outcome measures, so it is difficult to determine what is and is not effective. Furthermore this lack of instrumentation means that it is also difficult to measure the current level of preparedness for the profession.

Chapter 4 examined the psychometric properties of the Modified PREMIS, which is a leading instrument capable of measuring outcomes for IPV education interventions in AHP populations. We examined the psychometric properties of the instrument after delivery to 260 Australian AHS and found that, with the exception of some sub-scales the instrument demonstrated mostly poor validity and reliability. We performed Principal Component Analysis and found a 5 factors solution, with the identified sub-scales demonstrating poor internal consistency (Cronbach's alpha between .47 and .80), low construct validity with few scales showing significant correlations above r = .3, and medium to high test-retest reliability (spearman's rho between .63 and .88). Therefore we found that in Australian AHS population the Modified PREMIS does not demonstrate acceptable psychometric properties. This finding means that the results discussed in Chapter 2 should be interpreted with caution, and while results are likely to be indicative of the current preparedness of paramedics and paramedic students further work will be required to ascertain reliable data.

We recommended that the scale be revised and potentially updated to ensure it is relevant for Australian AHP contexts. Furthermore given the scale was developed in the US in 2006 and that recently the first clinical practice guidelines for healthcare staff have been released[70, 71] it may be useful to revise the scale taking into account the new evidence and recommendations. Pending revisions and subsequent psychometrics this scale may become pivotal to the overall success of improving paramedics' response to IPV, as it may serve not only as an outcome measure from education, but also as a measure of the population's current preparedness, and therefore could be used to identify practice and knowledge gaps which could then be addressed in CME.

Chapter 5

The previous chapters of this thesis demonstrated paramedics report that they are likely to frequently encounter IPV patients, that paramedics in Australia show poor preparedness and knowledge to manage IPV

patients, and that there is strong case to implement IPV education and training. However it will be difficult to initiate educational interventions without first defining what paramedics need to be taught. Educational needs can be drawn from existing recommendations[70, 71] however there is a need to ensure that education is relevant to the operational contexts and the unique skills sets of paramedics. Therefore there is a need to first determine how paramedics should be interacting with IPV patients, so that education can teach the necessary KAS. Therefore in this chapter we created the world's first guideline for paramedics to respond to IPV patients, which can be used to guide paramedic management of IPV patients, as well as be used to generate the necessary content for educational interventions.

Due to the lack of evidence from a prehospital context the creation of this guideline required the input of experts and the inclusion of data taken from similar healthcare contexts. The guideline includes recommendations on the signs and symptoms of IPV that paramedics are likely to witness and will be able to use in the prehospital environment. Additionally we created a method of discussing IPV with patients specially designed for paramedics, and provided an example conversation which paramedics can modify to suit their needs. The guideline also provides a simple yet comprehensive set of referral options which could be of benefit to the patient and provides recommendations on documentation of cases. The data created in this study forms new evidence which can be used to meet priority actions from Chapter 1, such as building collaborative partnerships, and defining educational and data collection needs.

These guidelines can direct the paramedic identification and referral of IPV patients, and will allow data to be generated in the prehospital context which can inform future guidelines. Therefore this guideline is a significant addition to the literature for paramedics and ambulance services, and the use of this guideline by appropriately trained staff may improve the recognition and referral of IPV patients, which could assist in improving individual healthcare outcomes.

Summary

The key findings of this thesis have created new evidence and a new guideline which can improve the paramedic response to IPV. The evidence collected in this thesis can be used to define the actions and responsibilities of paramedics and ambulance services in responding to IPV, provides the first evidence which can be used to determine the current level of preparedness of Australian paramedics to manage IPV patients,

provides evidence for creation of new educational packages, and has provided new evidence for the appropriateness of an outcome measure for the effectiveness of education.

Implications

The key findings of this thesis have created new evidence relevant to the prehospital context which provide significant implications for the paramedic response to IPV. The central aim of this thesis was to explore the paramedic response to IPV and the chapters presented have provided a clear exploration of the potential for paramedics to respond to IPV for the benefit of patients, as well as generated new evidence to inform the development of educational programs and practice guidelines. Implications to the findings of the chapters of this thesis will now be discussed.

To provide context and structure for the exploration of the paramedic response this thesis began by theorising the role of paramedics with regards to responding to IPV. Our discussion has shown that Australian Ambulance services are currently underserving women experiencing IPV and must increase their capacity and that of their paramedic staff to respond appropriately. Ambulance services need to forge links with key family violence agencies, build new capabilities such as data collection pathways, and need to provide their operational and non-operational staff with the necessary policies, education, tools and resources to respond to IPV. By addressing the current gaps in the ambulance service's response to IPV it is likely that paramedics and ambulance services could play a significant role in the reduction of overall violence against women, with particular relevance to IPV, and may become a useful resource for women experiencing violence to access care and support. To achieve these actions it is necessary to generate new research, and this thesis has begun this process by exploring the IPV educational needs of paramedics in Australia.

The current paramedic curricula appears to be inadequate in generating paramedics who are prepared to respond appropriately to IPV patients. There is a need to evaluate both the content of the current curricula and the method of delivery to ensure that paramedics are being properly trained. To achieve this there is a need to generate new educational packages aimed at paramedics, and to ensure the availability of robust educational outcome measures. With improved education it may be possible to increase recognition and referral rates of women experiencing IPV, and this may lead to improved healthcare outcomes for individuals.

Additionally there is a need to accurately measure the extent with which currently practicing paramedics and paramedic students are personally experiencing IPV. The data presented in this thesis was significantly limited by methodological complications, however the findings of this chapter may indicate that paramedics are over represented in family violence statistics, which may have significant implications for attempts to improve the paramedic response, and therefore this should be examined using more robust methodology as a priority. Before such educational programs can be created there is a need to evaluate the current literature to determine what is known to be effective when providing education to AHP groups.

This thesis has summarised evidence to support the generation of new educational packages aiming at paramedics. Currently there is no evidence for a robust educational intervention that could be used with paramedic populations, and therefore new packages need to be created. Educational packages may explore the use of a mixture of online and face to face learning. It is likely that educational packages will be improved by the use of experts to deliver content and provide skills practice sessions. Educational interventions should include evaluation using robust measures to ensure participants are properly trained. The creation of new educational packages specifically for paramedics, and the measurement of their effectiveness, is necessary to ensure that the response of paramedics to IPV is appropriate, and therefore this should be undertaken as a matter of priority. Therefore in addition to the creation of educational packages there is also a need to create or identify outcome measures capable of measuring the KASB of paramedics post intervention.

The Modified PREMIS is a potential tool to achieve this, however this thesis found it did not demonstrate sound psychometric properties when delivered to a cohort of Australian AHS, including paramedic students. There is a potential that with revision and updating this may become a useful tool, though further research will be required. There is therefore a need assess alternative scales, modify existing scales, or create new scales which demonstrate good psychometric properties when used to measure the preparedness of paramedics to manage IPV. The availability of such scales is essential to ensure the effectiveness of educational interventions, to ensure education leads to capable and confident practitioners. Therefore this should be undertaken as a priority.

Finally, to assist with the creation of educational packages there is a need to clarify the educational needs of paramedics, and from the work of this thesis there is now clear guidance on how paramedics should be responding to IPV patients. While the new guidelines are based on a combination of empirical evidence and

expert opinion, there is nonetheless no evidence to show that they will comprise an effective tool. Therefore while it is recommended that paramedics should adopt the guideline, there is also a need to measure the impact of the introduction of the guideline, to examine the appropriateness of the content, measure the ability of paramedics to apply the guideline appropriately, and assess its impact on patient healthcare outcomes. Ideally a pilot study would attempt to introduce the guidelines, along with the necessary associated education and support, to a selection of paramedics, and data collected could be used to inform the implementation of the guidelines to a wider audience.

Recommendations

Based on the key findings and implications of this thesis we make the following recommendations for paramedics and ambulance services to improve their response to IPV.

1) Ambulance services should commit to improving their response to IPV by:
    a. Increased engagement and collaboration with key family violence agencies
    b. Initiating educational interventions which teach the necessary KAS to paramedics and paramedic students that allows them to effectively recognise and refer IPV patients.
    c. Initiate data collection that allows for the accurate measurement of the frequency with which paramedics encounter IPV patients, and will allow for great research in to how and why IPV patients utilise the ambulance services, common scene findings, management practices including any referrals offered, and eventually patient health outcomes.
    d. Championing the values of zero tolerance to violence against women, including evaluating current management practices and policies to ensure they are consistent with strategies known to assist in the overall reduction of violence, and in particular violence against women.

2) The standard paramedic curricula for undergraduate students should be revised and potentially expanded to include IPV specific education, and currently practicing paramedics should have access to educational interventions meeting their needs also. Educational interventions should teach and assess the necessary KAS to allow participants to effectively manage IPV patients, and should focus on the needs of the audience with respect to student and practicing populations.

3) New educational interventions should be created for paramedics and paramedic students and should be delivered by experts and should provide opportunity for skills-based practice. Interventions should aim to cover all the key topics listed in the WHO guidelines, as well as aim to teach and assess the necessary KAS to effectively manage IPV patients in the prehospital environment.

4) Further evidence should be generated regarding outcome measures which can be used to evaluate the impact of educational interventions with both paramedic and student paramedic cohorts. The Modified PREMIS should not be used in Australian paramedic and student paramedic populations without revision and further psychometric analysis.

5) The guidelines created in this thesis should be adopted by properly trained paramedics and used to recognise and refer IPV patients to care and support. Additionally educational interventions should be created which ensure that practitioners receive adequate support and training to apply this guideline effectively.

Priority directions for further research

Research on the response of paramedics to IPV is in its infancy, and there are a vast array of research needs needed to inform and evidence the roles and responsibilities of paramedics. Nonetheless there are two key priority areas that should attract the majority of research.

Firstly, the response of paramedics cannot be advanced without the creation of educational packages that are demonstrated to be effective in improving the KAS of paramedics. Therefore the creation and testing of such educational packages should be begun immediately. This will allow for advancement of other areas of interest, such as patient acceptance of paramedics discussing IPV and the impacts of recognition and referral.

Secondly, the ability to accurately measure the impact of education to ensure that paramedics hold the appropriate KAS to appropriately respond requires the identification or development of outcome measures. There is no measure that has been shown to be valid and reliable in Australian paramedic populations and further research on this subject should be prioritised to ensure that when paramedics to begin to respond, they are adequately trained and prepared.

Once these two priority areas are addressed it will be possible to test the use of guidelines in practice and determine if paramedics are able to respond appropriately, and if their response is beneficial to patient outcomes.

Conclusions

SUMMARY OF FINDINGS

Conclusions

Intimate partner violence is a leading contributor to death and ill health for women worldwide and can impact on a broad range of physical and mental health conditions. It is likely that paramedics frequently encounter patients who are experiencing IPV, and their response may have a significant impact on outcomes for patients.

Evidence generated by this thesis indicates that ambulance services are currently underserving IPV patients and they need to take immediate action to ensure they are responding appropriately. This includes increased connection and collaboration with key family violence stakeholders, increasing education and support for staff, engaging in data collection, and promotion of ambulance services as a resource for women.

This thesis found that paramedics and paramedic students are not being properly prepared to manage IPV patients when they encounter them in the prehospital environment and so effective educational interventions and standard curricula should be created.

Educational interventions may benefit from learnings from previous interventions which have found the use of expert trainers who can provide skills practice training may be of benefit. Likewise education should ensure that it teaches the appropriate KAS to enable practitioners to effectively recognise and refer patient in line with the guideline created in this thesis, which gives consensus-based recommendations on the response of paramedics to IPV patients.

Despite its status as a leading outcome measure the Modified PREMIS was not found to demonstrate sound psychometric properties when delivered to Australian paramedic students. Therefore there is a need to rapidly assess the available IPV educational outcome measures, and potentially develop new or modify existing measures so that educational interventions can be accurately assessed.

This thesis has developed new consensus-based guidelines to direct paramedic management of IPV patients and these guidelines should be incorporated into future paramedic practice. This will ensure the highest standards of care and will allow greater evaluation of the use of paramedics as a resource for women experiencing IPV.

By improving the response of paramedics and ambulance services it is possible that the recognition of patients experiencing IPV may be increased, which could lead to increased access for patients to referral agencies. Improved access to referral agencies is a key strategy in reducing future incidences of violence and improving the overall health of women and children. Therefore paramedics could become a key resource for patients experiencing IPV, and could play a part in the overall reduction of violence against women.

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Appendices

Appendix 1 – Ethics approval for work undertaken in Chapter 2 of this thesis

MONASH University

Monash University Human Research Ethics Committee (MUHREC)
Research Office

Human Ethics Certificate of Approval

This is to certify that the project below was considered by the Monash University Human Research Ethics Committee. The Committee was satisfied that the proposal meets the requirements of the *National Statement on Ethical Conduct in Human Research* and has granted approval.

Project Number:	CF15/3072 - 2015001297
Project Title:	Australian paramedic students' knowledge, attitudes and preparedness to manage intimate partner violence patients
Chief Investigator:	Assoc Prof Brett Williams
Approved:	**From:** 14 September 2015 **To:** 14 September 2020

Terms of approval - ***Failure to comply with the terms below is in breach of your approval and the Australian Code for the Responsible Conduct of Research.***

1. The Chief investigator is responsible for ensuring that permission letters are obtained, if relevant, before any data collection can occur at the specified organisation.
2. Approval is only valid whilst you hold a position at Monash University.
3. It is the responsibility of the Chief Investigator to ensure that all investigators are aware of the terms of approval and to ensure the project is conducted as approved by MUHREC.
4. You should notify MUHREC immediately of any serious or unexpected adverse effects on participants or unforeseen events affecting the ethical acceptability of the project.
5. The Explanatory Statement must be on Monash University letterhead and the Monash University complaints clause must include your project number.
6. **Amendments to the approved project (including changes in personnel):** Require the submission of a Request for Amendment form to MUHREC and must not begin without written approval from MUHREC. Substantial variations may require a new application.
7. **Future correspondence:** Please quote the project number and project title above in any further correspondence.
8. **Annual reports:** Continued approval of this project is dependent on the submission of an Annual Report. This is determined by the date of your letter of approval.
9. **Final report:** A Final Report should be provided at the conclusion of the project. MUHREC should be notified if the project is discontinued before the expected date of completion.
10. **Monitoring:** Projects may be subject to an audit or any other form of monitoring by MUHREC at any time.
11. **Retention and storage of data:** The Chief Investigator is responsible for the storage and retention of original data pertaining to a project for a minimum period of five years.

[redacted]

Professor Nip Thomson
Chair, MUHREC

cc: Mr Simon Sawyer, Assoc Prof Jan Coles, Dr Angela Williams,

Human Ethics Office
Monash University

[redacted]

Appendix 2 – Ethics approval for work undertaken in chapter 5 of this thesis

MONASH University
Monash University Human Research Ethics Committee (MUHREC)
Research Office

Human Ethics Certificate of Approval

This is to certify that the project below was considered by the Monash University Human Research Ethics Committee. The Committee was satisfied that the proposal meets the requirements of the *National Statement on Ethical Conduct in Human Research* and has granted approval.

Project Number:	CF16/245 - 2016000114
Project Title:	A DELPHI based protocol for paramedics to recognise and refer intimate partner violence patients
Chief Investigator:	Assoc Prof Brett Williams
Approved:	**From:** 12 February 2016 **To:** 12 February 2021

Terms of approval - *Failure to comply with the terms below is in breach of your approval and the Australian Code for the Responsible Conduct of Research.*

1. The Chief investigator is responsible for ensuring that permission letters are obtained, if relevant, before any data collection can occur at the specified organisation.
2. Approval is only valid whilst you hold a position at Monash University.
3. It is the responsibility of the Chief Investigator to ensure that all investigators are aware of the terms of approval and to ensure the project is conducted as approved by MUHREC.
4. You should notify MUHREC immediately of any serious or unexpected adverse effects on participants or unforeseen events affecting the ethical acceptability of the project.
5. The Explanatory Statement must be on Monash University letterhead and the Monash University complaints clause must include your project number.
6. **Amendments to the approved project (including changes in personnel):** Require the submission of a Request for Amendment form to MUHREC and must not begin without written approval from MUHREC. Substantial variations may require a new application.
7. **Future correspondence:** Please quote the project number and project title above in any further correspondence.
8. **Annual reports:** Continued approval of this project is dependent on the submission of an Annual Report. This is determined by the date of your letter of approval.
9. **Final report:** A Final Report should be provided at the conclusion of the project. MUHREC should be notified if the project is discontinued before the expected date of completion.
10. **Monitoring:** Projects may be subject to an audit or any other form of monitoring by MUHREC at any time.
11. **Retention and storage of data:** The Chief Investigator is responsible for the storage and retention of original data pertaining to a project for a minimum period of five years.

[redacted]

Professor Nip Thomson
Chair, MUHREC

cc: Mr Simon Sawyer, Assoc Prof Jan Coles, Dr Angela Williams

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