Trauma Teams in Action

by

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Abstract

Trauma Teams in Action is a portfolio of research and is comprised of three studies: systematic review, cross sectional survey and phenomenological study. Study one examines 25 years of relevant literature up to December 2006 that focused on the education and professional development of civilian trauma team members and the teamwork practices employed in civilian trauma teams. Only 12 studies were included in the results of the review highlighting the lack of quality studies into the topic. It did however provide a basis of knowledge to inform the development of a cross sectional survey. Of the 12 included studies, five related to trauma team training. In particular, information pertaining to course content and delivery methods used, for example the use of simulation. The remaining seven studies provided details of teamwork management practices. Results highlighted details regarding the use of a formed team as opposed to ad-hoc team formation, and the use of a tiering system to provide optimal care to all trauma patients by the most appropriate sized and manned trauma team. Knowledge relating to optimally sized teams, and the use of a horizontal team approach was also identified. Finally, this component of the review identified knowledge relating to the role of the leader and fact that trauma teams with a dedicated team leader were more successful than those teams who did not have an identified team leader.

A cross sectional survey (Study Two), examined the current education and professional development of health personnel in the Australian Defence Force (ADF) for the development of trauma/resuscitation team skills. Details related to deployment history and teamwork practices (team composition, scope of practice and team management style utilised) of the participants. The study involved 128 respondents from the Royal Australian Navy and the Royal Australian Air Force Health Services Branch completing an online survey. The study was limited due to difficulties in having Army personnel not being able to participate, but useful information about the education and deployment of Australian Defence Force trauma teams was provided. The study highlights that the majority of respondents who reported that they had completed trauma training and deployed as a member of a trauma team had served in the ADF for longer than 10 years. The study also provided details of the large variety of courses completed by both permanent and reserve personnel, and highlighted the fact that this may reflect inconsistencies in the training provided. Of the 80 respondents who had completed formal trauma training only 38

respondents subsequently provided details of the deployments they had been involved in as a trauma team member. As the study identified issues relating to the number and variety of courses completed, consideration of strategies to ensure consistency of training should be further examined. The outcome of the study identified that respondents feel that they were well prepared to work as members of a military trauma team in a conflict/humanitarian situation. However, the study also indicated there should be more emphasis on multi-disciplinary training and more focus on teamwork skills.

A hermeneutic phenomenological study (Study Three), examined the lived experiences of six Australian Defence Force Nursing Officers working as members of trauma teams. The interviews provided a unique opportunity to share participants' stories and experiences. Six major themes were identified from the interviews. These included; Telling their stories; The role – Who we are and what we do; The environment – Is it so different?; Training-Will it ever fully prepare you?; Working in teams – There's no 'i' in team; and Leadership – Will the real leader please stand up. The participants provided details of their stories and their want for their stories to be told. Information of the role(s) that the participants held with details regarding the uniqueness of being a military nurse and the need to feel a valued member of the team was reported on. The participants also provided details of the environment in which they work. This included details of both the physical environment in regards to the need to work with less and the fact that in the environments in which they are required to work, the need to have a place for everything and the challengers relating to the areas in which they work. The psychosocial environment they had encountered and which included details of the horrors of the environment and the ways in which they cope when place in these situations was also provided. Details of the training undertaken by the participants, in particular the need to prepare them for uncontrollable environments was spoken of, as too, the training conducted in the field. The theme regarding working in teams provided information about the team and who made up these teams and the need to get to know the team members was spoken of. Finally, details relating to the issue of leadership was identified with information pertaining to the role of the leader in the team discussed by the participants. This study has provided a unique opportunity to gain a deeper understanding of a usually closed section of the nursing profession, that of the military nurse.

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As with any journey, this has proven to be, at times, a challenging one for me, and a journey that I did not take alone. Therefore, I wish to thank many people for their support, guidance and their never ending faith in my abilities, when I had little or no faith in myself.

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Declarations

Statement of Originality

I certify that this work contains no material which has been accepted for the award of any other degree or diploma in any university or other tertiary institution and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text. I certify that no part of this work will, in the future, be used in a submission for any other degree or diploma in any university or other tertiary institution without the prior approval of the University of Adelaide and where applicable, any partner institution responsible for the joint-award of this degree.

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Ethics Approvals

Research procedures reported in this thesis received the approval of the Australian Defence Human Research Ethics Committee Approval 559–09 dated 26 November 2009 as well as from Australian Defence Human Research Ethics Committee Approval 626–11 dated 9 November 2011, and the University of Adelaide Human Research Ethics Committee Approval H-048-2011 dated 28 April 2011.

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List of abbreviations

A&E	Accident and Emergency
ACLS	Advanced Cardiac Life Support
ADHREC	Australian Defence Human Research Committee
ADF	Australian Defence Force
ALS	Advance Life Support
AMAC	Advanced Medical Assistant Course
AME	Aero Medical Evacuation
APLS	Advanced Paediatric Life Support
ARA	Australian Regular Army
ATCC	Advanced Trauma Care Course
ATLS	Advanced Trauma Life Support
ATNC	Advanced Trauma Nursing Course
ATNM	Advanced Trauma Nursing Management
BARS	Behaviourally Anchored Rating Scale
BLS	Basic Life Support
BMAC	Basic Medical Assistant Course
CCISP	Care of the critically ill surgical patient
CINAHL	Cumulative Index to Nursing & Allied Health Literature
CMC	Clinical Managers Course
CRM	Crew Resource Management
CRN	Critical Response Nurse
CSM	Company Sergeant Major
CY	Code Yellow
DOs	Dental Officers
DSTC	Definitive Surgical Trauma Course
ED	Emergency Department
EDs	Emergency Departments
EMSB	Early Management of Severe Burns
EMST	Early Management of Severe Trauma
ENP	Emergency Nurse Practitioner
ETCC	Emergency Team Coordination Course
FNC	Field Nursing Course
HDU	High Dependency Unit
HSB	Health Services Branch
IDC	Indwelling catheter
IED	Improvised explosive device
ILCOR	International Liaison Committee on Resuscitation
IRA	Irish Republican Army
JHC	Joint Health Command

LCDR .... Lieutenant Commander
LSS .... Life Support Skills
MARC .... Military Advanced Resuscitation Course
MBBS .... Bachelor of Medicine/Bachelor of Surgery
MEDICS .... Medical Assistants
MIMMS .... Major incident medical management and support
MOU .... Memorandum of Understanding
MOD .... Modified
MO .... Medical Officer
MOs .... Medical Officers
NBCD .... Nuclear, Biological and Chemical Disaster
NHS .... National Health Service
NO .... Nursing Officer
NOs .... Nursing Officers
PHTLS .... Pre Hospital Trauma Life Support
RAAF .... Royal Australian Air Force
RAN .... Royal Australian Navy
RANR .... Royal Australian Naval Reserves
RAP .... Regimental Aid Post
RESUS .... Resuscitation
RN .... Registered Nurse
RNs .... Registered Nurses
RRTC .... Rural and remote trauma course
TLSP .... Time for life saving procedures
TNC .... Trauma Nurse Coordinator
TNCC .... Trauma Nursing Core Course
TR .... Trauma Response
UK .... United Kingdom
UN .... United Nations
US .... United States
USA .... United States of America
USNS .... United States Naval Ship
WWI .... World War I
WWII .... World War II
Yrs .... Years

Portfolio Introduction

Portfolio Introduction

Our patients did not choose us. We have chosen to treat them… we have accepted the responsibility for patient care in some of the worst situations, when we are tired and cold, when it is dark and rainy, and often when conditions are unpredictable

(Prehospital Trauma Life Support Committee
of the National Association of Emergency
Medical Technicians 1999, p. xxiii)

The delivery of trauma care in the military environment is one of the major planning priorities within any defence force and an area of concern to military health planners when preparing health personnel to be sent into an area of conflict, humanitarian crisis or when providing medical support to their personnel during times of training. As a member of a military trauma team, the researcher of this portfolio is passionate about ensuring that trauma team members are adequately prepared to deliver quality trauma care to their patients. The teamwork practices of these teams is also paramount and worthy of attention. This portfolio of research is a series of three studies, which explore Australian Defence Force Health personnel, in particular the role they play in trauma teams.

The title of the portfolio is *Trauma Teams in Action*. The term Action is used in this portfolio to denote both the physical act of accomplishing the goal of the trauma team when caring for the trauma patient, but is also used for the act of being in the field of war. The term Action is often used in the military context to denote act of working in an area of conflict.

My research journey

The journey of this research stems back to 1994 when I joined the Royal Australian Navy (RAN) as a Nursing Officer (NO). In order to undertake a substantial research project, I had to have the desire and passion to find as much information as possible about a personal area of interest, that being military trauma teams. Therefore, as means of a providing some background into the reason for this topic the following is now provided.

At the commencement of my candidature I was a full timing serving NO, and have since transferred to the reserve forces of the Royal Australian Navy (RAN). In 1995 I commenced training to work as a member of a trauma/resuscitation team. Following numerous trauma courses with other ADF health personnel (both nursing and multidisciplinary training), I was chosen to deploy as a member of the Australian contingent to the United Nations Military Hospital in Dili, East Timor (now known as Timor Leste) for six and a half months in 2000 with a group of four other RAN medical personnel. This small trauma team was posted to work in a Royal Australian Air Force (RAAF) led contingent. Prior to us leaving Australia to go to East Timor, our small team worked and trained together in order to prepare us.

The deployment provided not only the small team, but the entire Australian contingent of the facility, with a unique opportunity for all three services of the Australian Defence Force (ADF) to work closely together and to compare the trauma team models utilised by not only the RAN, but also the RAAF, and Australian Army health personnel posted to the facility. Within the hospital compound, a Singaporean Army Medical Services contingent also had a small trauma team. The ADF and Singaporean teams provided trauma services to United Nations personnel and to the local population. The knowledge and experiences gained as a result of this varied organisation continued to fuel my desire to research this topic.

During this time the RAN team had the opportunity to compare their procedures and teamwork practices with the other two Australian services. In particular, the composition of the RAN team and scope of practice of the team members were discussed at various times during the deployment with the other two services. In regard to preparation, it was found that all three services undertook the same civilian preparation courses and training of their trauma/resuscitation teams prior to deploying. There was debate and discussion about the most appropriate model that should be used for a tri-service trauma/resuscitation team should this be required for future deployments. Specific issues raised were in regard to the role of the leader of the trauma/resuscitation team, the composition of the team, the scope of practice of each team member, and the length of time that each of these members would remain within the team.

Training and professional development

Training and professional development education is provided to health personnel in all three services of the ADF in preparation for providing trauma/resuscitation services. Educational preparation of these personnel includes a number of trauma/resuscitation specific courses and experiential learning gained either during the provision of actual care or in the form of simulation exercises. The aim of the ADF Health Services is to appropriately prepare its personnel (Medical Officers, Nursing Officers and Medical Assistants) to work as members of a trauma team. This is achieved by personnel undertaking initial training through a variety of courses prior to deploying as members of a trauma/resuscitation team. Specific courses (the majority being civilian courses) are however only available to certain disciplines within the ADF. Basic information regarding these specialist courses are detailed in the following paragraphs. Brief details of the specialist health personnel within the ADF are provided. Information is also provided in the following studies and will expand from the details given in this portfolio introductory chapter.

Medical Officers

Medical Officers (MOs) are commissioned officers who are employed by the ADF to deliver health care to ADF personnel. They are trained within the ADF to provide this care, at times under adverse situations and minimal support. They must have completed a Bachelor of Medicine/Bachelor of Surgery (MBBS) and must be a registered medical practitioner in one of the states or territories of Australia. In regard to trauma training, ideally, the following courses are successfully completed by all ADF Medical Officers (MOs) prior to commencing deployment within a trauma/resuscitation team. They may, later in their careers, undertake further specialist trauma courses to enhance their skills. Some of the introductory courses for Medical Officers are: the Advanced Trauma Life Support (ATLS), Emergency Management of Severe Trauma (EMST), and the Nuclear, Biological and Chemical Disaster (NBCD) Course for Medical Officers.

Nursing Officers

Nursing Officers (NOs) are also commissioned officers who are employed by the ADF to deliver nursing care to ADF personnel. They must have successfully completed a Bachelor of Nursing degree with most having at two years postgraduate experience. They must be licensed registered nurses with the Australian Health Practitioner Regulation Agency

(AHPRA), a national health practitioner's registration board. This national registration board has been in effect since 2010. Prior to commencing working within an ADF trauma/resuscitation team, ADF Nursing Officers (NOs) may complete a number of the following courses; Basic Life Support (BLS), Advanced Life Support (ALS), Advanced Trauma Nursing Management (ATNM) Course, Trauma Nursing Core Course (TNCC), Field Nursing Course (an Army run course) and now known as the Military Advanced Resuscitation Course, NBCD, and EMST as observers, if able to gain observer positions on the course.

Medical Assistants

ADF Medical Assistants, also known as Medics, are non-commissioned officers who, on the whole, enter the ADF as apprentices. To join the ADF they must have successfully completed a minimum of Year 10 schooling with a pass in English and mathematics. Medics assist MOs and NOs with the provision of nursing and pre-hospital care to ADF personnel. Senior medics within the RAN also have an extended licence (following formal training) of practice to deliver care to personnel on ships. Although they deliver this care remotely, they are able to contact an MO should the care required within their scope of practice be outside this. Medics may undertake the following courses prior to becoming a member of a trauma team; Basic Life Support (BLS), Advanced Life Support (ALS), ATLS, NBCD, for RAN senior medical sailor personnel, the Clinical Managers (CM) course. Experiential learning takes place for these sailors during clinical placement and on the job training.

Models of trauma care in the ADF

Although trauma care and the skills associated with it are similar for all three services, mechanisms of delivery of courses varied between services. This is because all three services provide care to their patients in fundamentally different contexts. The RAN often provides their healthcare within the maritime environment; the Australian Army primarily in land settings and finally the RAAF, primarily in an air environment. These three environments often call for variations in care to be undertaken, for example care delivered in a land-based environment may vary to that of care delivered in the air environment (in aircraft).

The Royal Australian Navy

The RAN trains its personnel to deliver trauma care in formed teams. This is particularly important given that when working in the maritime environment, the team may only comprise of two health personnel, a senior and a junior medic. Prior to the researcher deploying to East Timor in 2000, five health personnel were prepared to work as a cohesive team. The team consisted of one MO, two NOs and two medics. The MO and the NOs gained their initial trauma skills through their respective civilian courses to gain the necessary qualifications, and the medics were sent to one of the two RAN Medical schools and then to civilian facilities on placement. This was seen as essential given the nature and environment in which the RAN medical personnel usually work and that this team would be working in a field/land environment as opposed to its usual maritime environment. During this team's time in East Timor they worked together as a formed team and only during times of staff leave and illness were other trauma team members from either the RAAF or the ARA used to supplement the team. The RAN trauma team also had the most senior ranking officer as the team leader, in this case, a senior Nursing Officer. The roles of the team were as follows:

> Team leader and scribe – NO
> Clinical leader – MO
> Airway and C-spine precautions – NO
> IV insertion and other procedural duties – Senior Medic
> Removal of clothing and runner – Junior Medic

RAAF and ARA

Both the Army and the RAAF utilise a different model to that of the RAN. They deploy, usually, in relatively large numbers. The RAAF and Army employ a similar system to that of civilian facilities in that at the beginning of a shift, staff are allocated to positions in the trauma team. This means that the same team does not always work together.

Portfolio of research

The aim of a Doctor of Nursing degree is to provide the researcher with training in a variety of methodologies. These consist of typically a systematic review; a quantitative and a qualitative study, which explores a particular area of clinical practice. This portfolio of

research comprises a systematic review, a cross sectional survey and a phenomenological study. As doctoral work is often deemed to be the commencement of a researcher's professional career, gaining an understanding and the ability to use various methodological approaches to research is an advantage.

Portfolio introduction

This section provides an introduction to the portfolio of studies and details of the researcher's motivation to conduct these studies. Information pertaining to the overall background of the topic is provided in order to prepare the reader for the studies to be presented. This portfolio of research is an opportunity to gain a deeper appreciation of ADF trauma teams and the personnel who work in them.

Study One

Study One of this portfolio presents a systematic review which examined studies specifically related to civilian trauma teams. This was the first of the three studies to be conducted. The systematic review is used to inform the content of the second study and has not been subsequently updated. Given that the ADF send many of its healthcare professionals to the civilian sector to gain and enhance their trauma clinical skills, the systematic review was conducted in order to provide an understanding of the education and professional development of civilian healthcare professionals who work in trauma teams. In addition studies regarding the composition, scope of practice and teamwork practices of team members was also undertaken. The review examined research from January 1990 to August 2006. An initial search identified 271 articles. Of these 271 studies, only 13 studies were found to meet the inclusion criteria. Following critical appraisal a total of 12 studies were finally included in the results of the systematic review. This systematic review provided details of trauma courses undertaken by trauma team members with details of methods of instruction including the use of simulation and videotaping of both simulated and real-life trauma cases. The review also highlighted issues regarding teamwork practices employed.

The results of the systematic review were vital to the development of the cross sectional study and provided a basis to further explore issues regarding education and professional development of trauma team members and trauma teamwork practices.

Study Two

The second study of the portfolio initially aimed to explore ADF personnel and their role as members of trauma/resuscitation teams. An online survey was developed and conducted in order to gather current data in regard to the education and professional development of health care professionals of the ADF. The results of this study have provided data of trauma education and professional development of ADF personnel. The study also provides information regarding their teamwork practices, team composition and scope of practice while working in trauma teams involved in conflict (including peacekeeping missions) or in humanitarian crisis situations. It should be noted that many attempts were made to gain support from the appropriate senior Australian Army Health Officer. Unfortunately this support was not provided and therefore only health personnel from the RAN and RAAF were permitted to participate.

The survey was undertaken by 128 RAN and RAAF health personnel. Details of the variety of courses that the respondents completed was vast with the respondents highlighting both the positive and negative aspects of their experiences, in regard to the development of clinical and teamwork skills and teaching methods used, when undertaking these courses. Information was also gained regarding the ongoing and professional development training that some of the respondents had completed following their initial training.

This study has afforded a unique opportunity to learn of the education and professional development of RAN and RAAF personnel in preparation to work as members of military trauma teams. It has also offered a deeper understanding of the teamwork practices of these teams and when read in conjunction with the findings of the systematic review provides an opportunity to learn from both the military and civilian sectors and to use this knowledge to enhance current trauma practices within both sectors.

Study Three

The final study presents the findings of a hermeneutical phenomenological study of Australian Defence Force Nursing Officers. As these studies underpin the researcher's interest and as a member of the ADF Nursing Services Branch, it is appropriate that the final study is undertaken to gain a deeper understanding of ADF NOs who have worked in trauma teams and share their stories with others. Six NOs participated in this study and

provided details (some of which are very personal) in relation to their training and experiences when working as members of military trauma teams. The experiences that these participants shared provide an opportunity for anyone who is unfamiliar with military nursing, to hear of their stories and learn from them. Their life experiences as a member of military trauma teams highlighted their uniqueness as military nurses; and their role in these teams and the ADF as a whole. It demonstrated their ability to be flexible and adaptable given the, at times, harsh and hostile environments in which they have worked. ADF NOs stories often go untold outside of a military environment; however this study has given their unique experiences of courage and determination a voice.

Portfolio conclusion

This final section provides a summary of the portfolio of studies and presents overall findings and recommendations for future practice and research into the topic of research. This section allowed for an initial reflection of the results from the portfolio.

Conclusion

This portfolio of studies is a culmination of the researcher's desire to enhance current preparation and practice of both Australian Defence Force and their civilian counterparts in order to deliver quality trauma/resuscitation care to their patients, and her thirst for knowledge in this specialist area of health care. It is a sad indictment of human nature that wars will continue to occur, as will traumatic injuries as a result of accidents. It is therefore vital that research into the methods to enhance this care is undertaken. The portfolio of research is the researcher's way to identify what is currently working well with trauma teams and also what aspects of trauma team education and practices may be improved.

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Chapter One

Introduction

Trauma/resuscitation skills are essential to those healthcare professionals of the Australian Defence Force (ADF) who are called upon to deliver this specialised care during conflict and humanitarian crisis situations. These team members deliver trauma/resuscitation care to those in need and within their government's mandate. Not only do these individuals undertake initial trauma training, when working in these teams, the members continue to develop their trauma skills. However, during times of low operational tempo, when the ADF is not required for duty in conflict or humanitarian crisis situation, the members are still required to maintain, and for those new to working as a member of a trauma team, to develop their clinical and teamwork skills (Sohn, et al., 2007). This training and team preparation is necessary in order to deliver quality trauma/resuscitation care at short notice.

Due to this need for continuing development and/or enhancement of clinical trauma skills, the ADF often turns to civilian teaching facilities to gain this essential training and skills development. In order to do this, the ADF have established Memorandums of Understanding (MOUs) with selected large urban teaching hospitals in Australia. It should be noted that this method of ensuring that trauma team members are appropriately trained and prepared is not unique to the ADF, with many defence forces' acknowledging the need to gain and enhance appropriate trauma skills development from the civilian sector (Knuth, Wilson & Oswald, 1998; Moore, et al., 2007).

Aim of the review

The aim of this systematic review is to examine evidence relating to the preparation of civilian trauma/resuscitation team members and the associated necessary teamwork practices. The results of the systematic review have been used to inform the second study presented in this portfolio. No subsequent update of this systematic review was conducted following the completion of the second study. It was believed that it would be inappropriate to update the systematic review at the completion of the portfolio of research as only details gained from the systematic review were used in Study Two. Any further

information gained from a subsequent systematic review update of the topic would not have been used in the cross sectional study and therefore inappropriate.

Review question

According to (Counsell, 1997), in order to conduct a successful systematic review a well formulated, and answerable question should be posed. This should not be seen as a simple process and time should be given to adequately develop an appropriate research question.

The following two review questions are posed:

> *What is the effectiveness of interventions and strategies to train and prepare civilian healthcare professionals to prepare them to work in a multidisciplinary trauma/resuscitation team?*

> AND

> *What is the effectiveness of teamwork practices used by civilian trauma/resuscitation teams?*

Purpose of this systematic review

The purpose of this review is to evaluate studies published from January 1990 to December 2006, and which focused on the education and professional development and teamwork practices of civilian trauma/resuscitation team members. History has shown that the military have provided knowledge and clinical expertise in regard to the delivery of trauma teams (Beachley, 2005; Ryan, Greaves & Porter, 2000). However, it is also acknowledged that much knowledge and many advances in trauma clinical skills currently derive from civilian practices. It is therefore appropriate that an investigation into the practices of civilian trauma teams be undertaken to assist in providing knowledge and insight into the education and professional development of civilian trauma team members. Knowledge regarding teamwork practices and issues facing these civilian teams will expand the knowledge of this topic and assist in the future development and/or enhancement of trauma/resuscitation teams, both civilian and military.

ADF trauma teams

During times of conflict and humanitarian crisis situations, personnel of the ADF Health Services Branch (HSB) are called upon to deliver quality trauma/resuscitation care to those in need and within their government's mandate. During these periods team members continue to develop their trauma/resuscitation skills while on the job. However, during times of low military operational tempo, members are still required to maintain, and for those new to working as a team members, to develop the clinical and teamwork skills necessary for the delivery of quality care.

Training of ADF trauma team members

Although each branch of the ADF has a similar approach to trauma/resuscitation education and professional development training, there is uncertainty as to whether these approaches are considered best practice. This could be in relation to the mix of course work and experiential learning or in the way in which different courses are accessed and undertaken by different members of the teams. That there is considerable variability in terms of the models of trauma/resuscitation care in relation to trauma/resuscitation teams within the ADF is also of concern. Due to the need for continuing development of clinical trauma/resuscitation skills and teamwork practices, the ADF turns to their civilian colleagues and facilities, to gain and enhance these skills. MOUs have been established with selected large urban teaching hospitals in Australia so that this training can take place. This is not unique to the ADF, many defence forces acknowledge the need to gain and enhance appropriate trauma skills development from the civilian sector and subsequently undertake this necessary training (Knuth, Wilson & Oswald, 1998; Moore, et al., 2007).

The sharing of knowledge and skills

It is acknowledged that knowledge and advancements in trauma clinical skills now come from civilian practices (Cole & Crichton, 2006). In addition to this, members of the Health Services Branch of the ADF undertake clinical skills development in many large urban teaching hospitals in Australia. It is therefore appropriate to conduct an investigation into the practices of civilian trauma teams and their teamwork practices as they would assist in providing valuable knowledge into the topic. The knowledge gained from this systematic review will be used to continue to enhance a trauma/resuscitation team model(s), which

will be appropriate to all three services of the ADF. This is essential given that tri-service trauma/resuscitation teams are constantly being deployed. Additionally, the knowledge will also be of use to trauma/resuscitation teams in the civilian sector who currently find that their current model is inappropriate or could be enhanced to provide quality trauma services to their trauma patients.

The military have long provided knowledge and clinical skills needed to manage battlefield trauma and injuries. These clinical skills and experiences are now being sought by military health personnel from civilian trauma units that provide ‗cutting-edge civilian concepts in trauma care‘ (Moore, et al., 2007, p. 2723). In addition, these clinical attachments are deemed to be of assistance when developing and enhancing current clinical skills regarding ‗damage-control surgery…and the trauma-systems approach to care‘ (Moore, et al., 2007, p. 2723).

Knowledge from the military and civilian sector contribute greatly to each other‘s development and should therefore be seen as a ‗win-win‘ situation for both parties. These training opportunities provide ADF Health personnel the opportunity to learn and work beside their civilian counterparts (Leggat, Aitkin & Seidi, 2009). In return, the skills and experiences that ADF health personnel bring to the clinical placement can assist in the continuing development of the civilian staff they are working with. The learning opportunities afforded to all are an essential component to the continuing development of trauma services.

It is not only during periods of clinical attachment that military and civilian trauma team members work together, it is also now (twenty first century), common for military – civilian collaboration to occur in humanitarian crisis situations. Recent examples include the earthquakes experienced in Sichuan, China in 2008 (Conlon & Wiechula, 2011) and Haiti in 2009 (Auerbach, et al., 2010; Rivers, et al., 2010). Therefore, it is appropriate that the preparation and team management practices of trauma members within the civilian sector (Knuth, 1996; Knuth, et al., 1998) is examined in order to determine if some of these practices can be utilised within the ADF. The use of a systematic review methodology was deemed an appropriate way in which to examine research into this specialised area of care. Both the military and civilian sectors can learn much from each other and the following systematic review is undertaken in order to identify methods to enhance current practices

for future trauma team members and the patients they will deliver care to (DeBakey, 1996; Gambhir & Agrawal, 2010).

Study One outline

The following provides details of the format and information employed to deliver the systematic review.

Chapter One – Introduction

The focus of the review is to gain an understanding of the mechanisms used to prepare healthcare professional within the civilian sector to work as members of trauma/resuscitation teams in a civilian health facility. The review also provides a mechanism through which to examine the effectiveness of various teamwork practices. This chapter also provides a brief introduction of the relationship established between trauma teams of the military and civilian sector and the collaboration that is now occurring in order to continue to develop trauma skills.

Chapter Two – Background

Knowledge regarding the clinical care for trauma patients has often been gained from military experience. The information obtained from these military operations has been formative in the development of civilian trauma teams in both urban and rural health facilities. This has recently changed with experience being gained and subsequently shared between the military environment and the civilian setting. One of the ways in which to enhance current practices is to learn from those who have experienced similar incidents. It is now common for ADF health personnel to be attached to a civilian health setting in order to gain essential trauma skills or enhance their current knowledge. The purpose this chapter is to provide an introduction into the civilian trauma team education and professional development of team members. Details of the differing ways in which to train healthcare professionals are provided. These mechanisms included: formal training courses, experiential learning, the use of simulation, and _on the job training'. Information relating to teamwork practices used by these teams is also presented.

Chapter Three – Methodology

The purpose of this chapter is to provide details of the systematic review methodology used. Details relating to the use and need for inclusion criteria, the search strategy, appraisal undertaken, data collection and synthesis of the data are explored.

Chapter Four – Method

Chapter Four provides details of the way in which this systematic review was conducted. Presenting the methods used to conduct a systematic review is essential in order to be able to replicate the review in the future. Details of the review question; inclusion and exclusion criteria that were used; the specific search strategy; critical appraisal process; data collection and data synthesis undertaken allow for transparency of the process employed.

Chapter Five – Results

The systematic review was conducted to identify relevant studies which were published from January 1990 to December 2006 and which related to the research question. Initially 271 studies were identified; however following close examination many were found to be opinion papers, organisational or facility policy documents and were subsequently discarded. Chapter Five provides details of the results and analysis of the 12 studies that were included in the study.

Chapter Six – Discussion

Following the identification and analysis of the included studies, discussion of these findings was undertaken. The discussion chapter focuses on the issues arising from the review. Issues relating to the quality of the research are provided. Implications for practice are addressed, as too are recommendations that can be made for future research.

Chapter Seven – Conclusion

At the conclusion of the systematic review it was found that there were limited published studies about the topic. The findings of the review identified that until December 2006 high quality studies were limited. However, the knowledge gained as a result of the review provided the researcher with a foundation on which to base future studies. It is hoped that research undertaken in the future in civilian practice will make findings available to others.

Summary

Chapter One provided an introduction into the researcher's reasons for undertaking a systematic review as an integral component of research into ADF trauma teams. The following chapter provides details of the background in regard to military and civilian trauma teams.

Summary

Chapter Two

Background

The purpose of Chapter Two is to provide information regarding civilian trauma/resuscitation teams and the relationship with Australian Defence Force (ADF) trauma/resuscitation teams. Regardless, if trauma/resuscitation care is being undertaken in a civilian or military environment, the clinical care is often complex and requires team members to be adequately and appropriately prepared.

Learning from each other

It remains a reality that trauma is one of the greatest killers in modern society (Baird, Kernohan & Coates, 2004; Civil, 1999; Driscoll, 1992; Flavin & Driscoll, 2000; Hadfield, 1993; Handolin, et al., 2006; Mock, et al., 2005; Society of Trauma Nurses, 2003; Tippett, 2004). Research shows that the majority of the knowledge and clinical skills required to provided care to trauma patients originated from the experiences gained by health personnel in the military (Beachley, 2005; Eardley, Taylor & Parker, 2009; McGinley, 1999; Ryan, et al., 2000; Trunkey, 2007). This is certainly true of the ADF, with much of this knowledge coming from the experiences of military health personnel during the Vietnam War and previous conflicts (Eastridge, et al., 2006). The lessons learned from the many Middle East conflicts (Paix, 2007) continue to enhance the skills of trauma teams providing trauma specialist skills to the injured. This knowledge assists the continuing development of civilian trauma/resuscitation teams and the centres in which they delivered this care (Eastes, et al., 2001). Much has been written and recorded and continues to be published about the collaborative approach and exchange of knowledge by both the military and civilian health facilities (Auerbach, et al., 2010; Conlon & Wiechula, 2011; Knuth, 1996; Knuth, et al., 1998; Rivers, et al., 2010) as mentioned in previous sections of Chapter One.

Education and professional development

The training and continuing development and maintenance of skills for trauma team members is continually evolving. Members of these teams undertake initial training to provide clinical and teamwork skills necessary to care for trauma patients (Humphery, 2002). Following this initial training, trauma team members commence working as a member of a trauma team. The knowledge and skills they acquire is enhanced through future training and the gaining of life experiences when caring for trauma patients. The progression of a skill and knowledge base is not easily gained and maintained in many military trauma teams and training in relation to the abilities to work within their area of expertise is often ad-hoc in its approach.

Research and history highlights that one of the major problems facing the training and continuing development of military trauma teams is gaining _real-life' experience. In a study undertaken by Schreiber et al. (2002) military trauma team training is now being gained within the civilian sector. In the last 20 years the ADF has been involved in both combat and humanitarian crises, but this has not been continuous. The ADF has therefore found it necessary to explore alternative training venues to prepare its health personnel to provide trauma care to its patients (Buckley, 1999). In 1996, the United States (US) Congress in their attempt to ensure that military personnel were adequately prepared, passed legislation mandating that the US Defence Force were to undertake trauma team training in civilian hospitals (Schreiber, et al., 2002). It is now evident that many Defence Forces find it necessary to gain trauma experience from the civilian sector in preparation and maintenance of skills required of a trauma team.

Experiential learning

The use of experiential learning has provided a method of preparing individuals in a variety of roles (Kolb & Kolb, 2005). Experiential learning provides a method to refresh the knowledge gained in formal education/training programs. This type of training _most often involves linking out-of-classroom experiences with in-class learning' (Wright, 2000, p. 116). The following quote from Confucius encapsulates the aim and the need for experiential learning:

> *I hear and I forget,*
> *I see and I remember,*
> *I do and I understand.*

In a study conducted by Ward (1993), it was determined that the most appropriate training to be provided to trauma teams came from within the trauma departments of hospitals. Ward goes further to this and states that ‗A major advantage of A&E as a clinical learning environment, which must be highlighted, is the wide range of patients and nursing interventions which the student will be able to experience' (1993, p. 95).

Alternative ways to gain trauma/resuscitation clinical skills

Trauma/resuscitation experiences required during the 1990 Gulf War highlighted the limitations experienced by military trauma/resuscitation teams. These teams found that due to the limited exposure to trauma by military trauma teams during times of conflict and the difficulties in maintaining these skills during peacetime, alternative training needed to be found. In an report presented by Dori, Alon and Dori (1994), a statement encompasses not only the concerns raised by health personnel in defence forces, but that of the civilian health personnel, ‗Since real-life situations of trauma training are practically not available, a proper substitute must take advantage of the most recent advents in multimedia and groupware technologies' (p. 166).

In order to train trauma/resuscitation team members in the essentials of this specialized care, alternative methods have been developed to provide a safe environment for both patients and staff members (de Vet, et al., 1997; Ellis, Hendrickse & Morris, 2002; Gilbart, et al., 2000; Halvorsrud, 2002; Hammond, 2004; Kyrkjebø, Brattebø & Smith-Strøm, 2006; Marshall, et al., 2001; Ritchie & Cameron, 1999). One such method is the use of simulation and scenario based training.

Simulation

As a member of a RAN trauma/resuscitation team, the researcher was required to undertake training in specific methods of trauma care with the rest of the trauma team in preparing the team prior to deployment and working at the United Nations Hospital in Dili, East Timor in 2000 (Smith & Conlon, 2001). The training involved the whole team undertaking training sessions using the ‗SimMan' simulator at a local civilian hospital. The

teamwork practices model utilised by the team and the composition of the team was often challenged by the other two services. This was seen as an unusual (at the time in the ADF) approach to the leadership role as it fell to the most senior and most clinically experienced member of the team, the senior nurse. At times, a confronting issue, being placed in that situation was one of the major reasons for the researcher choosing to undertake research into the subject.

The use of simulation as a training method is widely used, both within the civilian health and the military sectors. This method of training is offered not only to single disciplinary personnel, but also now to team members.

> Simulation is a technique—not a technology—to replace or amplify real experiences with guided experiences that evoke or replicate substantial aspects of the real world in a fully interactive manner. (Gaba, 2004, p. i2)

The use of simulation has provided a safe method of training (McFetrich, 2006). It is safe not only for the individual undergoing the training, but within the health arena, a real patient who may have otherwise been given care by an under-trained individual. Simulation training is an alternative method to ‗on the job training‘ of trauma/resuscitation team members. It has been shown to provide effective training in a safe environment (de Vet, et al., 1997). The teaching method provides an environment that allows for mistakes to take place without the risk to patients. A combat or humanitarian crisis situation would not be a safe environment in which to learn.

The use of videotaping

Another training option is the use of videotaping, that can occur during real-life trauma cases or in a simulated learning environment (Brooks, et al., 1999).

Teamwork management practices

It is therefore the responsibility of the ADF and other International Defence Forces‘ to adequately and appropriately prepare and train their trauma teams to carry out the role required of them. In regard to the issue of an appropriate ADF trauma team composition, it has long been held that all three services of the ADF, comprising the Royal Australian Navy (RAN), the Australian Regular Army (ARA) and the Royal Australian Air Force

(RAAF), have been deployed in their specific areas of service. The RAN trains its trauma teams to deal with those trauma casualties received within a maritime environment, the ARA prepares its medical personnel to cope with casualties in a field environment, and the RAAF to provide trauma care in both land and air environments. Currently (2012), trauma teams from all three services are being deployed together and in fact as part of an international staffed trauma team, and more commonly outside their respective areas of comfort. Therefore, it is vitally important that these teams are able to provide the most appropriate trauma care in any environment, without any inconsistencies in an individual's training reducing the cohesiveness of the team. The specialty of trauma care is continuing to be advanced and enhanced and in response to this, the Advanced Trauma Life Support (ATLS) model is constantly evolving. It is therefore the responsibility of each member of a trauma team to maintain their skills and knowledge and subsequently to monitor and adopt these new and evolving practices of delivering trauma care to the highest level.

Summary

When deciding why this topic needed to be examined in detail, it was determined that the information gained as a result of this systematic review would greatly assist the ADF in maintaining currency in line with civilian advances in regards to trauma health care. The researcher also envisaged that the information and knowledge gained, when published, will also greatly benefit the field of emergency health care within the civilian community. The following chapter will provide details in regard to the methodology employed for this review. The purpose of Chapter Two was to provide background regarding the topic to be examined in this systematic review. The following chapter will now present details of the methodology to be used to undertake this study.

Chapter Three

Methodology

Introduction

The purpose of Chapter Three is to provide information regarding the process of systematic reviews and the methodology associated with conducting this type of review. The chapter aims to provide the reader with an understanding of the systematic review process. Major elements of carrying out a systematic review will be provided. Areas to be addressed and covered are as follows:

- Basic information about systematic reviews

- The systematic review protocol

- Information regarding the background of the search and the rationale for carrying out this review

- Definition of the study question and the objective of the review

- The development of the inclusion criteria and the search strategy

- Study inclusions

- Critical appraisal of the identified studies

- Determination of the level of evidence

- The process for data collection and extraction of data

- Synthesis of the data, and finally

- A conclusion of the systematic review process

Systematic reviews

Lohr and Carey (1999) state that ‗systematic, evidence-based reviews are innovative in their comprehensive review of the literature, use of standard methods of presenting data, and special emphasis on the validity of research methods‘ (1999, p. 470). In addition to this, the knowledge gained as a result of the systematic review process provides health

personnel with information regarding literature and study's available. The benefits of these systematic reviews means that those consulting them are able to easily read large amounts of information in a summarised and concise manner on a given topic (Cook, et al., 1997).

Another benefit of systematic reviews is that it is a method of research utilised for in-depth and unbiased gathering and analysis of information on a specific topic (Cook, et al., 1997; Evans & Kowanko, 2000). It is a way in which to gather information and to summarise it in such a way that there is no room for debate. The strategy required to undertake a systematic review includes: a comprehensive search of all potentially relevant and available studies, a predetermined set of inclusion criteria to discard any information not directly related to the chosen topic. After the collection of all available and pertinent information, the reviewer(s) are then required to appraise the gathered information, synthesise the data and to interpret and present the results in such a way that others reading the review are sound in the knowledge that a rigorous and unbiased report is before them.

Systematic reviews are often focused on a specific clinical question; they provide a comprehensive source of available data, with a criterion-based selection method, which is routinely applied to all of the information gained during the collection phase of the process. During the appraisal phase, a rigorous critical appraisal process is undertaken with a synthesis of the data collated in order to provide a comprehensive and _relevant to practice report'. Systematic reviews are prepared using predetermined strategies, which are developed during the protocol development phase of the process. This is used in an attempt to reduce the risk of bias or error (Cook, et al., 1997).

The knowledge gained from conducting a systematic review may be used to influence and develop the way treatment is provided to patients or influence the way practices are carried out. It may also be used as a method of gathering all relevant data available, and processing this information in such a way that procedures are amended or enhanced to provide the best possible care. As systematic reviews and the concept of providing information in this method continues to be enhanced and developed, the information provided is a rigorous method of carrying out research synthesis into a given topic and provides useful and relevant data (Evans & Pearson, 2001a, 2001b; Higgins & Green, 2008; Jones & Evans, 2000). As mentioned, the knowledge gained as a result of systematic reviews can be utilised in one of two ways: the information may be used to enhance clinical practices, and

to improve patient outcomes. It is envisaged that the information presented as a result of this particular systematic review will be used for the second reason.

Systematic review protocol

In order to perform a systematic review or any research, the researcher must firstly develop a protocol or proposal (Jones & Evans, 2000; Khan, Popay & Kleijnen, 2001). The protocol is a way in which the researcher is able to bring together the proposed plan to conduct the review and is the most important aspect in the process (Jones & Evans, 2000). A similar process is used and developed when developing a research proposal, regardless of the method to be employed. The protocol is also a systematic document, which provides specific information about the review to be undertaken by the researcher. The protocol commences with the background into why the researcher thinks it is necessary to undertake the research. The background knowledge will provide the reader with detailed information about the topic and includes details to support the rationale for carrying out the review, in particular the reason why a systematic review approach was thought to be the most appropriate.

The development of inclusion criteria needs to be developed for the gathering of relevant studies in an attempt to reduce bias and identify only those studies which are relevant to the topic (Jones & Evans, 2000). Depending on the subject of the study, specific information regarding the population to be investigated should include relevant information about the gender; age of participants is essential when developing this component of the systematic review protocol. A search strategy needs to be developed to identify studies relevant to the topic, also detailed information regarding the method utilised to assess the gathered studies, how the data will be collected and collated and how the information gained from these relevant studies is to be synthesised and reported needs to be established in the protocol. In conclusion, the protocol developed prior to carry out a systematic review is essential as a guide and a method of maintaining control in conducting the review.

Background search/rationale

As mentioned in the previous section, the information necessary in the background component of the protocol is essential, as this will provide the setting of the review and a reason why it was felt necessary to carry out a systematic review on the topic. The information gained as a result of an initial literature review of the topic is undertaken in this section, as it will provide the researcher with a basis of previous research into the topic (Khan, Popay & Kleijnen, 2001).

Defining the question/objective of the review

As with all research, a well thought out and structured question and objective of the study is essential (Evans & Kowanko, 2000; Jones & Evans, 2000). The question should address the following components:

- The study participants
- Interventions to be considered
- The outcomes used to evaluate the success of the review
- The types of research methods that will best fit the objective of the review (Jones & Evans, 2000; Khan, et al., 2001)

Following the finalisation of the objective of the study and the development of the subsequent research question, the process of establishing inclusion criteria needs to be established.

Establishing inclusion criteria

Inclusion criteria utilised for a systematic review is intended to provide a clear definition of what types of research will be used for the review (Jones & Evans, 2000). The purpose of these inclusion criteria is to reduce the risk of bias and to ensure that the studies identified are similar enough and will address the topic being examined. The use of inclusion criteria is essential so that others who undertake the review using the protocol will have the same results (Jones & Evans, 2000). The inclusion criteria must identify:

- The population of the participants

- The types of studies to be included in the review

- Types of interventions

- The outcomes measured as a result of the review

Development of a search strategy

The purpose of a search strategy is to provide the reader of the study with information about how the relevant studies were identified. Information regarding the stages of the search for studies should include the outcome of the initial search for studies, how the full search was undertaken including the search terms found to identify the relevant studies and additional search strategies including the identification of relevant studies using databases, reference lists and hand searching. In-depth information about the databases utilised is essential, including the time frame (if appropriate) and if only studies written in certain languages were identified. This component of the research cycle should also highlight the search terms identified and used to find studies in the databases identified. These search terms are developed as a result of the information provided in the background to the study, the initial literature search and the researchers, at times, lengthy attempts at identifying key words to locate the greatest number of relevant studies. They will be fine tuned and tailored to each database being searched (de Vet, et al., 1997; Glasziou, et al., 2001; Higgins & Green, 2008; Jones & Evans, 2000).

Study inclusions

After the search has been completed, the process of appraising the studies needs to take place (Glasziou, et al., 2001; Jones & Evans, 2000). This is a process to determine if those studies found during the search phase are valid with respect to the inclusion criteria formulated. In order to determine and finalise the studies to be included, the literature needs to be read through with an initial selection made. During this component of the process the mere name of the study may be all that is required to initially either accept or reject the study. In order to provide the reader of the review with all of the relevant information, all excluded studies and brief reasons for the exclusion will be included as appendices.

Critical appraisal of selected studies

In order to identify appropriate studies to be included, a sound critical appraisal process needs to be established (Evans & Pearson, 2001b). The development of a critical appraisal form/sheet is vital in ensuring that a systematic approach is taken when analysing and assessing studies for potential inclusion in the study. When undertaking a systematic review, it is usual practice that two researchers appraise the studies identified for inclusion. In having two researchers independently appraise studies, the risk of bias is greatly decreased by either researcher. For the purpose of explanation to the reader of a systematic review, a copy of the critical appraisal sheet should be included as an appendix to the document. This is a method of ensuring that readers of the systematic review are aware of the assessment requirements determined by the researcher(s) and that if required, the process of carrying out the initial review can be reproduced accurately (Higgins & Green, 2008).

Levels of evidence

In order to accurately establish the quality of the studies included in the review, it is essential to rank the studies in terms of their study design using and evidence hierarchy, such as The Joanna Briggs Institute FAME levels of evidence schema (The Joanna Briggs Institute, 2007). The Lohr and Carey study (1999) state that the idea surrounding the quality of studies is still debatable. Although researchers believe that randomised controlled trials are highly desired for a systematic review, a review that does not solely focus on clinical aspects of a specific topic, the inclusion of lower level studies should be considered for inclusion in the systematic review (Higgins & Green, 2008).

Data collection/extraction

Data collection/extraction of the study is used to identify, document and summarise the findings of the primary research studies (Khan, et al., 2001) that have been evaluated and deemed relevant for inclusion (Evans & Pearson, 2001b). In-depth details of this process; must be provided in the final report to allow for later researchers to carry out similar reviews independently. The data extracted from the studies must be extracted in the same manner for each study, which is facilitated by the use of a developed data collection

form/sheet. This allows for appropriate synthesis of material and data from the studies identified. The Data Collection tool should be developed with the following in mind:

- The information that is required to address and answer the review question
- Information required to be available and easily gathered on the Data Extraction tool should include:

  Numerical data including, but not limited to, patient characteristics, intervention groups, effect size and difference. This will assist in comparing the data with that of other studies (Evans & Pearson, 2001b).

Once the data is collected and extracted, the meta-analysis or meta-synthesis phase can be undertaken. It is advisable that more than one researcher undertake this phase to reduce the risk of transcription error.

Data synthesis

Data from a number of studies once extracted should be synthesised in manner where conclusions can be made about the evidence. The type of synthesis varies depending on the type of evidence and where the studies are sufficiently similar to pool their results. Where pooling is possible meta-analysis is used to combine similar studies to provide a summary measure of effect (Evans & Pearson, 2001b). If however, meta-analysis is not possible, a narrative summary of data should be undertaken (Evans & Pearson, 2001b).

Summary

The purpose of Chapter Three was to provide details of the methodology to be employed in this study, that being a systematic review. Details relating to the process of conducting a systematic review were provided. Information regarding the benefits of systematic reviews, the need to identify and develop inclusion criteria, a search strategy, and the critical appraisal process and data synthesis employed in systematic reviews was presented. The following chapter will provide details of the method to be employed to conduct this systematic review.

Chapter Four

Method

Chapter Four will provide specific details of the way in which this systematic review was undertaken. In the chapter the following will be addressed; details of the specific area researched with information relating to the inclusion and exclusion criteria; the search strategies employed; the process of critically appraising the data; and the data collection process used. Finally, the data synthesis process will be provided.

Objective of the review

The objective of the systematic review was to identify and evaluate studies relating to the two areas listed below. These specific areas and a brief definition developed by the researcher are as follows:

> **1. Education and professional development of trauma team members.** The education and professional development of members of trauma teams was explored. In particular, the education and training received prior to a member joining the team, and throughout their time as a member of the trauma team was examined.

> **2. Teamwork practices of trauma teams.** The teamwork practices in regards to sizing, composition and management approaches of civilian trauma teams was examined

Inclusion criteria

Study types

An initial scoping search into the topic with the basic search terms utilised, found that there were few if any experimental studies. As a result the decision was made to include studies down to the level of cohort and case control studies.

Participants

Only those hospitals or health facilities with dedicated trauma teams, trauma services/centres providing trauma care to adults and which were classified ‗Level 3' health facilities or the international equivalent were examined. For the purposes of the systematic review, only civilian facilities were examined.

Interventions

The purpose of conducting the review was to identify studies specifically relating to education and professional development and aspects of trauma team management in adult civilian hospitals within Australia and internationally.

Outcomes of interest

Outcomes of interested in relation to education and professional development included, objective measures of knowledge and skills acquisition, leadership attributes, teamwork behaviours, and satisfaction.

Objective of interest in relation to teamwork practices include, morbidity/mortality rates of the patients being treated by trauma teams.

Search strategy

Search strategies were utilised in an attempt to identify all relevant studies to the topic (Evans & Kowanko, 2000) and the following were undertaken:

- Identification of optimal search terms to identify studies in electronic databases
- Identification of relevant databases
- Search of all databases using the optimal search terms
- Search of bibliographies and reference lists of all retrieved papers
- Search of conference abstracts

Search terms

Search terms or keywords were developed and used to target the chosen topic. One of the major components when undertaking this systematic review was determining the optimal search terms in an attempt to undertake the widest search possible. Alternative search term

words or phrases to those identified in the systematic review proposal were adopted in order to ensure identification of alternative key words used by authors, different databases and the country of origin of the study. It has been shown to be essential for researchers to work closely with librarians when compiling search terms (NHS Centre for Reviews and Dissemination, 2001). This was undertaken in the initial stages of the review and the search terms found to identify pertinent studies were:

"Trauma" AND "team*" AND "composition*

"Trauma" AND "team*" AND "roles"

"Trauma" AND "education"

"Trauma" AND "training"

"Trauma training"

"Trauma" and "professional development"

"Trauma teams"

"Resuscitation" AND "team*"

"Trauma"

"Trauma Centres" OR "Trauma Centers"

The symbol * denotes that the search term would look for a single or plural word. For example, the search "team*" would look for the word 'team' or 'teams'.

Electronic databases searched

When determining the most appropriate databases to search, an extensive search of the Cumulative Index to Nursing and Allied Health Literature (CINAHL) and PubMed databases was initially undertaken. After this initial search, the following databases were examined and used for the review:

CINAHL

PubMed

Cochrane Library Database, including Expanded Academic Index for broad searches

Meditext

Google scholar

Web of Science (This was beneficial when searching for cited references)

The University of Adelaide Library and the ADF library were extensively used to access these databases, including Dissertation Abstracts Online.

Experts contacted

During the process of conducting the review, the researcher attended conferences, which contained segments, related to the review topic. The researcher was able to speak and make contact with experts within the field who were able to direct the researcher to areas, which may not have been easily found. These contacts also provided a source of communication at times when attempting to locate studies was difficult. The ability to establish these contacts and develop these professional relationships is vital to the continuing development of not only this topic, but to anyone undertaking future research.

Conference proceedings

Conference proceedings, both Australian and International, and dealing with the topic were examined where possible. This also provided an avenue to discuss the topic with experts and those interested in this field and who may not have formally published their research. Conference abstracts were utilised in the study if pertinent to the review question. The following conference proceedings were examined:

1. Spark of Life

2. Australian Military Medicine Association

3. Various trauma conferences, for example those of Trauma Org, and the Royal Australasian College of Surgeons

Reference list and bibliography searches performed

Searches were undertaken using the reference lists and bibliographies of all of the identified studies to be included in the review. A review of all included and excluded studies reference lists provided the researcher with additional areas to be examined. Some of the studies found during this process are vital not only to the background information for the review, but also for future components of the researcher's doctoral portfolio research. Reference list and bibliography searches provided another method of identifying studies missed during database searches. Study selection was undertaken by two reviewers, the author and another senior academic familiar with the topic.

Critical appraisal

The researcher maintained a strict set of criteria that needed to be met in order for the study to be accepted into the review. The standardised JBI critical appraisal tools were used to determine quality of studies, including the JBI tool for experimental studies (Appendix 1-1) and the JBI tool for observational studies (Appendix 1-2). All papers were critically appraised by two reviewers. There was no need for referral to a third reviewer.

Data extraction

Data was collected using a standardised Data Extraction tool (Appendix 1-3). This tool was modified from the standard JBI data extraction tool. Data was then gathered, analysed and a report of the findings made. Data was extracted only by the primary reviewer and then verified by a second reviewer.

Data synthesis

Although it was intended that meta-analysis be conducted, due to very few high level studies being found, a narrative summary of the included studies was undertaken. The extracted data was transferred into tables, for ease of understanding, with the findings recorded in the results and discussion chapters of this review.

Summary

Chapter Four provided the researcher's method of conducting this specific review. This is beneficial because it provides a template in which to base other systematic reviews and it will be of assistance to other researchers embarking on a systematic review. The other benefit of this chapter is to assist future replication of a systematic review of the same topic. In the following chapter, the results of the review will be provided.

Chapter Five

Results

Introduction

The purpose of Chapter Five is to present the results of the systematic review. A comprehensive summary of the results includes the following: an overview of the number and types of studies identified utilising the search terms, results following the critical appraisal process, and details regarding the studies assessed as not meeting the inclusion criteria and the reasons for this assessment. Commentary on the overall type and quality of these studies is also presented. Finally, a synthesis of the evidence from the included studies will be offered. In-depth discussion of the findings will be presented in Chapter Six.

Overview of number and type of studies reviewed

At the commencement of the review an initial search was carried out identifying 271 studies. After an initial examination of study titles and abstracts, 57 studies were retrieved for potential inclusion (Figure 1.1).

Of the 57 studies, 13 studies were subject to critical appraisal. One study was discarded due to study quality and 12 were included in the review from which, five studies were found to meet the inclusion criteria related to education and professional development of trauma team members and included in that component of the review. In regard to trauma teamwork practices, seven studies were included in that section of the review.
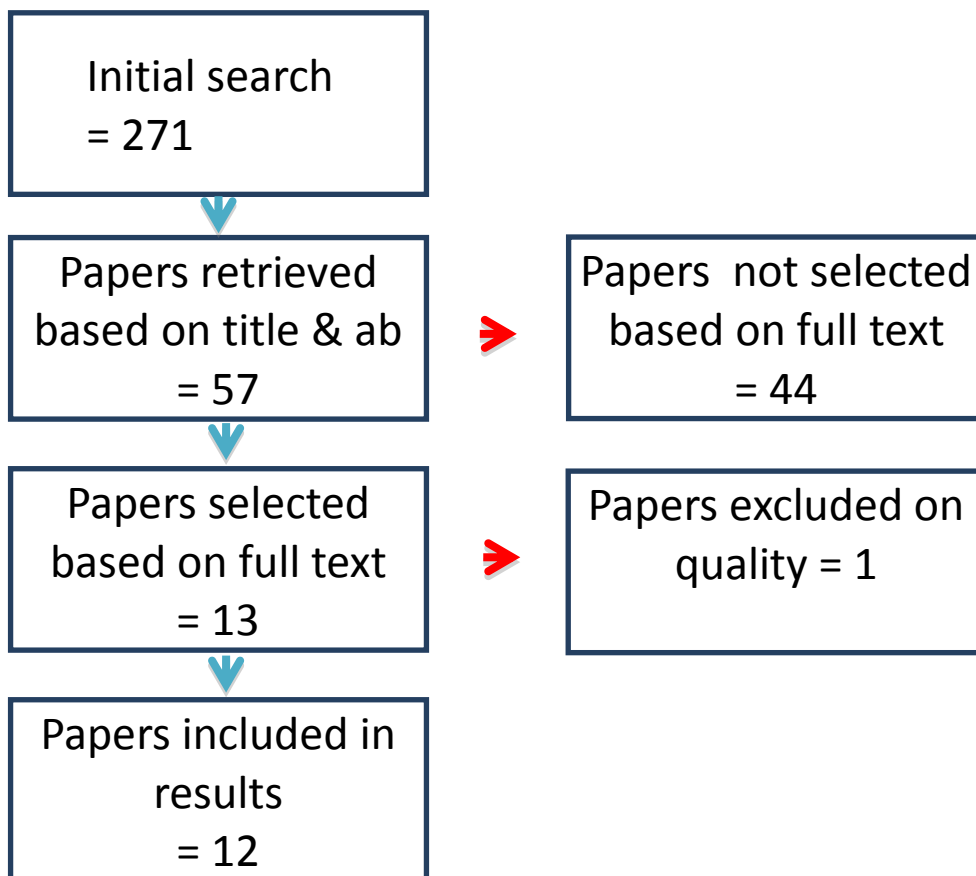
Figure 1.1 Overview of number of studies examined.

Excluded studies

Although there were a significant number (271) of studies initially identified, many of these were found to be opinion papers, organisational and facility/position policy documents, and were not included in the review. Of the papers retrieved many were descriptive in nature, or did not provide a comprehensive and/or robust analytical component in their method. Details of the excluded studies for the education and professional development component of the review can be found in Appendix 1-4.

Results

Results are presented using a narrative summary with findings relating to education and professional development presented first, and results pertaining to teamwork practices following. The quality of the studies varied as did the types of studies initially identified.

An inclusive approach was taken, but problems were identified relating to study design and quality.

Education and professional development

The following section provides the results of the included studies in relation to the education and professional development of individuals working within a trauma team (Appendix 1-5). The Joanna Briggs Institute FAME levels of evidence schema (The Joanna Briggs Institute, 2007) was used with the studies being either assessed as E-2 (One or more smaller RCTs with wider confidence intervals or Quasi-experimental studies (without randomisation), or level E-3 (cohort studies (with control group, case-controlled or observational studies without control group). During the data extraction phase, it was apparent that only certain aspects of trauma team education and professional development had been investigated. These aspects were comprised of: the courses available and the methods employed to deliver them. The methods of course delivery were further broken down into: simulation, videotaping of both scenarios and actual resuscitation events. These results are now presented.

Trauma courses evaluations

Many of the included studies dealt with discipline specific related courses, for example the Advanced Trauma Life Support (ATLS) course which was originally designed to meet the needs of individual medical practitioners. It should be noted that the ATLS still remains a medical personnel specific course, with nurses continuing to attend solely as observers. The Trauma Nursing Core Course (TNCC) and the Advanced Trauma Nursing Course (ATNC) are two examples of courses conducted solely for nurses. All of the identified courses varied in their teaching approach to the knowledge and clinical skills being delivered: didactic sessions; clinical skill and teamwork development utilising scenario training using both high and low fidelity simulation equipment; and videotaping of both simulated scenarios and actual resuscitation events. These training methods will also be examined in this section.

Two studies were identified that evaluated courses for trauma team members (Baird, Kernohan and Coates 2004; Tippett 2004). The Baird, Kernohan and Coates study (2004) was a cross-sectional correlational survey (utilising a questionnaire) conducted in Northern

Ireland of first level registered nurses (RNs) working in Emergency Departments (EDs) *(n=123)*. The purpose of the study was to evaluate specific nursing courses, which utilised ATLS principles. The courses identified and available specifically to nurses include: Trauma Nursing Core Course (TNCC), Advanced Trauma Nursing Course (ATNC), Advanced Cardiac Life Support (ACLS) course, and the Pre-Hospital Trauma Life Support Course (PHTLS).

A total of 275 participants were asked to complete the questionnaire. Of this 275, 123 completed and returned the survey (45%), with the majority of the participants having worked in an ED for longer than 10 years. Of the 123 respondents, 90% (*N = 111)* were employed as staff nurses in their respective departments. There were 65% of the respondents who reported having had formal training utilising ATLS principles with another 21% receiving informal training. Only 14% of the respondents reported that they had received no formal training. The results indicate that the respondents had completed the following courses: TNCC (38%), ATLS (25%) as an observer, ATNC (11%) and PHTLS (9%) and ACLS course (20%).

Subjects were asked to respond to two scenarios providing information regarding initial assessment and management of the case study patient. Correlations were determined between types of advanced life support training and performance scores. Correlation co-efficients were: TNCC (*r = 0.31)*, ATNC (*r = 0.29)*, ACLS (*r = 0.15)*, PHTLS (*r = 0.17)*, ATLS, as observer (*r = 0.08)*. The authors indicated there was little difference between the effectiveness of the TNCC and the ATNC. The ACLS and the PHTLS were approximately 50% less effective with ATLS training (as observers) shown to be the least effective. The Baird, Kernohan and Coates study (2004) found that knowledge and clinical skills of the participants were enhanced as a result of attending, and successfully completing, the TNCC, ATNC, ATNC and PHTLS courses. The authors state that the outcome for nurses attending the ATLS course, as observer did not assist in participants‘ knowledge levels and did not enhance their ATLS skills and the methods utilised from this. Baird et al. (2004) supported the claim that ATLS principles are essential for ED nurses, but believe that participating fully in ATLS training would be more beneficial to the individual than merely observing the course.

The second study, conducted by Tippett (2004), evaluated the ATNC utilising a before and after design. Fourteen *(n = 14)* Accident and Emergency (A&E) nurses in the United

Kingdom completed the course. The extent and retention of knowledge gained as a result of undertaking the course was assessed at the following times: prior to receiving the education manuals for the ATNC and ATLS; at commencement of the course; day two of the course (midway point of the five day course); and three months following completion of the course. Participants were sent the ATNC and ATLS manuals six weeks prior to commencing the course. The result of this study indicated that of the 14 participants, the mean length of experience of working in an A&E department was 5.42 years (2.08 – 8.76 years). Of this 14, four participants had previously been an observer on the ATLS course and seven (50%) had post-registration qualifications in A&E nursing (no further details of these qualifications were made available). The following results (Table 1-1) were identified at the four interval stages of the study.

Table 1-1 Details of participant's exam results at the four assessment intervals.

Results	Stage 1	Stage 2	Stage 3	Stage 4
	On receiving the ATNC and ATLS manuals	At commencement of the course	At completion of day two of the course	Three months after completion of the course
Achievement of 80% pass mark	0%*	7%**	79%	43%***

*   Three did not submit the exam

**   After having the manual of six weeks

***   One did not submit the exam

Tippett (2004) concludes that the knowledge gained by the participants following completion of the course had increased with 79% of the participants passing the assessment. The study also found that retention of this knowledge significantly decreased (from 79% to 43%) three months after completion of the course.

Course content

Constant development and refining of specialist trauma courses aims to address the issues of specific training of a trauma team and the development of management skills required for a cohesive team. The skills provided to trauma team members is now not only directed towards educating trauma teams to provide clinical treatment to their patients, but to address the development of teamwork practices to carry out individual team members specific roles within these teams. The addition to trauma course content now includes:

team training, leadership, management, communication skills of team members, conflict resolution and the environment required in order for these teams to carry out appropriate and beneficial services to their patients. The following section provides details of the studies identified, which examined team training within these courses.

Team training

Two studies were identified as dealing with the specifics of team training (Cooper, 2001; Morey, et al., 2002). In a quasi-experimental controlled trial undertaken by Morey et al. (2002), an investigation and evaluation of the benefits of an Emergency Team Coordination Course (ETCC) which utilised components of the aviation crew resource management (CRM) program was undertaken. In particular, the course focused on teamwork training specifically designed for ED personnel. The study was conducted utilising one pre-test and two post-test measurement phases. The pre-test measurement was performed prior to the commencement of the course and the post-test evaluation phase at four and eight month intervals following completion of the course. Nine EDs (teaching and community hospitals) were included in the study. Six hospitals were in the experimental group and the remaining three, the control group. The control group delayed training until after Period 2: Post-test 1 Phase. Subjects included a total of 1,158, which included specific staff providing the clinical trauma services (physicians, nurses and technicians), the admitting nurses and patients receiving care from these staff members.

The study (Morey, et al., 2002) evaluated: team behaviour, ED performance (observed errors and admission evaluation), and attitude and opinion of the staff examined. This final component focused on the participants' attitudes towards teamwork, staff perceptions, and patient satisfaction.

The result of this study (Morey, et al., 2002) demonstrated that teamwork had significantly ($p = 0.012$) improved in the experimental group between the pre- and post-test phase. Teamwork was initially assessed by physician and nurse instructors and used a Team Dimensions Rating Form. Observation was also conducted by someone outside of the facility who undertook calibration exercises over a one day period. The control group displayed no differences in regard to teamwork. Major improvement to the reduction ($p = 0.039$) of clinical errors was found in the experimental group (30.9% to 4.4%). In relation to attitudes concerning teamwork, an increase ($p = 0.047$) in the experimental

group, was observed. Finally, the experimental groups' assessment of the support provided by the facility was shown to have increased (*p = 0.040).* Results from the Morey et al. study (2002) found that this type of training provided to trauma teams is usually discipline focused, that being doctors trained with doctors, nurses with nurses, for example. The study findings state that teamwork training enhanced the team members' ability to work within a multidisciplinary team and this resulted in the reduction of clinical errors, and a harmonious working environment.

Cooper (2001) provides details of a randomised controlled trial regarding the benefits of a leadership development course. The study was undertaken to determine if the introduction of a leadership component to the ATLS program, would provide the recipient with the ability to lead a team. Three courses were conducted, with two courses comprising 22 participants and one comprising 24 participants. The experimental group (although it was unclear how many participants were in this group or the control group) were provided with the ATLS course with the addition of the Leadership Development Program component, the control group, only the ATLS program. A modified _leadership behaviour description questionnaire' was provided to all the participants prior to and at the completion of their respective training. The questionnaire addressed 10 items including: expectations of the leader, use of guidelines, display of a positive attitude, to name but three. Additionally, in order to identify the personality types of the participants, the Myer Briggs Type Indicator was utilised. This was used in an attempt for the participant to identify if they had an introvert of extrovert personality.

Results of the study indicated an increase of improvement of both the experimental and control group in regard to leadership performance. However, it highlighted that the experimental group's improvement provided the most significance to the overall result of the study. It also highlighted that those participants displaying an extroverted personality were more likely to make effective leaders without additional training. The results highlight that the addition of leadership training enhances performance within the training environment; however, further research is necessary to apply this to clinical practice (Cooper, 2001).

Methods of course delivery

Methods of course delivery were until recently confined to didactic lectures, case scenarios and the use of part-task trainer equipment. Details of two emerging styles of course

delivery were examined: the use of simulation, and that of videotaping. No studies were identified of sufficient quality that evaluated videotaping.

Simulation

Prior to the development of simulation, trauma teams were required to gain their theoretical knowledge and development of clinical skills through real-life participation in trauma cases and/or part-task trainers. Simulation scenarios have been developed to include the enhancement of not only the participant's knowledge base and clinical skills, but also refinement of leadership, communication and conflict resolution skills of the team members. The use of simulation equipment includes both high and low fidelity.

Shapiro et al. (2004) conducted a prospective, single blinded and controlled study at a Level 1 trauma centre in Providence, USA. The purpose of the study was to examine the use of simulation as a method of enhancing teamwork in trauma teams of the trauma centre. Both the experimental and control group had received Emergency Team Coordination Course (ETCC) training. In addition the experimental group received eight hours of simulation training. During the simulation exercise the experimental group undertook three scenarios, which gradually increased in complexity. Both the experimental and control group were observed prior to and following completion of these respective training programs. Assessment of the participants, in particular their ability to work as a team, was examined and assessed utilising the Team Dimensions Rating Form consisting of five behaviourally anchored rating scales (BARS). These five areas were: team structure and climate, problem solving strategies, team communication, management of workload and improvement in team skills.

The participants ($N = 20)$ comprised of four physicians, four resident physicians and 12 nurses from the ED divided into four teams, two experimental and two control. These 20 participants were randomly chosen from a total of 152 comprising of: 32 ED doctors and 120 nurses. All of the participants in the study (Shapiro, et al., 2004) had worked in the ED for at least three years. The results of the study identified that there were no observable differences between the control and experimental groups prior to the training programs. The experimental group displayed an improvement in teamwork behaviour ratings ($p = 0.07)$ following the training program, in comparison with the control group, which showed

no changes to team behaviour (*p = 0.55)*. The experimental group also stated that they felt that the use of simulation, which supplemented the didactic training, was a useful tool.

Trauma team management practices

A fundamental requirement of trauma care and management of the trauma patient is to ensure that appropriate resources (in particular appropriately trained staff and adequate staffing numbers) are available and in place to meet the needs of the trauma patient and their presenting condition. Mechanisms need to be in place to assess the requirement for a trauma team, the optimal size of the needed team, the concept of a trauma team tiering system, and the team composition and the scope of practice of the individual team members. The following section provides the results of the review in regard to trauma teamwork practices.

Trauma team versus No trauma team

Knowledge of many factors are required when making the decision to form a trauma team including: the size of the facility, availability of trained staff, number of potential trauma patients requiring treatment and financial constraints associated with this service. The following section provides details of a study by Lomas and Goodall (1994) that addressed the issue of whether facilities should have a formed and functioning trauma team or not.

Lomas and Goodall (1994) conducted an observational cohort study of six Accident and Emergency departments in the United Kingdom. This comprised three teaching hospitals and three general district facilities. Of the six units being examined, three had a formed trauma team; one had a partial team and the remaining two units, stated that they did not have a trauma team. The unit with the partial team stated that their nursing staff had formed a team, but the medical staff had not. The results of the study highlighted the following in regard to the percentage of completion of phases within the team versus the non-team groups (Table 1-2). The initial range of timings for each segment of the resuscitative process was as follows: primary survey (5–30 minutes); vital signs (5-60 minutes, most 10–15 minutes); secondary survey (5–90 minutes, most 10–15 minutes) and completion of set of three X-rays (5->130 minute, no significant time differences between teams).

Table 1-2. Results of participant's exam at the four assessment intervals.

Team	Percentage of completion within resuscitation phases			
	Securing of an airway	Insertion of an IV line	Insertion of a second IV line	Completion of primary survey
Team	100%	100%	75%	95%
No / Partial team	75%	82%	40%	85%

Of particular note, according to the results (Table 1-2), is that up to 25% of trauma patients requiring the insertion of an airway and insertion of a second intravenous line access by the non-team groups was significantly lower than that of the formed team's results. This is significant given that hypovolaemia and hypoxia are major predisposing factors, which can lead to a prompt death in the trauma patient if left untreated. This study reported that when a group of health professional (not in a formed team) provided trauma care, the care they provided to the patient was often disorganised with many tasks often duplicated by staff. Lomas and Goodall (1994) conclude by stating that a formed team is essential to the outcome of the patient (taking into account their presenting condition). They consider that the team that is organised and well structured, with team members appropriately trained and with assigned roles, provides the best opportunity of appropriate care to the trauma patient. They also assert that these teams must have predetermined roles, a dedicated team approach, appropriate clinical skills and knowledge to provide the best care to their patients.

Optimal trauma team size

When determining the optimal size team required by a facility to provide trauma services, the following needs to be taken into account: frequency and type of injuries of trauma patients, and availability of appropriately trained staff. One study was identified that addressed the optimal trauma team size and the impact of different size trauma teams.

In a prospective case series study conducted by Driscoll and Vincent (1992a), involving four Level 1 trauma centres (two in the United States and two in South Africa), 257 (Unit A–87, Unit B–65, Unit C–50 and Unit D–55) trauma patients were examined. In particular, the time to treat (during the pre-defined stages of care) these patients was observed. Four stages of resuscitation were identified and examined: time from arrival to the unit to completion of recording of vital signs (*Trecord),* time for head to toe examination

(*Texamine),* time for life saving procedures (*TLSP),* and time for completion of primary and secondary survey, including radiographer and formulation of a management plan (*Tsurvey).* The following results were identified (Table 1-3).

Table 1-3. Results of timings of specific resuscitation milestones of the resuscitation phases of all four units.

Unit	Average team size	Results (in minutes)			
		Trecord	*Texamine*	TLSP	*Tsurvey*
A	10 (5-15)	2	10	5	15
B	7 (3–11)	2	15	7	47
C	4 (2-7)	7	15	20	47
D	2 (1-8)	25	30	47	102

The results indicate that there were significant differences between the four units in relation to the times to meet the phases of the resuscitative process. Using one-way analysis of variance (ANOVA) with Scheffe multiple comparisons, the study concluded that although there were some differences in the outcomes measured between the units, this could not be attributed to the size of the trauma team. As a result of this study, it was reported that the optimal size of a trauma team appeared to be from five to eight members; however, this could not be confirmed statistically.

Tiering of trauma teams

A concept regarding the activation of an appropriately and skilled trauma team was addressed in three studies (Ochsner, et al. 1995; Tinkoff, O'Connor & Fulda, 1996; Eastes et al. 2001). The use of a tiering system to activate these teams was addressed in these studies. Ochsner, et al. (1995) conducted a study to establish if there were differences in the rate of efficiency and safety to trauma patients if a two-tier approach was established. The study was conducted at the MedSTAR Trauma Center, a Level 1 trauma centre at the Washington Hospital Center, in Washington DC, the United States, to determine if pre-triaging prior to admission and the activation of an appropriate sized and skilled mixed team was beneficial to the outcome of the patient. A pilot study was initially conducted and consisted of a paper exercise with no changes made to the actual running of the department. Following on from this pilot study, a modified tiering system was commenced

and evaluated. In particular, the effects of these teams on the outcome of the patient and the costs savings to the organisation were also examined. The introduction of the two-tier system was proposed in order to determine the appropriate trauma team size required when assessed with the trauma patient's injuries and requirements. During the assessment period, two modifications to the activation criteria were introduced at the six and nine month period. Trauma patients were triaged and either a full team (code yellow) or a modified team (trauma response -TR) was activated. The differences in staffing between the teams were as follows. The modified team comprised of: a trauma surgeon, house staff members (not defined), security and a radiology technician. In regard to the full team, the addition of the following staff members was implemented: an operating room nurse, anaesthetist, respiratory technician, cardiopulmonary technician and a member of the blood bank.

In the study 1,479 patients were evaluated during the first observation period, with 682 (46%) receiving the services of the full team, and the remaining 794 (54%) services from the modified team (Ochsner, et al., 1995). After the introduction of the second modification, little enhancement to the services provided was observed. The authors concluded that implementing the two-tier system significantly improved the matching of the services needed and that of the injuries of the presenting patients. Ochsner et al. (1995) also stated that the cost savings associated with activating an appropriately sized and skilled trauma team was substantial (US$178,000) over the observation period.

Tinkoff, O'Connor and Fulda (1996), conducted a retrospective design study examining the impact of the establishment and activation of a two-tier response system in appropriately identifying, evaluating and treating patients utilising the services of either a full (named a trauma code) or a modified trauma team (named a trauma alert). The study was conducted at an unnamed Level 1 trauma centre in the United States. Prior to the introduction of the tiering concept, a full trauma team would be activated regardless of the clinical needs of the patient. The study examined the records of 4,910 trauma admissions (791 study patients and 4,083 control patients). Those patients who did not meet the triage criteria (systolic blood pressure <90mmHg, respiratory compromise, airway obstruction and/or endotracheal intubation, a gunshot wound to the neck, abdomen or chest, and those patients with a Glasgow Coma Scale of <8 were classified as the control group. Results found that the use of a trauma team tiering system allows a facility the flexibility in

determining an appropriately sized and manned team to deal with the presenting trauma case.

Finally, the Eastes et al. (2001) study reported the results of a retrospective case series study with historical control. This study was undertaken in order to determine the size and composition of the trauma team prior, pre-phase, to the instigation of a two-tier approach and following implementation (post-phase) of this proposed new system. The pre-phase comprised of the observation of 1,740 patients and post-phase 2,333 patients. The two-tier system comprised of a full (FULL) trauma team and a modified (MOD) team. During the post-phase, 55% of the patients were provided with FULL team services and 45% MOD team services. The study highlighted the staffing differences between both teams, which would be activated depending on the severity of the trauma patients' injuries. The staffing deemed necessary to run a MOD team included: trauma surgeon (staff), senior trauma resident, ED physician, department resident, two nurses, and ED specialist and a radiology technician. In addition to this staffing, the FULL team also included the skills of: anaesthetist, anaesthetic resident, respiratory practitioner, an additional member of the nursing staff and an orderly.

Results of this study (Eastes, et al., 2001) indicated that the time in the department was decreased when using the two-tier approach; however, the death rate was similar between the pre and post groups. The authors concluded that the implementation of a two-tier approach was satisfactory and increased the efficiency of the unit. They did, however; state that further research is necessary to fine-tune the MOD and FULL compositions.

Leadership

The appropriate management of any team is essential in an attempt to have smooth running group of individuals reach a desired goal. The role of the leader is seen as the role that is pivotal to the effectiveness of the team. The following section will present two studies (Driscoll and Vincent, 1992a; Hoff, et al., 1997), which address the issue regarding team management.

In a retrospective study conducted by Hoff et al. (1997), examination into the use of videotaping of resuscitation cases performed at a Level 1 trauma centre in the United States over a 25 month period was undertaken. In particular, the role of the command-physician (leader) was examined and the benefits of this role to the running of a

trauma team considered. Of the 425 resuscitation cases videotaped, it was identified that the role of the command-physician was easily identifiable in 365 (85.7%) of these cases. It was also found that at the completion of the secondary survey phase of examining the trauma patient, and the formulation of a definitive treatment plan for the trauma patient, the team with the identified team leader was more successful (81.4%) than that of the group without this leadership role. Hoff et al. (1997) concluded by stating that teams who have an identified team leader have an increased success rate of systematically completing the primary and secondary survey (81.4%) of a trauma patient assessment process and subsequently providing an appropriate definitive patient plan (89.6%) for the individual patient. The authors conclude that the most senior medical officer can carry out the role of the command-physician at the time of the resuscitation. However, they also state that this individual should have the support and guidance of a senior traumatologist in order to provide guidance in determining the most appropriate treatment plan for the trauma patient.

Finally, a _before and after' study was conducted by Driscoll and Vincent (1992b) to examine the impact of various organisational aspects of trauma teams. The concept of horizontal organisation of trauma teams was addressed. A horizontal organisation is achieved when each member of a team carries out their individual roles simultaneously. This study was undertaken to assess the differences in timings of resuscitation phases (as described in the previous study) before and after the introduction of horizontal organisation with three of the four previously studied units (Units A, B and D). This study examined 207 trauma patients utilising the same time specific milestones. Table 1-4 presents the percentages regarding the introduction of the horizontal organisational approach within the three units.

Table 1-4 Introduction of horizontal organisational approach for the three units.

Unit	Introduction of horizontal organisational approach		
	Yes %	Partial (%)	No (%)
A	98	0.6	0.6
B	12.5	87.5	0
D	2.0	2.0	96.1

Results regarding the changes from the average times for each stage between the baseline and the experimental group can be found in Table 1-5.

Table 1-5 Average times for stages between baseline and experimental group.

Phase of resuscitation	Average baseline results (mins)	Average results following introduction of horizontal organisation within teams (mins)
T_{record}	9.1	4.9
$T_{examine}$	16.3	13.1
TLSP	27.4	11.6
T_{survey}	69.5	26.6

These results indicate that the length of all stages of the resuscitation had significantly decreased from 122.3 minutes to 56.2 minutes. Driscoll and Vincent (1992b) highlights the advantages of introducing a horizontal organisation approach and task allocation of staff members to these trauma teams and also states that although these results show significant improvement in the time to resuscitate these trauma patients, some trauma surgeons found it difficult to disengage from the process. The author concludes by stating that future development within these teams utilising a horizontal organisation approach would be beneficial and may result in resuscitation timings being further reduced. The previous section has presented the findings relating to the included studies meeting the inclusion criteria in regards to the composition and scope of practice of trauma team members.

Summary

Chapter Five provided the results of the two major topics investigated in the systematic review. Although at the beginning of the review, it was thought that many studies would meet the inclusion criteria, following the critical appraisal process, this number was considerably reduced. The following chapter will provide discussion relating to these findings.

Chapter Six

Discussion

It is a reality that trauma care will continue to be required within virtually every community and it is the right of every patient requiring this care to have the best possible and most appropriate trauma team to deliver this care to them. Therefore, a way in which to advance the skills and knowledge in order to provide this quality and effective care is through adequate education and preparation of trauma teams. Appropriate teams comprising of medical, nursing and allied health personnel to deliver this care is also essential. It is with this thought; that the areas of education and professional development of trauma teams and teamwork practices is examined and subsequently advanced. At the completion of the systematic review studies were found to be scarce, with many studies being opinion papers or organisation/discussion documents. This chapter will be presented in two parts. Firstly, discussion of results relating to education and professional development will be undertaken. Following this, discussion regarding the results of the teamwork practices component of the review will be presented.

Education and professional development

Trauma remains one of the leading causes of death (Baird, et al., 2004) and subsequently the training of health personnel to deliver appropriate life saving measures is crucial. This component of the study identified five studies for inclusion.

Trauma courses

Until recently, training of trauma team members to care for their patients was undertaken primarily utilising the skills and knowledge of senior medical personnel and ‗on-the-job‘ training. Over the years research has been undertaken to identify short falls in this method of training and subsequently trauma courses have been developed and continue to be enhanced to address these issues. Multidisciplinary education is now an everyday occurrence with professional training organisations understanding the benefits and supporting the training of multidisciplinary teams prior to putting knowledge into practice.

In regards to evaluation of specific trauma courses only a small number of studies (Baird, et al., 2004; Tippett, 2004) were found and subsequently included in the review. Both studies provided details of training provided to nursing personnel only. Results indicated that nursing specific courses were more beneficial to the nursing participants. It was also reported that although knowledge and clinical skills acquisition increased following the completion of training, this knowledge and level of skill significantly decreases within three months of completing training. This highlights the need for continuing ongoing professional development. The studies also reported that nursing personnel who had completed certain courses (ACLS, ATLS, ATNC, PHTLS, TNCC) had a more successful outcome when undertaking the courses as participants as opposed to being on the courses as an observer. Therefore, it is reported that it is more beneficial for training to be undertaken as a participant not merely as an observer. In regards to the use of course delivery alternative methods were identified during the review; the use of simulation and videotaping

Course content

Details regarding content of trauma courses revealed only two studies (Cooper, 2001; Morey et al., 2002) specifically met the inclusion criteria. These two studies explored existing training courses with additional elements attached, in particular, the inclusion of aspects of CRM training and leadership. The Morey et al. study (2002) identified an improvement in teamwork practices and attitude of staff within the team following completion of the ETCC with the additional CRM aspects. The training is also credited with a decrease in clinical errors of team member following completion of the course. The Cooper study (2001) reported on the ATLS training program which included the addition of leadership training. Although the results of the Cooper study (2001) reported that there was an increase of leadership abilities in both the experimental and control group, statistical significance of this result could not be verified. These studies suggest the potential benefits of providing leadership training in trauma courses.

Course delivery

Course delivery has until recently been conducted using didactic lectures, case study scenarios and on-the-job training. The review highlights the use of simulation as a useful strategy in which to train trauma team members.

The use of simulation

The use of simulation is to provide as real as possible experience for the student without having to ‗practise' on real patients. Only one study (Shapiro et al., 2004) that evaluated simulation was included in the review results. The study highlighted that following completion of simulation training, an increase in teamwork behaviour was seen. The study was unable to adequately and accurately measure the benefits to the patient, but it is thought that the development of essential trauma clinical skills of trauma team members in a simulated environment is more beneficial than practising and/or refining skills on a patient alone. The use of simulation as a component of education and professional development of trauma teams has and continues to provide a safe environment for the student. It not only allows for the development and enhancement of clinical skills, but also provides a way in which to develop the teamwork practices of all team members. This is evidenced in the results presented by Shapiro et al. (2004)..

Videotaping of trauma team resuscitations as a training aid

No studies met the inclusion criteria for the use of videotaping of trauma team and its benefits. Therefore, no conclusion can be made about the effectiveness of this method of instruction. Further evaluation of this is warranted.

Teamwork management practices

Only seven studies (Driscoll & Vincent, 1992a, 1992b; Eastes et al., 2001; Hoff et al., 1997; Lomas & Goodall, 1994; Ochsner et al., 1995; Tinkoff , O'Connor & Fulda, 1996) met the inclusion criteria and were subsequently evaluated and reported on.

Trauma team versus No trauma team

The determination of a trauma unit to use a preformed team as opposed to the ad-hoc formation of a team just prior to at the arrival of a trauma patient is complex. Only one study (Lomas & Goodall, 1994) met the inclusion criteria for this issue. Findings of this study report that preformed teams (with predetermined team roles) performed better than those units that did not have a formed team. It was also reported that those units that have teams with predetermined team roles, a dedicated team approach, appropriate clinical skills of all team members were believed to provide better care to their patients. Those teams that

were not preformed with team members not having predetermined roles worked in a disorganised manner with many tasks either duplicated by staff or not performed. These results assert that preformed teams will provide a coordinated approach to the resuscitation and therefore offer the best care available to the trauma patient. It is essential to identify what team members' roles are in advance of the commencement of any trauma care and that these roles should be determined prior to the team working together. However, it is also important to identify the essential elements required to have a functioning and cohesive team.

Optimal trauma team size

The size of a trauma team is also of vital importance and must be a consideration for facilities that are commencing the formation of a trauma team or for those who are reviewing their department's trauma team organisation. This is essential in order to better tailor the requirements of that department to deal with the needs of the community they are serving. Only one study (Driscoll & Vincent, 1992a) met the inclusion criteria. This study states that an optimally sized trauma team should comprise of between five to eight members. This information should be taken with caution by trauma centres with them taking in account their individual circumstances and determining the most appropriate team size to meet their needs. Factors including; the number of available staff, the incident of trauma case presentations, and funding considerations should be considered.

The use of a horizontal team approach

Trauma care is often provided in a highly stressful environment, with life saving measures needing to be provided in a timely fashion. The team members need to know their roles and to carry out these roles in such a way that no task is overlooked and no treatment missed. The use of a horizontal team approach allows members of a team to carry out their roles simultaneously. The review identified one (Driscoll & Vincent, 1992b) study, which examined the benefit of a horizontal team approach as opposed to a vertical approach. A horizontal team approach allows for staff members to carry out their role at the same time and results in care not being missed due to the fact that members of the team thought that others were carrying certain care. This study (Driscoll & Vincent, 1992b) does however highlight the need for appropriate leadership in order for the team approach to be successful. The use of a horizontal team approach is also reported to reduce resuscitation times when used appropriately and ultimately to benefit

The use of team tiering

The introduction of a tiering system of trauma team activation is relatively new. The review found three studies (Oschner et al., 1995; Tinkoff, O'Connor & Fulda, 1996; Eastes et al., 2001) were found to meet the inclusion criteria. The results highlighted that the use a team tiering approach could potentially provide a better outcome of the trauma patient, Although statistical significance was not measured and cannot be reported on. In addition the financial benefits cannot be confirmed. The use of a tiering approach appears to provide a way in which to activate the most appropriate team to provide care needed for the individual patient and their needs.

The role of the leader

As with any team, the role of the leader provides a team with guidance and support. Two studies (Driscoll & Vincent, 1992a; Hoff et al., 1997) met the inclusion criteria for this component of the review. These studies reported that teams with a dedicated team leader were more successful than those teams without an identified leader. Results indicate that the most senior medical clinician should take on this role. It also asserted that a junior medical officer can lead the team if their senior medical officer is there to provide guidance.

Implications for practice

This review identified that the number of studies providing evidence regarding trauma team education and practices were small in number with mostly low level studies. Many of these studies failed to reach statistical significance; therefore no strong recommendations can be made. There are however, some issues that should be considered. Firstly, when providing trauma courses, organisations should consider having these courses available to multidisciplinary participants, where all disciplines are active in the course and not observers. Course content should also include elements that address teamwork in addition to clinical skills acquisition and which specifically addresses the development of leadership skills. In regards to teamwork practices, the use of a horizontal organisational approach has considerable potential and when teams are appropriately trained to undertake this approach, it should be considered a base level of service provision. Finally, the use of simulation has the potential to enhance skills for an area of practice where real life experience is unpredictable.

Issues related to the quality of research

The studies identified and evaluated for inclusion in this systematic review were varied in relation to their research quality. Many of the papers lacked high level evaluation and statistical support. This may be due to the limitations associated with the timing of the papers. Advancements have been made in research into the area of quality when undertaking research. Another area of concern throughout the review was the small number of participants in some of the studies.

Recommendations for future research

The purpose of this systematic review has been to gain an appreciation of civilian trauma teams in regard to their education and professional development, and the teamwork practices used. This review was conducted in order to gain a deeper understanding of the topic. Recommendations for future research into training includes; the undertaking of high level studies and more focused studies into the topic. It would also be beneficial to conduct further research into the evaluation of courses as many courses may currently present the same or at least very similar content. In addition, further research should be conducted to explore if courses should be conducted for multidisciplinary participants as opposed to uni-disciplinary courses. This would be beneficial given that the majority of trauma teams comprise of multidisciplinary team members. Finally, research to measure outcomes for patients needs to be undertaken in order to determine the courses effectiveness in the long term.

In regards to future research recommendations regarding teamwork practices, the following should be considered. Firstly, further examination into trauma team sizing and investigation into the use of a tiering approach would be beneficial. Further evaluation of the use of a horizontal team approach and the issue of a formed trauma team as opposed to units that do not have formed teams would be valuable.

Summary

The systematic review provided details of studies conducted and which met the inclusion criteria. Following critical analysis of identified studies, 12 were found to meet the inclusion criteria and were subsequently included in the review. Chapter Six presented discussion of the results of this review and highlighted areas that have been perceived as

well done in clinical practice and those that could be enhanced. The following chapter presents a conclusion to this review, with recommendations made for future research into this topic.

Chapter Seven

Conclusion

The purpose of conducting this systematic review has been to identify research conducted in regards to the education and professional development of trauma team members and the teamwork practices employed by these teams. Whilst undertaking this systematic review it was found that between the periods of January 1990 to December 2006, there has been limited research undertaken and published in the topic, with only 12 studies meeting the inclusion criteria and subsequently reported. This does not mean that internal organisational studies were not undertaken within health facilities during this period, but that these reports have either not been published, or did not specifically meet the inclusion criteria determined by the systematic review.

As a result of the systematic review, information gained has highlighted essential information regarding trauma team training; including trauma course (including course content) evaluation, the need for team training, and various methods of course delivery being used. The review has also provided knowledge regarding teamwork practices, in particular; the use of a formed trauma team versus no trauma team, sizing of trauma teams, the use of tiering to provide the most appropriate care to trauma patients and the role of the leader.

Information acquired from this review has formed the basis for the development of a cross sectional study (Study Two) which will examine the education and professional development, and teamwork practices of Australian Defence Force health personnel who are trained to work as members of a trauma team. It is anticipated that continuing research is being conducted in regards to this topic. Updating the results of this systematic review will provide current knowledge of research being undertaken. This knowledge would be useful for the development and enhancement of trauma teams.

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Appendix 1-1: JBI Critical Appraisal of Experimental Studies

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Appendix 1-2: JBI Critical Appraisal of Observational Studies

NOTE:
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Appendix 1-3: Data Collection Sheet

Ref no: _____

Author(s):_____**Year:** _____

Type of report:_____

Quality:_____

Setting: _____

Participants:_____

Intervention/model:_____

Training ☐   **Communication** ☐   **Composition** ☐

Scope/role ☐   **Brief/debrief** ☐   **Safety/quality** ☐   **Other** ☐

_____
_____
_____
_____
_____

Conclusion: _____
_____
_____
_____
_____
_____

Outcome/evaluation:
Measures: **Results:**

_____   _____
_____   _____
_____   _____
_____   _____

Is study to be included in the review   **Yes** ☐   **No** ☐

Comments: _____
_____
_____
_____
_____
_____

Appendix 1-4: Systematic Review Excluded Studies

Author(s)	Study type	Area of focus	Intervention/Phenomenon	Setting/ Participants	Reason for exclusion
Gautam & Heyworth (1995)	Quasi experimental controlled / prospective study	Education and professional development	The study aimed to identify the difference to the outcome of training of junior medical personnel using either the Advanced Life Support course or an induction into an Emergency Department course	Portsmouth, United Kingdom	Many aspects of the study are not well defined including the intervention for controls, characteristics of both groups and the evaluation tool utilised.

Appendix 1-5: Systematic Review Included Studies

Author(s)	Study type Level of evidence	Area of focus	Intervention	Setting/ Participants	Results
Baird, Kernohan & Coates (2004)	Cross sectional correlational design using a questionnaire survey JBI-E3	Education and professional development	The aim of this study was to examine the influence on performance of Accident and Emergency nurses who have undergone Advanced Trauma Life Support training	All Level 1 Registered Nurses in Emergency Departments in Northern Ireland.	Outcome for nursing participants did not assist in the participant's knowledge level and was stated to not enhance the participants ATLS skill level. The results indicate that participants believed that it would be more beneficial to undertake the course as a participant not merely as an observer.
Cooper (2001)	Randomised Controlled Trial JBI-E2	Education and professional development	The study aimed to examine the results of introducing a leadership development seminar into the Advanced Life Support course	United Kingdom	Results of the study indicated an improvement of both the experimental and control group in regards to leadership performance. It also identified that those participants with an extroverted personality were more likely to make an effective leader and would not require additional leadership training. Leadership training was also shown to enhance performance with the training environment.
Morey et al. (2002)	Prospective multicentre evaluation using a quasi-experimental, untreated control group design with one pre-test and two post-test measurements JBI-E2	Education and professional development	Examination of the benefits of the Emergency Team Coordination Course	Nine unnamed teaching and community hospital Emergency Departments, United States	The study reported a significantly statistical improvement in the experimental group between the pre to post test phase. The control group did not display any differences in regards to teamwork. Major improvement occurred in: reduction of clinical errors. Study highlighted that training was focused at discipline specific participants. Doctors trained with doctors, nurses with nurses. The study stated that teamwork training would enhance the ability to work as a multidisciplinary team.
Shapiro et al. (2004)	Single, crossover, prospective, blinded and controlled trial JBI-E2	Education and professional development	The purpose of this study was to examine the use of simulation as a method of enhancing teamwork in trauma teams	Level 1 trauma center, Providence, United States	The study reported no observable differences between the control group and the experimental group prior to the training programs. Following the training programs the experimental group displayed an improvement in teamwork behaviours as opposed to the control group, which showed not changes to team behaviour.

Tippett (2004)	Before and after design study measured at four intervals JBI-E3	Education and professional development	This study examined the results of 14 Emergency Department nurses who had completed the Advanced Trauma Nursing Course	United Kingdom	The study states that the knowledge gained by the participants following the completion of the course had increased by 79%. However, they also found that the retention of this knowledge had significantly decreased from 79% to 43% in three months following the course.
Driscoll & Vincent (1992a)	Prospective case series study JBI-E3	Team composition	This study examined the composition of trauma teams and compared outcomes with other teams. Also looked at the time of resuscitation stages and outcome	Two trauma centres in the United States and two in South Africa	This study found that there was a significant difference in the four units reported on in regards to timings to meet the phases of the resuscitative process. Although differences were reported, it could not be attributed to the size of the trauma teams. However, the study did report that the optimal size of a trauma team appeared to be five to eight members. This, however, was not statistically confirmed.
Driscoll & Vincent (1992b)	Prospective observational study JBI-E3	Teamwork practices	This study aimed to determine the impact of a horizontal team approach to that of a vertical team approach on the speed of a resuscitation	Four units: two in North America, one in the United Kingdon and one in South Africa.	This study indicated that the length of stages of resuscitation in the units examined had significantly decreased form 112.3 minutes to 56.2 minutes. The authors report of the advantages of introducing a horizontal organisational approach and staff task allocation. They state that future development of a horizontal organisational approach would be beneficial and may result in a further reduction in resuscitation times.
Eastes et al. (2001)	Retrospective case series study with historical control JBI-E3	Team size and composition	To determine the size and composition of the trauma team prior to the instigation of a two-tier approach	Oregon Health Services University, Oregon, United States	The results of this study highlighted that with the use of a two-tier team approach the time in the department was decreased. However, the death rate was similar in both the pre and posttest groups. It was concluded that the implementation of a two-tier approach was beneficial and increased the efficiency of the unit.

Hoff et al. (1997)	Case control study JBI-E3	Teamwork practices	Examination of the use of videotaping of resuscitation cases and use of a horizontal team approach	Pennsylvania, United States	The study identified that the role of the command-physician was easily identifiable in 85.7% of the cases observed. It also reported that the completion of the secondary survey and formulation of a definitive treatment plan for patients was more successful in those teams with an identified team leader. They conclude that with an effective leader guidance and support to other team members is provided and that an appropriate treatment plan for the patient is provided.
Lomas & Goodall (1994)	Case control study JBI-E3	Team composition and teamwork practices	Study examined the use of formed trauma team as opposed to units which do not have a formed trauma team and the results from these teams	Six Emergency Departments, United Kingdom	This study identified that units with formed trauma teams provided timely treatment as compared with those units without a formed team. They state that teams with pre-defined roles, a dedicated team approach, appropriate clinical skills and knowledge provide the best care to their patients.
Ochsner et al. (1995)	Cohort study with historical control JBI-E3	Teamwork practices	Study was conducted in order to establish if there is a difference in the rate of efficiency and safety to trauma patients if a two-tier activation team was established	MedSTAR Trauma Center, Washington Hospital, United States	The result of this study highlight the fact that the introduction of a two-tier system significantly improved the matching of services needed and that of the injuries of the presenting patients. They also stated that the cost savings associated with activating an appropriately sized and skilled team were substantial over the observational period.
Tinkoff, O'Connor & Fulda (1996)	Cohort study with historical control JBI-E3	Teamwork practices	Examination of the impact of the establishment and activation of a two-tier response system	Level 1 Trauma Centre, Dellaware, United States	This study reported that the use of a trauma team tiering system allows a facility to be flexible in determining the most appropriate size and composition of a trauma team to provide suitable care to the presenting trauma patient.

Study Two

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Chapter One

Introduction

We must be aware of our history to better understand not only whence we came, but to identify some of the possible paths down which the Australian health services in the ADF are likely to proceed. To ignore recent and past history is to neglect our traditions and to risk errors based on ignorance of mistakes and solutions already devised.

(Tyquin, 2000, p. 79)

Appropriately preparing a team to undertake a task, regardless of the type of team or the nature of the task they are required to undertake, is essential to the successful outcome of the group's goal(s)/aims (Morey, et al., 2002). It should therefore be a requirement of all organisations that have a trauma/resuscitation team, whether military or civilian, to prepare each of the team members to assist in the provision of quality care to their patients. The purpose of this chapter is to provide an introduction to this cross sectional study. In order to do this, the following will be provided: the context, aim, purpose and significance of the study, the research questions and the definitions of terms used throughout the study.

Title of survey

The ethic approval title of Study Two is:

> **A survey of the Royal Australian Navy and the Royal Australian Air Force trauma/resuscitation teams' preparation and practices.**

Definition of terms

The following terms will be used throughout this study. Many of these are militarily focused, definitions are provided to assist the non-military reader.

Deployment

The term deployment, for the purpose of this study, is described as the sending of military personnel in readiness for a conflict situation or to assist with the provision of military

assistance during a time of humanitarian crisis. The term is usually applied when sending military personnel outside of their country of origin.

Field

The term field, when used in this study and in a military context, is often used to describe the area into which a military unit is deployed. It usually denotes an area outside of a military base.

Inter-service

Inter-service refers to the mix of personnel in a unit or deployment, in this instance, more than one of the ADF services. The ADF is comprised of the Royal Australian Navy (RAN), Australian Army, and the Royal Australian Air Force (RAAF).

Personnel

The use of the term personnel refers to a group of people who work in an organisation. For the purpose of this study, the term refers to the healthcare professionals in the ADF.

Tri-service

This term, when used in this study, will refer to an organisation comprised of personnel from all of the three services of the Australian Defence Force: the Royal Australian Navy, the Australian Army and/or the Royal Australian Air Force.

Trauma/resuscitation team

A trauma/resuscitation team is a group of healthcare professionals who provide care to critically/seriously injured patients. For the purpose of this study, these teams are considered to be comprise of: ADF Medical Officers (MOs), Nursing Officers (NOs) and Medical Assistants (Medics). This is the population of interest for this study.

Multidisciplinary

The term multidisciplinary (when used in the context of this study) will encompass healthcare personnel who are Medical Officers, Nursing Officers or Medics, who have been trained and/or who work in a military trauma team.

Unidisciplinary

The word unidisciplinary refers to a group of healthcare professionals who belong to the same discipline.

Context of study

Personnel of the Australian Defence Force (ADF) Health Services Branch (HSB) have in the past and continue today to deliver quality healthcare to all ADF personnel both within Australia and while on military service internationally. During times of conflict (including peacekeeping missions), ADF healthcare personnel provide care for their own personnel; to other allied defence force members; and to civilian populations affected as a result of the time of conflict. In addition to this, these military healthcare professionals are required, at times, to deliver health care to enemy personnel. In times of humanitarian crisis, members of the ADF Health Services Branch are often deployed into the affected area to assist in the provision of healthcare to those wounded as a result of the disaster (Cook, Smart & Stephenson, 2006; Eardley, Taylor & Parker, 2009).

Given the often short notice to deploy these personnel, it is vital that all military trauma/resuscitation team members are able to carry out their role(s) and duties immediately in all situations as mentioned above (Tricarico, 1998). In many circumstances (for example during a natural or manmade disaster) there is often limited opportunity to adequately prepare the team members in the field. It is therefore imperative that the personnel who make up the trauma/resuscitation teams are appropriately prepared to work in multidisciplinary and military inter-service teams prior to their deployment (be it a conflict or humanitarian mission situation). Not only do these members need to be clinically prepared, they are also required to work in remote locations with at times, limited resources. In addition, ADF trauma/resuscitation team members need to be capable of working in tri-service teams due to the continuing operational tempo (Bilski, et al., 2003).

Research questions

The following two research questions were posed:

> *What trauma/resuscitation education and professional development training have individuals received, and is this training perceived as adequate preparation to work in a multi-disciplinary and in a tri-service trauma/resuscitation team?*

<div align="center">And</div>

> *What is the nature of trauma/resuscitation teamwork practices used during recent Australian Defence Force deployments, and is this perceived as adequate?*

Aim of the study

The aim of this study was to gain an appreciation of the current education and professional development of health personnel in the ADF in regard to the development of trauma/resuscitation team skills. In addition, details related to deployment history and teamwork practices (team composition, scope of practice and team management style utilised) of the participants have been examined. Prior to commencement of this study, a systematic review (Study One) was conducted and the results provided information relating to the education and professional development of civilian healthcare professionals who work as members of a trauma/resuscitation team. The systematic review also examined studies relating to the teamwork practices employed in these teams when they are deployed. The major findings identified from the systematic review were used to assist in the development of the online survey used in this study.

The systematic review afforded the researcher a greater understanding of the preparation of individuals and the teamwork practices employed within the civilian sector. This was seen as key information given that, at times, the ADF and the civilian health sector work closely, both within Australia, and internationally, on humanitarian missions. The information gained as a result of this study will also assist in the continuing enhancement

of current practices being employed by many health facilities in regard to their trauma team members and practices within both the civilian and military sector.

Purpose of the study

The purpose of Study Two is to afford the reader with a better understanding of current education and professional development of ADF trauma/resuscitation team members. This knowledge may be used within the ADF Health Services Branch to continue to enhance team members' preparation and teamwork practices.

It is rare that information regarding the ADF, or any defence force, is freely available for the civilian sector to consider and learn from. It is anticipated that results from this study will be published in a refereed journal in order to provide details of this, relatively closed, environment. Both (military and civilian organisations) have a unique body of knowledge to share and this study will be one instrument through which to share this knowledge. The progression of trauma care services is vital to the successful outcome of all trauma patients.

Significance of the study

The operational aspects of healthcare services of a defence force are often unknown to anyone outside of the organisation. During times of conflict, humanitarian crisis or a scandal within a military, news items appear and which are available to the civilian population. However, details of the work personnel of a defence force often go untold. This study provides a mechanism to consider up to date data and to learn from the experiences of the participants. To the knowledge of the researcher, this will be the first study of this specific topic to be disseminated outside the ADF. There may have been internal studies conducted within the ADF, but these are not readily available outside of the organisation. The ADF and many other defence forces worldwide analyse deployments in order to learn from mistakes. However, the knowledge gained from these reports could be used to assist in the continuing development of civilian trauma team members and the teams in which they are employed.

With the continuing requirement to deploy ADF healthcare professionals as formed trauma/resuscitation teams (both single service and tri-service teams), preparing personnel to work in a multidisciplinary and tri-service environment is essential. Ways in which to enhance current training and teamwork practices are constantly adjusted. It is in the interests of not only the patients to which these teams will be providing care, but also to the personnel working in these teams, that all measures are undertaken to ensure that the teams are appropriately prepared to meet their goal, delivering quality trauma care.

Therefore, this study is offered as a mechanism to introduce and inform the reader about some of the personnel who make up the Health Services of the Australian Defence Force and their role when working in a military trauma team. The study will provide senior health military planners with current information about their members training to work in multidisciplinary and tri-service trauma/resuscitation teams. The knowledge gained as a result of this study may assist future development of ADF trauma/resuscitation team members and team practices to be employed within these teams.

Study Two outline

Study Two is presented in six chapters:

Chapter One: Introduction

The purpose of the first chapter is to provide the reader with a brief introduction to the study, including the study's aim and purpose. Definitions of some military terms used throughout the study are offered to assist the reader. In addition, the significance of the study is explained.

Chapter Two: Background

The personnel of the Health Services Branch of the Australian Defence Force are often deployed as members of trauma teams in conflict and humanitarian crisis situations. This chapter aims to introduce the reader to this organisation and its personnel. In preparation to deploy these personnel, appropriate and adequate training is a major priority for health planners. An introduction to some of the training offered to ADF trauma/resuscitation personnel is provided in this chapter. Details of some of the more common training courses are provided in order to set the scene for the results chapter. In addition, information

relating to the challenges facing these health care professionals when delivering this care is presented.

Chapter Three: Methodology

A cross sectional study was utilised in order to gain the most from this study and its participants. The study provides a snap shot of training undertaken by the participants and the subsequent teamwork practices that are used when these individuals have worked in teams. This chapter details the rationale for choosing a cross sectional survey, delivered online in order to reach the greatest number of participants.

Chapter Four: Method

An overview of the conduct of the study is provided, with details about the study design including, survey development and ethical considerations. The objectives of the study, the inclusion and exclusion criteria and the methods employed to analyse the data are also provided.

Chapter Five: Results

Information relating to respondents' education and professional development is presented. Details of the courses that participants have successfully completed provide an insight into the training provided to ADF Health personnel in preparation to work as a member of an ADF trauma team. In addition, information regarding the participants' deployment experiences as members of a trauma team is offered. This data provide a unique insight into the teamwork practices employed by these teams during times of conflict (including peacekeeping missions) and humanitarian crisis situations.

Chapter Six: Discussion

This chapter offers a discussion of the results, and where appropriate is related to the results obtained in the systematic review (Study One). Limitations, which were encountered while undertaking this study, are presented. This is undertaken in order to learn from this experience and to assist others contemplating using an online survey in their studies. The recommendations that arose as a result of the findings are also offered.

Chapter Seven: Conclusion

This final chapter presents the conclusions drawn from this study. A summary of the study findings and recommendations for future research is also supplied. This chapter also provides identified practical application of the knowledge gained as a result of the study.

Summary

This chapter provided a brief introduction to this study. It also presented details regarding the context, aim, purpose and significance of the study. In addition, the research question and definitions of terms used were supplied. Finally, the outline of the study was provided. The following chapter provides details of the background to the study in order to inform the reader to the research topic.

Chapter Two

Background

Defence Health medical history is a valuable teacher.

(Humphrey, 2002, p. 9)

Introduction

When providing training for their employees, most organisations believe that they are supplying the most appropriate education. One way of determining if there is a level of overall effectiveness of training is to assess the level of satisfaction of the participants. If individuals are satisfied with the training they receive, they will be more engaged in training and are more open to participate in future training (Benigno & Trentin, 2000). The purpose of this study was to gain an understanding the Australian Defence Force (ADF) health personnel who have received training in order to prepare them to work as members of a military trauma/resuscitation team, but due to uncontrollable circumstances only two services (the Royal Australian Navy (RAN) and the Royal Australian Air Force (RAAF)) were able to be involved. Firstly, information about the Australian Defence Force (ADF) Health Services Branch (HSB) is provided in order to set the scene for the study. Specifically, information regarding military trauma teams is presented. Details of some of the training courses available to prepare individuals to work as members of trauma/resuscitation teams are provided. As the results of the systematic review (Study One) were used to inform this study, a brief summary of the findings are provided.

The Health Services Branch of the ADF

The Health Services Branch of the ADF, although relatively young compared with other defence forces has had and continues to have, a distinguished military health history (Buckley, 1999; Eardley, et al., 2009; McGinty, 2007). The ADF Health Services Branch is made up of 104 health facilities around Australia. The Branch is comprised of ADF hospitals on military bases; health centres; and regimental aid posts and sickbays. In addition, a new concept of ADF military healthcare is now being delivered through a

military medical-surgical ward housed in a large urban hospital in Sydney (The Australian National Audit Office, 2011).

Although this branch is comprised of all health personnel including allied health personnel, only personnel numbers of Medical Officers (MOs), Nursing Officers (NOs) and Medical Assistants (Medics) will be supplied. This is due to the fact that these are the personnel involved in the study. As of 2011, the ADF HSB comprised of 2975 MOs, NOs and Medics (pers. comm., Ferrier, 2012). Table 2-1 provides information pertaining to the number of members of each discipline by service, with a further breakdown of these numbers into members belonging to both the permanent and reserve forces in which they are employed.

Table 2-1 Breakdown of numbers of health personnel.

Service	Discipline						Total
	Medical Officers		Nursing Officers		Medical Assistants		
	Perm	Res	Perm	Res	Perm	Res	
Royal Australian Navy	46	123	44	93	240	116	662
Australian Army	65	386	164	336	554	134	1639
Royal Australian Air Force	58	222	94	126	123	51	674
Total	169	731	302	555	917	301	2975

The medical care provided to ADF personnel is usually provided by health personnel (both military and civilian) of the ADF's HSB. Currently (2012), this department is known as the Joint Health Command (JHC). It is comprised of healthcare professionals from all three services of the ADF; the RAN, the Australian Army, the RAAF and contracted civilian healthcare professionals working for the ADF. The JHC is made up of four departments or branches. They are: Strategic Health Coordination; Mental Health, Psychology and Rehabilitation Branch; Health Capability Branch; and the Garrison Health Operations Branch (Joint Health Command, 2010).

The majority of health care provided by the ADF is available at the operational (unit or working) level. These personnel (ADF permanent, reserve, and civilian personnel) work under the command of their respective services (RAN, ARA and RAAF). In regards to operationally deployable units, the respective single service senior management controls command of these units. For example: the RAN is concerned with maritime operations; the

Australian Army, land; and the RAAF with air operations. The ADF continue to experience periods of high operational tempo, which result in the need for appropriate healthcare (Sullivan, 2006). As a consequence, there is now a necessity to deploy tri-service teams to meet these operational demands (Ellis, Hendrickse & Morris, 2002).

Life as a member of the ADF Health Services Branch

The career of a military healthcare professional varies considerably from that of their civilian counterparts. Most civilian healthcare professionals go to work, carry out their duties during their allotted shift, and then head to safety of their homes and families. In contrast, all ADF military health personnel may be sent into an area of conflict and humanitarian crisis situation at short notice (Cook, et al., 2006). When deployed, they are often required to work alongside other contributing military and non-government organisations. In addition to this, all ADF military health personnel must be able to work and function in remote locations for extended periods of time, in roles that differ from that of the civilian sector.

Learning from the civilian sector

In order to gain an appreciation of the education and teamwork practices employed in civilian organisations, a systematic review (Study One of this portfolio) was undertaken. This review provided details of courses available in order to prepare health personnel to work in trauma teams. When examining these courses, it was identified that many of these courses focus more on management of trauma with less of a focus on teamwork. The systematic review also provided valuable details of the use of team tiering, a horizontal team approach and team composition and sizing. The following section provides details of one of the roles that ADF health personnel may undertake that of trauma team members, and the preparation they receive to prepare them for this role.

Preparation of military trauma/resuscitation team members

The courses and training available to ADF health personnel in order to prepare them to work in these teams is varied. The following provides details of both civilian and military trauma courses available to ADF health personnel. The Advanced Trauma Life Support Course (ATLS) is a two to three day course, which is primarily conducted for medical personnel. Many of the trauma courses offered are based on the teachings of the ATLS

course. The ATLS course has been run since the 1970s as a result of an identification of gaps in trauma care and is now available in many countries for trauma skill development (Driscoll & Wardrope, 2005). The Definitive Surgical Trauma Course (DSTC) is a two-day course conducted for medical personnel in order to develop an individual practitioner's operative management of life threatening injuries. The course was developed in the 1990s. The Early Management of Severe Trauma (EMST) Course is run by the Australasian College of Surgeons is a two and a half day course (with an additional half day added for a military component) and is offered to medical personnel. However, nursing personnel are only able to attend the course as observers. Some of the nursing specific trauma courses include: the Trauma Nursing Core Course (TNCC) and various postgraduate courses available through some Australian Universities. The TNCC (McGinley, 1999) is a two-day internationally recognised course and is run by the Australian College of Emergency Nurses. Specific trauma courses offered to ADF Medical Assistants include: components of the Basic and Advanced Medical Assistant courses. In addition to this training, the RAN offer a nine month training program for their Clinical Managers in preparation for these individuals to run sickbays on RAN vessels. These courses are ADF specific courses and are conducted within ADF medical training facilities. All three of these courses contain an attachment to a civilian health facility in order to consolidate their training. Although these courses are ADF run, medics are also sent on some civilian trauma courses, which were identified by the participants in the survey. All of the courses mentioned here (both military and civilian courses) were untaken by participants in order to prepare or to continue to enhance trauma clinical skills and teamwork practices.

Often the training is unidisciplinary (for single discipline participants). Some of these unidisciplinary courses that ADF health personnel undertake include: Advanced Trauma Nursing Course (ATNC)), Field Nursing Course (FNC), now known as the Military Advanced Resuscitation Course (MARC), and Clinical Managers Course (CMC) (Sammut, Cato & Homer, 2001; Tippett, 2004). However, trauma/resuscitation teams are almost exclusively made up of multidisciplinary (MOs, NOs and Medics) members, identification of courses that are aimed at preparing individuals to work in inter-professional and tri-services teams would be beneficial. In addition to this, finding out what teamwork practices (for example: leadership, team sizes and compositions) are employed would enhance current knowledge of this topic.

Summary

The Health Services Branch of the Australian Defence Force is comprised of Medical Officers, Nursing Officers, Medical Assistants and allied health professionals (for example: dental officers, pathologists, psychologists, radiographers). As of 2011, there were currently 2975 MOs, NOs and Medics employed in both the permanent and reserve forces. The purpose of this chapter has been to provide information regarding the focus of this study, that being the Health Services Branch of the ADF and its members. Trauma teams are made up from these healthcare professionals who have been expressly trained to work in these specialised teams. Background information regarding some of the training has been provided in order to set the scene for this study. This information is provided as a means of introducing the reader to ADF Health. In order to conduct this study, the following chapter provides details of the methodology to be employed.

Chapter Three

Methodology

Introduction

When determining the most appropriate research methodology, the researcher must undertake a comprehensive examination of the different methodologies available to better understand them and make an informed decision. The intention of this chapter has been to provide details regarding the use of the cross sectional study methodology and why it was deemed, by the researcher, to be most appropriate for this particular study.

Cross sectional studies

Cross sectional studies are undertaken in order to gather information from a population group. For the purposes of this study, the population group studied was to be healthcare personnel from the ADF who have been trained and/or have worked as a member of a military trauma/resuscitation team. As with all cross sectional studies, this study was undertaken at a particular time (Borbasi, Jackson & Langford, 2008). The aim of the study was to collect this information 'on only one occasion with the same subjects rather than with the same subjects at several time points' (LoBiondo-Wood & Haber, 2006, p. 244). This provides the researcher with an indication of how things are at the present point of time. Given the varied potential localities of the prospective participants and the nature of their employment (with many deployed at short notice), an online survey was seen to be most appropriate. In order to achieve this, a cross sectional study was found to be a way in which to achieve this (DePoy & Gitlin, 1994).

Determination for the use of a survey

The use of a survey allows for large numbers of responses and this is especially evident with the use of online surveys. With the increasing availability of the internet and in particular to those ADF members on deployment, the use of an online survey was considered to be the best way to attempt to recruit the largest number of participants for the study.

Time was taken regarding what questions needed to be asked and how to go about asking them. The survey contained both closed and open-ended questions. Closed questions were used to elicit demographic details (length of service, the service they belonged, discipline of the participant and general information regarding their training and deployment history). Open-ended questions afforded the participants the opportunity to express their thoughts and feelings and gave them the chance to provide their personal suggestions for improving training and teamwork practices for the future. It was hoped that this would supply the researcher with greater depth of information from the participants. This was considered to be a particularly valuable method of allowing participants to freely express their feelings - something not routinely done in a military environment. When determining how best to gather this information and while utilising a cross sectional study methodology, the use of an online survey allowed the researcher to 'collect all the needed data at a single time' (Leedy & Ormrod, 2001, p. 194). This is particularly important given the uncertain nature of military deployments and movement of the potential participants of this study. The use of an online survey provided prospective participants who were deployed or posted to a remote location the opportunity to participate in a study.

Population sampling

When conducting a study, sampling is a process undertaken to identify the proportion of the population to be examined. Where feasible, a study is strengthened by studying the entire population (Burns & Grove, 2001).

The use of on-line surveys

The use of an online survey was considered appropriate for this particular study as online surveys allow the researcher to gain information from as many people as possible with a minimum of cost and time (DePoy & Gitlin, 2005). Online surveys are also seen as an easy, cost efficient and time responsive method of gathering information from respondents (Van Selm & Jankowski, 2006). Given the number and locations of the participants, an online survey was seen as one way to attempt to reach the greatest number of participants.

Developing an online survey

When developing an online survey two aspects need to be taken into account, these being: the content of the survey and the subsequent delivery of the survey. In order to commence

the development of the content of the survey an examination of the available literature is required. This is undertaken in order to ensure that appropriate questions are posed to gain the most from the survey. After identifying the most appropriate way in which to gather data, development of the tool needs to be undertaken (Polgar & Thomas, 2008). Conceptualising the types of questions that need to be asked commences the process. In regard to the delivery of an online survey, this method allows for many potential participants to undertake the survey without the need to sit and write their responses by hand and alleviates the need to physically have to return the survey by mail or other mechanism. The online survey allows individuals to quickly respond to questions and be quickly directed to questions relevant to them. According to Polgar and Thomas (2008) utilising a survey to gain data provides a systematic way to gather data and does not allow the researcher to change the results presented to them.

Rigour and validity

Content experts should be consulted to assess the prospective survey and to provide feedback during the initial development phase and allows for a peer review of the survey (DePoy & Gitlin, 1998). Individuals who were potential participants should also be asked to pilot test the survey and provide information regarding their thoughts and comments about the survey. In particular, the language used in the questions should be analysed and reported on by these individuals undertaking the pilot testing. The feedback received should be used to further enhance the survey and to ensure that an appropriate survey is provided to the participants (DePoy & Gitlin, 1998). The pilot testing of the survey will also confirm timings for completion of the survey. This is important when informing potential participants of the time they need in which to complete the survey should they wish to take part in the study.

Analysis

The analysis needs to consider the study design and the research question. Typically surveys would use, in the main descriptive statistics (DePoy & Gitlin, 1998). Identification of commercially available tools (for example SPSS™) may assist with this process. Analysis must be conducted using a systematic examination of the data with a resultant logical presentation of the results of the data provided(DePoy & Gitlin, 1998).

Summary

The use of a cross sectional study methodology was found to be appropriate for this particular study using an online survey as its method. Information regarding the use of this methodology has been presented in this chapter. The following chapter provides information pertaining to the actual method employed to carry out this specific study.

Summary

Chapter Four

Methods

Introduction

In the preceding chapter, information was presented in relation to the use of the cross sectional survey methodology. This chapter is provided in order to supply specific details regarding the method employed to undertake this specific study. Topics to be addressed in this chapter include: the study title, aim of the study, and details regarding the development and subsequent use of an online survey. In addition, the inclusion criteria employed, required ethics approval, pilot testing of the survey, and the distribution of the survey is presented. Finally, details relating to the analysis of the gathered data and method of presentation of the results are made available.

Aim of the study

The aim of this study was to gather and collate current data relating to the education and professional development of trauma team members of the ADF. In addition, details regarding the current teamwork practices employed (for example: composition of these teams and the team members scope of practice while working in these teams) are examined. An online survey was developed to collect, collate and analyse data provided by the participants of the study.

In order to meet the research questions posed, the researcher gathered, collated and analysed data provided by participants who from the RAN and the RAAF Health Services Branch. Although the Australian Army has the greatest number of personnel, support for this study was not provided. Therefore, only personnel from the RAN and RAAF participated. This was disappointing for the researcher and it is believed that should personnel of the Australian Army Health Services have been permitted to participate, a greater appreciation of the training and teamwork practices employed within all three services would have been gained. General demographic details including information regarding the individual participants' military history was also collected. This was

undertaken in order to provide an introduction of the participants of this study to the reader. Aspects of the participants' education and professional development in regards to trauma/resuscitation were also obtained. In addition, details of personal preferences regarding teaching styles and methods used in the courses they attended were gained. Thoughts surrounding the delivery of this training were gathered from the participants.

Objective of the study

The objective of this study was to obtain current (as of 2011) 'one off' data from individuals of the ADF Health Services Branch who received training in regards to trauma/resuscitation skills and details regarding their work within a trauma/resuscitation team. The survey aimed to provide up to date information specific to the following areas:

> **1. Demographics of the participants.** The aim of this component of the survey was to gather information about the participants' length of military service and the service to which they belong. Information pertaining to the participants' discipline (comprising of MOs, NOs and Medics) and membership of the permanent forces or the reserve forces of the ADF was gathered.

> **2. Education and professional development of trauma/resuscitation team members**

> The education and professional development of members of trauma/resuscitation teams was examined. In particular, the training received prior to members joining a trauma/resuscitation team, and throughout their time as members of a trauma team was studied. Details regarding the specific courses that the participants successfully completed and their opinions in regards to the relevance and need of these courses to their trauma/resuscitation skills development and enhancement was collated and analysed. In addition, the survey provided participants with an opportunity to voice any concerns or recommendation(s) they had for future courses and course delivery.

3. Teamwork practices of the ADF trauma/resuscitation teams

The composition of the trauma/resuscitation team(s) in which the participants worked was examined. The scope of practice of participants who made up these teams was examined as too the position they held in the team(s) and the limits of their practice, as identified by the participants, was explored.

Population sampling

Identifying appropriate participants to take part in the study was undertaken after speaking to experts in the field and closely working with senior health officers of the RAN and RAAF. As a member of the ADF, the researcher had the added advantage of knowing 'the ADF system' and knowing how to access potential participants. Having knowledge of the military 'lingo' was an added benefit and assisted in the recruitment of participants. This was beneficial when developing the information sheet and email (Appendices 2-1 & 2-2). Although the ADF Health Services, currently known as the JHC, is made up of the three services of the ADF; the RAN, the ARA and the RAAF; due to a lack of support for Army personnel to take part in the study, the study involves solely participants from the RAN and the RAAF. The Senior Health Officer of the Australian Army HSB was unwilling to allow their personnel to take part in this study. Repeated attempts were made to gain support for the study, however, this did not result in support for Army personnel to participate. It is hoped that future research will be able to investigate training and team management practices of all three health services of the ADF.

Development of the survey

In order to develop the online survey two aspects were considered. Firstly, the proposed participant group was defined. This was an important process in order to determine the most appropriate way in which to deliver the content of the survey so that this would meet the needs of the individual groups (MOs, NOs and Medics) and elicit the greatest depth of knowledge and experiences from them. After determining this, the findings of the systemic review (Study One of this portfolio) were used to assist in the formulation of the survey. The systematic review identified studies which highlighted issues related to the education and professional development of civilian health professionals who received formal and informal training in preparation to deliver care to trauma/resuscitation patients. It also examined aspects of team management (teamwork practices) of civilian trauma teams. In

addition the experiences of the researchers assisted in refining components of the study to be included in the survey.

Content experts were also consulted in order to ensure that the most would be gained as a result of this survey. Content experts included other military healthcare professionals who had worked as members of ADF trauma/resuscitation teams. The use of knowledge gained from not only the systematic review, personal experiences of the researcher and content experts enhanced the content of the survey. The survey was comprised of closed questions used primarily in the demographic component of the study, courses completed and deployment demographic information. Open-ended questions were used to gain details of individuals' perceptions regarding the training they had received and some areas relating to teamwork practices while deployed. The survey was developed and subsequently peer reviewed (by content experts) and then pilot tested (by potential participants) to ensure validity prior to distribution. Details regarding the pilot testing of this survey prior to distribution are provided later in the chapter. Technical aspects involved in the preparation and distribution of the survey were also considered. The survey was developed and delivered to participants utilising a commercially available survey hosting website and data collection tool, SurveyMonkey™. The School of Nursing, at The University of Adelaide, holds the license for this survey tool. All details relating to the content development and technical aspects of development and delivery of the survey were provided to the Australian Defence Human Research Ethics Committee (ADHREC) prior to their approval to conduct the study.

Peer review and pilot testing of the survey

Prior to distribution of the URL link to the survey, a peer review process was undertaken. This allowed the researchers peers to closely examine the proposed questions and provide their thoughts about these. Following this, pilot testing of the survey in the format that prospective participants would undertake and see the survey was conducted. A total of five ADF health personnel, who could potentially take part in the study were asked to assess the proposed survey. In particular their comments and suggestions regarding: the ease of use of the survey; the appropriateness of the language used (this was primarily gained from the military reviewers) and questions asked; and the reviewers overall comments were gained. All comments and suggestions provided by these experts were incorporated into the survey prior to distribution. This peer reviewing and pilot testing of the survey ensured that an

appropriate survey was presented and therefore was seen as the most appropriate mechanism to obtain the greatest number of participants.

Ethics approval

In order to apply for ethics approval to conduct the study, the survey in its entirety needed to be completed and ready for submission to the ethics boards. Ethics approval to conduct the study was sought and subsequently gained from the Australian Defence Human Research Ethics Committee (Approval Reference ID 559/09). Information regarding approval to conduct this research was supplied to all participants in the event that a participant had any concerns about the survey and the aim of the study. An email providing details of the study (Appendices 2-1 & 2-2) was supplied to each participant prior to their undertaking of the survey.

To maintain participant confidentiality, all respondents' surveys were de-identified. Data is stored at the primary investigators office and secured in a locked filing cabinet. This information is only available to the primary investigators of this study. All data was entered into an electronic database and is password protected. Printed data will be also stored for seven years and then shredded at the end of this period. Electronic data is also to be stored for seven years following completion of the study and then deleted from the computer (storing this data) hard drive. All of these mechanisms are in compliance with the ethics application approval gained.

Inclusion criteria

Initially, it was envisaged that participants from all three health services of the ADF (RAN, Australian Army, and the RAAF) would participate in the study. However, as mentioned, the Army senior Health representative was unwilling to support the study. Therefore, only health personnel from the RAN (potentially 662 members) and the RAAF (potentially 674 members) were asked to participate in the study. A broad sampling approach was undertaken. The survey link (a URL link provided by SurveyMonkey™) to this online survey was emailed to all RAN and RAAF health services personnel, both permanent serving and reserve members. However, only those members who have had training and/or had deployed in a trauma team were asked to complete the survey (Appendix 2-4).

Distribution of survey

The survey was conducted online via the ADF intranet and was anticipated to take each participant approximately 20–30 minutes to complete. This timing was confirmed by those who had piloted tested the survey. At no time was direct contact made with a participant and an information email providing details of the survey, requirements of the participants and the aim of the survey was sent prior to the participant being able to access and complete the survey. Participants who completed the survey were deemed to have given their implied consent to take part in the study. In addition to this information, the researcher provided an option for individual participants to contact the research team directly should they wish to receive a copy of the report upon completion. This offer was made at the end of the survey.

As this survey was conducted utilising an online survey program (in this instance SurveyMonkey™), the assistance of the military sponsors (a requirement of the ADF's ethics approval) for this study and their Staff Officers was greatly appreciated as this survey was sent from their offices and made available to all RAN and RAAF permanent and reservist health personnel via the ADF intranet. Two weeks after the distribution of this survey a reminder email was sent to all prospective participants encouraging them to complete the survey. After another two weeks (now four weeks since the initial distribution of the survey was made) it was planned that access to the survey would be closed. This was changed as early participant numbers from the RAAF were low and it was discovered that there were delays with the distribution of the survey. The issue of confidentiality was addressed in the information email to the prospective participants prior to them undertaking the survey (Appendices 2-1 & 2-2). All survey results were de-identified and sequential numbering of the participants occurred.

Data collection

As previously mentioned, data from this survey was collected using the SurveyMonkey™ program. The data collected included demographic data, information regarding education and professional development in relation to working in trauma teams and finally details of the respondents deployment to trauma teams in the field (see appendix 2-3). The information/data was exported from SurveyMonkey™ to Microsoft Excel™ spreadsheets and Microsoft Word™ (open ended responses) developed by the researcher. Excel™

spreadsheets were used for cleaning and sorting before transfer of data into SPSS™ for analysis.

Data analysis and reporting results

Descriptive data analysis (Burns & Grove, 2001) was undertaken, with open ended responses provided by the respondents used as an additional way in which to illustrate the views of the respondents. SPSS™ was used to assist to analyse the descriptive data. Where appropriate, chi-square tests were conducted to assess differences between groups. Results are provided in text and illustrated with the use of diagrams, figures and tables.

Summary

The survey was conducted in order to gather current one off information regarding the education and professional development of the Australian Defence Forces' Royal Australian Navy and Royal Australian Air Force health personnel in regards to preparation to work in a trauma/resuscitation team. In addition to this data, information regarding individuals' experiences of working within one of these teams in particular, team practices will be examined.

Chapter Five

Results

Introduction

The purpose of this chapter is to present the findings of the survey. Statistical results are primarily presented in table and figure format with summaries of these findings in written text. In addition to these, personnel comments made by participants to support their claims are also provided. As Survey Monkey ensures confidentiality of the respondents only a reference number for a participants is provided. Reference of these quotes will occur as (Respondent No). The discussion of the results will be provided in Chapter Six.

Re-statement of the research questions

Two research questions were posed for this study. Question One relates to the education and professional development of respondents, with the question being:

> *What training have individuals received and is this perceived as adequate as preparation to work in a multi-disciplinary and tri-service trauma/resuscitation team?*

The second question relates to the subsequent deployment of these respondents after training, and seeks to answer one main and one sub question:

> *What is the nature of trauma/resuscitation teamwork practice currently being used during recent deployments and is this perceived as appropriate?*

In order to present the results of this study, the format of the chapter will follow the same order that the questions were asked of the participants in the survey. The first component of the survey asked for demographic details of the study respondents. The following component related to the education and professional development successfully completed by the participants. The final component of the survey asked questions pertaining to the teamwork practices used for the trauma teams that participants worked in during deployments.

Survey results

The link to the online survey was sent to participants via the Australian Defence Force Restricted intranet on 19 July 2010. Staff officers working for the Senior Health Services officers of the Royal Australian Navy (RAN) and Royal Australian Air Force (RAAF) carried this out. The survey was available to participants from Monday 20 July 2010 until Sunday 27 February 2011. This was longer than anticipated, but allowed for the initial distribution delay at the commencement of the survey. In addition, this length of availability of the survey to the participants provided an extended opportunity for those personnel who did not have regular access to the ADF intranet (for example those on deployment overseas, and members of the reserve forces who did not regularly access their military email account) to participate in the study. For all tables and diagrams in this chapter, the following legend (Figure 2.1) will be used.

Table legend

MO(s) = Medical Officer(s)

NO(s) = Nursing Officer

Medic(s) = Medical Assistant(s)

Service = Denotes if the respondent was a member of the Royal Australian Navy or the Royal Australian Air Force

Status = Denotes if the respondents was a member of the permanent or the reserve forces of the Australian Defence Force

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Figure 2.1 Legend to be used in chapter for tables and figures.

Study participants

Initially there were 128 respondents who provided demographic details. However, only 80 (62.5%) respondents proceeded to the section dealing with education and training completed. Of the 48 respondents not proceeding with the survey, 10 (7.8% of all initial respondents) stated that they had not completed any formal training, with the remaining 38 (29.7%) not proceeding even though they originally stated that they had completed formal training. Therefore the focus of this results chapter will be placed on the 80 respondents who had completed formal training. Table 2-2 provides a summary of the initial

respondents' details (n =128). This table identifies the total number of participants in each discipline with the numbers in brackets highlighting the percentage of each service and status of the respective disciplines.

Table 2-2 Descriptive details of study participants (n=128)

Discipline	Total	Service		Status		Yrs of Service		
		RAN	RAAF	Perm	Res	1-4.9	5-9.9	>10
MO	27	6	21	12	15	4	6	17
NO	43	35	8	27	16	11	7	25
Medics	58	49	9	55	3	8	13	37
Total	128	90	38	94	34	23	26	79

Length of service

The length of service of respondents was broken down into four timeframes. Of the 128 respondents, 23 (18.0%) respondents had been a member of the ADF for between 1-4.9 years, 26 (20.3%) respondents for between 5–9.9 years and the remaining 79 (61.7%) for longer than 10 years. No respondents had served for less than one year in the ADF.

Military branch of service

In regards to the military branch of service to which the respondents belonged, 90 (70.3%) were members of the RAN, and 38 (29.7%) from the RAAF. Of this group, 94 (73.4%) respondents were employed in the permanent forces and 34 (26.6%) members of the reserve forces.

Discipline of participants

The survey identified that 27 (21.1%) Medical Officers; 43 (33.6%) Nursing Officers and 58 (45.3%) Medics completed the first part of the survey. Of the 27 MOs, 21 (77.8%) were members of the reserve forces and the remaining six (22.2%) from the permanent forces. This differs from the other two disciplines (NOs and Medics) whose greater number were members of the permanent forces. Of the 43 NOs, 27 (62.8%) were members of the permanent forces and 16 (27.2%) reservists: and of the 58 Medics; 55 (94.8%) members were members of the permanent forces and the remaining three (5.2%) reservists.

Professional development training

Of the 128 respondents 118 (92.2%) stated that they had received formal trauma/resuscitation training. Ten (7.8%) respondents stated they had not received any formal training. This group comprised of: five NOs; and five Medics. Of this group of 10, two (20.0%) had served from between 1–4.9 years, two (20.0%) from between 5–9.9 years and the remaining six (60.0%) for longer than 10 years. Table 2-3 provides details of the 80 respondents who had successfully completed formal trauma/resuscitation training: a breakdown of the participants' disciplines, years of military service, and if they were members of the permanent or reserve forces.

Table 2-3 Details of respondents (n=80) who have completed questions regarding formal training.

Discipline	Total	Service		Status		Yrs of Service		
		RAN	RAAF	Perm	Res	1-4.9	5-9.9	>10
MOs	22	4	18	10	12	4	4	14
NOs	25	19	6	19	6	6	4	15
Medics	33	27	6	20	13	4	5	24
Total	80	50	30	49	31	14	13	53

Of the 80 respondents who completed the training component of the survey, 50 (62.5%) were from the RAN and the remaining 30 (37.5%) from the RAAF. Of this group, 49 (61.25%) belonged to the permanent forces, and 31 (38.75%) to the reserve forces. These 80 respondents comprised of 22 (27.5%) MOs; 25 (31.25%) NOs; and 33 (41.25%) Medics.

Training - Education and professional development

The training component of the survey was divided into information about formal courses completed and ongoing professional development undertaken following this training.

Trauma/resuscitation courses completed

Various courses available (within both the ADF and civilian sector) were identified during the survey development phase. These courses were known by the researcher to be training courses used by the ADF to prepare or to enhance current skills of individuals in preparation to work as members of trauma/resuscitation teams. In addition to these named

courses, participants were asked to provide details of any unnamed or 'other' courses they had successfully completed. Table 2-4 presents the data in regards to the formal training courses completed. Courses are in ascending order of the number of courses completed as some respondents completed the same course on more than one occasion. It should also be noted that this table contains only details of courses completed by two or more participants. Due to the small numbers in most courses it was not appropriate to test for differences using chi-square (Burns & Grove, 2001).

For the 80 respondents who had successfully completed formal training, 181 courses had been completed, this averaged to a mean of 2.3 courses per respondent. The EMST course was reported as the most commonly attended course with 36 course completions. The composition of disciplines completing this course comprised of 22 (61.1%) MOs, 11 (30.6%) NOs, and 3 (8.3%) Medics. Other commonly undertaken courses were the ATLS with 23 completions (seven MOs, six NOs and 10 Medics); the CMC with 20 completions (all Medics), FNC/MARC with 18 participants (15 NOs, and three Medics), and the TNCC with 12 completions (all were NOs). In addition to the initially named courses, respondents identified additional courses they had completed. All courses completed (and with the number of participants who have successfully completed these courses can also be found in Table 2-4. Note, only those courses that had two or more participants successfully completed are detailed. (Note, full title of courses can be found at the beginning of the portfolio).

Table 2-4 Course completions by survey respondents (n=80).

Course	No. of course completions	Course completions by discipline of respondents			Unidisciplinary or Multidisciplinary course		Single or tri-service/civilian course	
	n=80	MOs n=22	NOs n=25	Medics n=33	Uni*	Multi**	Single service	Tri-service & Civilians
EMST	36	22	11	3	MOs	-	-	Yes
ATLS	23	7	6	10	-	Yes[1]	-	Yes
CMC	20	-	-	20	MAs	-	Yes	-
FNC/MARC	18	-	15	3	NOs	-	-	Yes
PHTLS	12	4	2	6	-	Yes	-	Yes
TNCC	12	-	12	-	NOs	-	-	Yes
ATNM	9	-	9	-	NOs	-	-	Yes
CCISP	7	5	-	2	MOs	-	-	Yes
AMAC	6	-	-	6	MAs	-	Yes	-
RRTC	6	1	2	3	MAs	-	-	Yes
Sub Total	**149**	**38**	**57**	**53**	**8**	**2**	**2**	**8**
Mean courses completed for top 10 courses	**1.86**	**1.77**	**2.28**	**1.61**				
ATCC	4	-	1	3	MAs	-	-	Yes
BMAC	4	-	-	4	-	Yes	Yes	-
DSTC	4	3	1	-	MOs	-	-	Yes
EMSB	4	-	1	3	-	Yes	Yes	-
APLS	3	3	-	-	-	Yes	Yes	-
MIMMS	3	1	2	-	-	Yes	-	Yes
LSS	2	-	1	1	-	Yes	Yes	-
ALS	2	-	1	1	-	Yes	-	Yes
RNSH Trauma Workshop	2	-	1	1	-	Yes	Yes	-
Trauma rotation	2	2	-	-	-	Yes	-	Yes
MCAT	2	2	-	-	-	Yes	-	Yes
Total	**181**	**50**	**65**	**66**	**10**	**11**	**7**	**14**
Mean courses completed by ≥2 participants	**2.26**	**2.27**	**2.60**	**2.00**				

* Unidisciplinary course
** Multidisciplinary course

In addition to the courses that respondents successfully completed, they were also asked if they had undertaken these courses previously, that is, on more than one (1) occasion.

Table 2-5 provides a summary of the courses completions by these participants where they had completed courses more than once.

Table 2-5 Summary of course completions by respondents.

Discipline	Number of courses completed				Total
	1	**2**	**3**	**4 or > 4**	
MOs	4	6	8	4	**22**
NOs	3	7	8	7	**25**
Medics	14	13	2	4	**33**
Total	**21**	**26**	**18**	**15**	**80**

The above table shows that the mode for MOs and NOs course completions was three courses with eight MOs and eight NOs having completed this number of courses, and for Medics, one course completed. Given that the majority (66.25%) of the respondents who had successfully completed training had served for longer than 10 years, the number of course completions per respondent is to be expected. Even though the numbers were low, a statistical test was done. A Kruskal-Wallis test identified a significant difference between the disciplines. Of particular note, the course completions of the NOs and MOs were similar, however, course completions by medics was less than the other two disciplines. The Bonferroni correction identified a difference between the NOs and the medics, the difference being 0.05.

Table 2-6 Courses completed on more than one occasion by respondents.

	Discipline of participants			Total
Course	**MOs**	**NOs**	**Medics**	
EMST	16	1	-	**17**
ATLS	5	2	1	**8**
TNCC	-	7	-	**7**
CCISP	2	-	-	**2**
PHTLS	-	-	2	**2**
DSTC	1	-	-	**1**
ATNM	-	1	-	**1**
RRTC	1	-	-	**1**

Table 2-6 provides details of the courses in which respondents had completed the same course on more than one occasion. Data relating to the above courses (as detailed in Table 2-6), undertaken on more than one occasion by the some respondents, identified that the EMST course was the most common of these. The top three courses taken on more than one occasion were: EMST with 17 respondents (16 MOs and one NO): ATLS with eight respondents (five MOs, two NOs, and one medic); and TNCC with seven respondents, all of whom were NOs.

Discipline specific training courses

Of the 21 courses reported on in the survey, 10 (47.6%) were identified by the respondents, as being offered to single discipline (unidisciplinary) participants (Table 2-4). The remaining 11 (52.3%) courses being reported as being offered to a multidisciplinary student cohort. However, when considering the ten most commonly completed courses, only two were multidisciplinary and eight (80%) were unidisciplinary. Table 2-4 presents both courses offered to unidisciplinary and multidisciplinary participants. Although the respondents identified some courses as unidisciplinary, some of these courses are offered to other disciplines in the capacity of an observer. In addition to details regarding participation of courses, some respondents provided comments about these courses. In particular, participants made comments regarding the option of only being able to attend as observer and making these more inclusive.

> Be inclusive of all people. Nurses have a lot to offer also. (Respondent No. 7)

> Target the team environment, not solely Medical Officers. (Respondent No. 122)

In addition to the comments above by the study participants, one respondent suggested the following in regards to the EMST course.

> EMST needs to move away from the idea of a single doctor assessing and managing the patient as the norm. That is rarely how it is done now. Also many aspects of EMST are out of date and at odds with contemporary trauma management. (Respondent No. 115)

Currency of training

Information obtained from participants regarding the training they had undertaken also addressed the issue of the timing in which these courses had been successfully completed. Details of courses undertaken during the period prior to 2000–2010 (Table 2-7) provide details of years in which courses were completed and the number of respondents who had finished the particular course. The final column gives the totals of course completions for the 5-year period 2006-2010 expressed as percentages of overall course completions.

For the period 2006–2010, 44 participants provided details of the training they had completed and currency of training. This resulted in a total of 170 courses being completed by these 44 respondents. Of this 44, 21 (47.7%) respondents had completed only one course; with the other 23 respondents having completed more than two courses. In order to assess currency of training analysis of results during the period 2009–2010 provides current details of course completions by the respondents. From 2009–2010, 34 respondents stated that they had completed training. Of these 34, 21 (61.8%) had completed a total of one course, with the remaining 13 (38.2%) stating that they had completed two or more courses during this timeframe. Further examination of these results also highlighted that some respondents had completed up to eight courses. This is relevant given that respondents are required to maintain their currency and undertake courses at regular intervals. It also highlights that EMST remains the most commonly completed course.

Table 2-7 Courses completions from 2000–2010.

Course	2000-2010	2010	2009	2008	2007	2006	Total completions 2006–2010 (% of total course completions)
EMST	36	5	6	1	4	-	**16 (44.4)**
ATLS	23	3	4	2	2	1	**12 (52.2)**
CMC	20	1	3	1	-	-	**5 (25.0)**
FNC/MARC	18	3	2	5	1	-	**11 (61.1)**
TNCC	12	2	6	-	1	1	**10 (83.3)**
PHTLS	12	1	2	1	1	1	**6 (50.0)**
ATNM	9	-	-	-	-	-	**-**
CCISP	7	-	2	-	-	1	**3 (42.9)**
AMAC	6	1	-	-	1	1	**3 (50.0)**
RRTC	6	1	2	-	-	-	**3 (50.0)**
ATCC	4	-	1	-	-	1	**2 (50.0)**
BMAC	4	1	1	-	-	-	**2 (50.0)**
DSTC	4	-	1	2	-	1	**4 (100.0)**
MIMMS	3	-	-	1	1	-	**2 (66.6)**
EMSB	4	-	1	-	-	-	**1 (25.0)**
MCAT	2	-	-	1	-	-	**1 (50.0)**
Total	170	18	31	14	11	7	**81 (47.6)**

Training to work in a tri-service team

Tri-service training was reported to occur in 14 (66.6%) courses. The survey did not specifically ask for details of courses completed and if they were conducted specifically for the individual service of the respondent completing the course. The survey only requested details of courses and if they were offered to single service or tri-service/civilian participants. The course may have been designed for tri-service personnel, but that specific course running may have only contained single service personnel in it. Given this, of the 21 courses reported, only seven (33.3%) were identified by the respondents as being offered and available solely to single service personnel. These courses were: AMAC, APLS, BMAC, CMC, Early Management of Severe Burns (EMSB), Life Support Skills

(LSS), Royal North Shore Hospital Trauma Workshop, and the Underwater Medicine Course. When considering the top ten courses with most completions, tri-services courses comprised 80% of completions.

Teaching methods used

All courses, apart from the PHTLS course, were reported to be conducted utilising a mixed teaching method comprising of didactic, skills stations, and simulation. Of the 80 respondents, 69 (86.25%) provided details of their level of satisfaction with this style of teaching. This resulted in 55 (79.9%) stating that they were satisfied, 11 (15.9%) somewhat satisfied, two (2.9%) neutral and the remaining one (1.5%) stating that they were dissatisfied. These figures provide the results for the combined courses. Table 2-8 summarises the information provided by participants in regard to the type of teaching method utilised and their level of satisfaction with this teaching style. Not all 21 courses originally identified by respondents are included in this table, as many of respondents did not provide responses to all of the questions in the survey.

Table 2-8 Level of satisfaction teaching styles used per course.

Name of course	Level of satisfaction				Total
	Satisfied	Somewhat satisfied	Somewhat dissatisfied	Dissatisfied	
EMST	31	1	-	-	32
ATLS	16	4	-	-	20
CMC	12	7	-	-	19
FNC/MARC	12	4	-	-	16
TNCC	11	1	-	-	12
ATCC	5	1	-	-	6
ATNM	5	1	-	-	6
CCISP	5	-	-	-	5
AMAC	3	-	-	1	4
DSTC	3	1	-	-	4
EMSB	2	1	-	-	3
RRTC	3	-	-	-	3
BMAC	2	-	-	-	2
MIMMS	2	-	-	-	2
APLS	1	-	-	-	1
LSS	1	-	-	-	1

Suggestions provided by respondents for improvement in regard to course content included: establishment of a multidisciplinary and tri-service approach for more of the training courses. With respect to the delivery of the course: increased use of simulation, an increase in the number of multidisciplinary courses, use of tri-service educators/lecturers and the use of appropriately trained and experienced instructors. Suggestions by participants to enhance current teaching methods include:

> Higher fidelity simulation and skills stations. (Respondent No. 18)

> Inclusion of practical scenarios/simulation to augment theory. (Respondent No. 112)

Clinical attachment(s) completed during training courses

Of the 80 respondents who had completed formal training, 27 (33.75%) participants provided details of courses they had attended and of which had a clinical attachment component attached to the course. Of this 27, 23 (85.2%) were Medics from the RAN permanent forces. The remaining four (14.8%) respondents comprised of two MOs, and two NOs. Table 2-9 provides details of the courses reported as providing a clinical attachment during the course. Note some respondents included details of more than one course. Only courses with two or more respondents providing details of a clinical attachment are reported in this table.

Table 2-9 Clinical attachment(s) provided during courses.

Course	Total
CMC	18
AMAC	4
BMAC	3
ATLS	2
ATCC	2

Ongoing professional development

Many health organisations/facilities provide ongoing professional development in order to continually prepare their staff to work in specialised areas. The ADF Health Services

Branch is similar with many health facilities conducting ongoing professional development. Table 2-10 provides details of this training.

Table 2-10 Ongoing professional development

Discipline	Total	Frequency of training (months)				Mandatory training	
		Every 3 months	3–6 months	6–12 months	>12 months	Yes	No
MOs	9	6	-	3	-	5	4
NOs	11	3	1	4	3	7	4
Medics	12	5	-	5	2	10	2
Total	32	14	1	12	5	22	10

Of the 80 respondents, 32 (40.0%) provided details of ongoing professional development they had completed. The remaining 48 respondents stated that they had not undergone any ongoing professional development and did not proceed to answer any further questions relating to this topic. The group who provided details of ongoing professional development they had undertaken comprised of 17 (53.1%) from the RAN and 15 (46.9%) from the RAAF. This number was comprised of nine MOs, 11 NOs and 12 Medics. Ongoing professional development was most commonly undertaken every three months, with 14 (43.8%) respondents having completed it during this timeframe. Ongoing professional development every six to 12 months was reported by 12 (37.5%) respondents. One (3.1%) respondent reported ongoing professional development every three to six months, with the remaining five (15.6%) respondents having this training at duration of greater than 12 months. Of the 32 respondents who reported on their ongoing professional development, 22 (68.8%) stated that the training was mandatory, and the remaining 10 (31.2%) stated that they were not required to complete this training. These respondents were also asked for their level of satisfaction regarding their clinical skills and teamwork practices following this training. Figure 2.2 summarises these results.
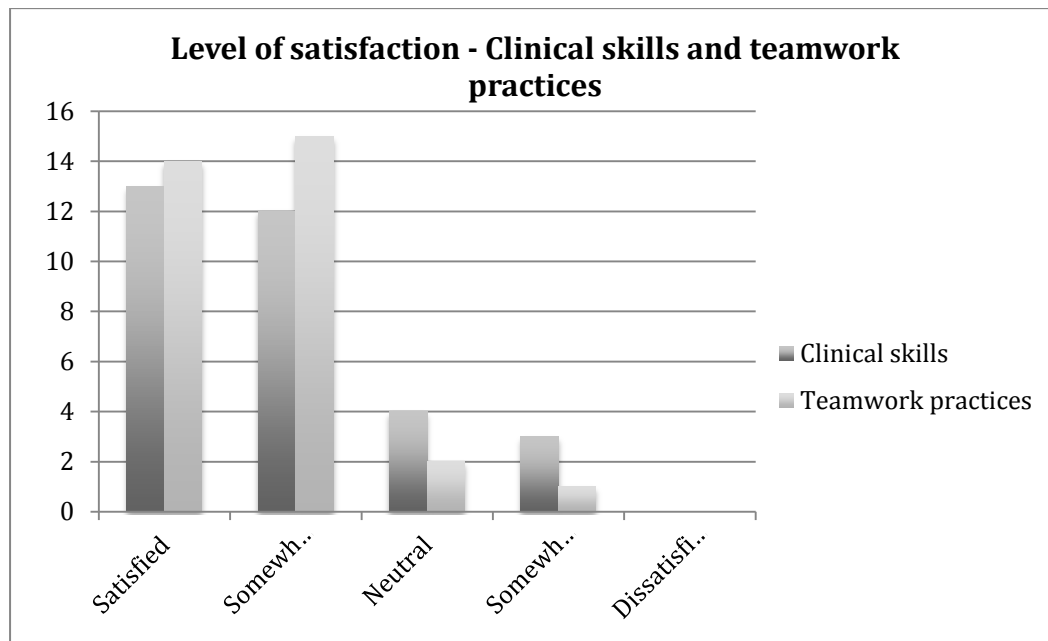
Figure 2.2 Participant's level of satisfaction with ongoing professional development and subsequent enhancement of clinical skills and teamwork practices.

Of the 32 responses made, 25 (78%) respondents stated that they were satisfied or somewhat satisfied with the training they had received in relation to clinical skills development. Of the 32 responses made, 29 (91%) respondents stated that they were satisfied or somewhat satisfied with the training they had received in relation to teamwork practices. No respondent stated that they were dissatisfied their level of improvement with either clinical skills or teamwork practices. Remarks made by participants regarding ongoing professional development included comments relating to a lack of opportunity to gain experience in a civilian setting and that they found the training repetitive.

> Not being able to access civilian facilities to maintain trauma skills due to MOU not established. (Respondent No. 55)

> The repetitive nature of the training. (Respondent No. 7)

Deployment history and teamwork practices

Of the 80 participants who provided details of their trauma/resuscitation training, 38 (47.5%) participants stated that they had proceeded to work as a member of a military trauma/resuscitation team. The remaining 42 (52.5%) participants stated that they had not deployed as a member of a trauma team and did not offer any further details of deployment history and experiences. Table 2-11 provides a summary of these participants who had subsequently been deployed as a member of a trauma/resuscitation team.

Table 2-11 Details of participants who have successfully completed trauma/resuscitation training and subsequently deployed as a member of a military trauma/resuscitation team.

Discipline	Total	Service		Status		Yrs of Service		
		RAN	RAAF	Perm	Res	1-4.9	5-9.9	>10
MOs	10	1	9	3	7	-	1	9
NOs	14	9	5	10	4	1	2	11
Medics	14	9	5	13	1	-	2	12
Total	38	19	19	26	12	1	5	32

Deployment history

When examining the seniority (in length of service) of personnel deployed and working in trauma/resuscitation teams, it was identified that of the 38 respondents, 19 (50.0%) were members of the RAN and 19 (50.0%) from the RAAF. Table 2-11 provides details of the length of service of these deployed members. Of this group of 38, 26 (68.4%) belonged to the permanent forces, with the remaining 12 (31.6%) to the reserves. They comprised of 10 (26.4%) MOs, 14 (36.8%) NOs and 14 (36.8%) Medics. Of the 38 respondents, 32 (84.2%) had been a member of the ADF for longer than 10 years, five (13.2%) for between five to 9.9 years, and one (2.6%) member for between one to 4.9 years.

These respondents were also asked for details of their deployments, to a maximum of four deployments and Table 2-12 provides a summary of the details. Note two respondents provided no further details of their deployments. For the 36 respondents who deployed

between 1996-2010, details of 78 deployments was provided. This resulted in a mean average of 2.22 (SD 1.2) deployments per participant. The data also identifies that the mode for length of deployment was one to six months. Although only 36 participants provided details for this component of the survey, many had been involved in more than one deployment.

Of the 78 deployed completed during the period 1996-2010, 22 (28.2%) had deployed for less than one month: 53 (67.9%) for between one to six months and three (3.9%) for longer than six months. Of the three who had deployed for a period of longer than six months, these deployments occurred in 2000, 2001 and 2006. They comprised two NOs and one MO. Both NOs were from the RAN, one a permanent member who deployed in 2000, and the other, a reserve officer who deployed in 2001. The MO was a RAAF reserve officer. All three stated that they had been members of the ADF for more than 10 years.

Table 2-12 Deployment details of respondents.

Year of deployments	Service composition of deployment(s)						Length of deployment		
	RAN	RAAF	Tri-service	RAN/RAAF	Army/RAN	Army/RAAF	<1 month	1–6 months	>6 months
1996–2000	2	3	5	-	1	1	4	7	1
2001–2005	8	8	14	1	4	3	9	28	1
2006–2010	4	11	6	4	1	2	9	18	1
Sub Total	14	22	25	5	6	6	22	53	3
Total	36		42				78		

Variations in Service compositions deployments

During the period 1996–2010 single service (either RAN or RAAF) deployments occurred in 36 (46.2%) out of a total of 78 deployments (Table 2-12). Tri-service deployments occurred in 25 (32.1%) of reported deployments, with the remaining 17 (21.8%) deployments comprised of mixed service compositions (RAN/RAAF, Army/RAN or Army/RAAF). Mixed service teams occurred in 42 (53.8%) of the mentioned deployments. This shows a relatively similar deployment history of single service to mixed service teams deployed.

Teamwork practices

For the purpose of this survey, the term 'teamwork practices' refers to issues such as; the size and composition of teams, the use of a horizontal team approach, team versus an ad-hoc team, and leadership. Table 2-13 provides details of teamwork practices of those respondents who had deployed as a member of a military trauma/resuscitation team during the period 1996-2010.

Table 2-13 Teamwork practices.

Deployment period	Dedicated role in team				Horizontal organisational approach employed		Appropriate team size perceived by participants		
	All of the time	Most of the time	Some of the time	Never, ad-hoc arrangement of tasks and /or roles (Roles allocated prior to the patient arriving for treatment)	Yes	No	Yes	No	Unsure
1996–2000	5	6	1	-	11	1	10	1	1
2001–2005	16	15	3	4	36	1	29	8	1
2006–2010	21	4	2	1	29	-	26	1	1
Total	**42**	**25**	**6**	**5**	**76**	**2**	**65**	**10**	**3**

The results indicate that in 86% of cases, team members were given a role in the team prior to delivering care to a patient all or most of the time. In regards to the use of a horizontal approach respondents indicated its use in 97% of deployments. Finally, when asked if the team in which they worked had the appropriate sizing, the majority (83%) stated that they believed this did occur. Table 2-13 provides a summary of these results.

Size and composition of teams

Details of the size of the teams that participants have worked in were provided. Of the 78 deployments undertaken by these 38 participants, 51 (65.4%) deployments were comprised of teams with four to five team members. Table 2-14 presents a summary of these findings.

Table 2-14 Changes to team sizes during the period 1996-2010.

Years of deployment	Number of members in team		
	2–3 members	4–5 members	>5 members
1996–2000	3	3	4
2001–2005	11	27	3
2006–2010	5	21	1
Total	**19**	**51**	**8**

Participants were also asked for their thoughts regarding the size of the teams in which they had worked. The following comments are provided.

> A small team is easy to manage, reduced confusion as to who is doing what jobs, and what is done for the patient. Reduced clutter/crowding around the patient, leaving room to move and do what is necessary. Also allows for calling for extra personnel temporarily should extra help be needed, but knowing the help will withdraw when no longer required, reducing clutter/crowding and confusion regarding the patient's management. (Respondent No. 91)

> Anymore than five becomes unmanageable and in a military environment, there is often no room to handle more people. (Respondent No. 42)

> Three people is not enough initially. More than 5 and everyone trips over each other roles get overlooked. (Respondent No. 20)

Participants were also asked to provide details of the composition of the teams in which they worked. Table 2-15 presents the findings as made available by the participants. Mapping of these results indicates the most common (21%) team composition comprised of one MO, one NO and three Medics, this was closely (17%) followed by teams comprising of one MO, two NOs and two Medics.

Table 2-15 Team compositions 1996-2010

MOs	NOs	Medics	No. of respondents reporting this
1	1	3	16
1	2	2	13
1	1	1	8
1	0	3	4
2	2	1	4
2	2	2	4
1	0	2	3
1	2	1	3
1	0	>3	2
1	1	2	2
1	2	>3	2
2	1	2	2
3	>3	>3	2
>3	>3	>3	2
1	2	3	1
1	3	1	1
2	1	0	1
2	1	1	1
2	2	3	1
2	3	>3	1
3	1	1	1
3	3	>3	1
>3	3	2	1
-	-	2	1
-	-	3	1

The role of the leader

As with all teams, the role of the leader is a key position. Participants were asked for details in regard to the person who held this position in their particular team. The following table (Table 2-16) provides data relating to the role of the team leader in teams.

Table 2-16 Most common team leader.

Year of deployments	Discipline of team leader		
	Medical Officers	**Nursing Officers**	**Medics**
1995 & prior to 1995	1	1	-
1996–2000	12	1	-
2001–2005	36	2	4
2006–2010	27	2	3
Total	**76**	**6**	**7**

Of all responses provided by the participants, the Medical Officer (85%) was identified as the individual who held the role of team leader. Respondents were then asked who they believed was the most appropriate member to lead a team. Table 2-17 presents the responses provided by the respondents to this question.

Table 2-17 Respondents' thoughts on most appropriate team leader.

Most appropriate team leader	Discipline of respondent			Total
	MO	**NO**	**Medic**	
MO	7	7	4	**18**
NO	-	1	1	**2**
Medic	-	-	-	**-**
Team member with most trauma/resus experience	2	6	8	**16**

Results indicate that 50.0% of the respondents stated that they believed that the most appropriate member to lead the team was an MO, with 44.0% believing that the most appropriate team leader would be the member of the team with the most trauma/resuscitation experience. No participants stated that they felt that a Medic was appropriate for this role. Respondents were asked to provide comments about their feeling regarding leadership. The following are some of the comments made:

> The medical officer is the person with the most significant professional background. However, during my first deployment the medical officer available was providing support to multiple teams, and therefore the Clinical Manager [CM], was left to manage with minimal supervision from the medical officer as the incident progressed. The level of care delivered was not

compromised and the patient was well managed in the end. The medical officer accounted for the CM's approach and confidence to work with the medical officer. (Respondent No. 91)

As a specialist trauma surgeon, I am usually supporting the junior doctor in their role in the resuscitation. Care of the patient, deciding the order of the investigations or need for surgery and timing is a medical decision. (Respondent No. 71)

The comments made above support the two participants' feelings that the MO makes the most appropriate leader. However, the following comments support those who believe that the person with the most trauma experience and training is the most appropriate.

Rank must not be a factor – must be the most experience clinician. (Respondent No. 68)

Best mix of training and skills. (Respondent No. 67)

Most skilled for the role. (Respondent No. 92)

Summary

The results of this survey have provided details of current training and subsequent deployment details of the studies participants. The survey not only collated statistical data from the participants, but in addition, personal thoughts and comments regarding the training and teamwork practices of teams that the individuals have been involved in have been provided. The following chapter will provide discussion of these results with recommendations for future practice made, if appropriate or required.

Chapter Six

Discussion

Introduction

The aim of this study was to gain an appreciation of the trauma/resuscitation training completed by members of the ADF Health Services Branch in order to prepare them to work as members of military trauma/resuscitation teams. In addition, details pertaining to the subsequent deployment of these individuals and the teamwork practices employed during these deployments was gathered and examined. Using a cross sectional survey design (online survey), responses provided an overview of the training and subsequent use of the knowledge and clinical skills in military field settings.

It is often through the examination of comments and suggestions made by course participants, that enhancements and/or advancements to a course's curriculum are considered and made (Dobbie, et al., 2004). Although it is rare that all training courses will meet the needs of all course participants, identifying methods to enhance current training courses is advantageous. Not only is it important that concerns and suggestions be raised, it is also useful to confirm what components of these courses are seen as appropriate. Teamwork practices employed need to be studied in order to determine if they are appropriate for the team and the patients for whom they provide care. The knowledge of teamwork practices and clinical skills gained as a result of training must be appropriately put into action in order for the successful running of the team and successful outcome. It is through this examination of training and teamwork practices that suitable training programs are enhanced and then clinically appropriate practices are put in place for the benefit of the patient being cared for.

The purpose of this chapter is to provide discussion relating to the results obtained from the online survey. Firstly, discussion of the results of the study is made. Following this, details regarding the limitations encountered in the study are presented. One of the major limitations was the non-participation of Army personnel. In addition to this, limitations related to the distribution of the on-line survey are offered. This information is provided to

assist future researchers who may consider using this type of data collection tool. In particular, the information and lessons learned from this study may assist with the success of their cross sectional studies. Next, recommendations as a result of the survey for future training and teamwork practices are made. Finally the concepts for the final study in this portfolio are provided.

The study participants

Although only relatively a small number (n=128) of respondents completed the survey, this was a rich source of information. As previously mentioned in Chapter Two, as of 2011, there were 2975 health personnel, which comprised of MOs, NOs and Medics from all three (RAN, Australian Army and the RAAF) services. In regard to the RAN and RAAF who were the contributors to this study, the number of potential participants numbered 1336, however, not all would have met the inclusion criteria. Only participants who had completed trauma/resuscitation training and subsequently deployed as a member of a trauma team in conflict or humanitarian crisis situation were asked to take part in the study. If all health professionals in the two services had met the criteria, then the response rate would have been 9.58% however, the actual rate would be somewhat higher.

Many of the respondents provided informative comments and suggestions in regard to their experiences during this training and during their deployment(s). Of the 128 respondents who had completed part one of the survey, the general information component of the survey, 80 (62.5%) had provided details of the formal trauma/resuscitation training they had completed. Participation in the study was greatest from the RAN with 90 (70.3%) of respondents being members of this service. The remaining 38 (29.7%) participants belong to the RAAF. In regard to the length of service, those who had served for longer than 10 years were the highest with 79 (61.7%). No participant in the survey had been a member of the ADF for less than one year. This may be due to the fact that the majority of the first year of service is usually focused on training personnel to work as a member of the ADF and the Health Services Branch, and not particularly focused on specialist health training. Therefore, the majority (61.7%) of the participants in this study are experienced members of the RAN and RAAF Health Services Branch. It should also be noted that although some participants completing the survey may appear to be relatively junior in years of military service, it may not necessarily relate to the years of their clinical experience. In addition, it

should also be acknowledged that the study did not identify when the participants were first deployed and at what stage in their clinical careers that this occurred.

With respect to the employment status of the respondents (being permanent or reserve forces members), 94 (73.4%) were permanent members of the ADF with the remaining 34 (26.6%) belonging to the reserve forces. Although this result indicates the majority of participants were permanent members of the ADF, this differed considerably between disciplines and services. This may be due to the survey only being available via the ADF intranet. This facility is not available for many members of the reserve forces unless they are physically present at a military base. As reservists do not routinely work at military bases, they will have reduced the number of reserve members from participating in the survey.

The survey also highlighted that more medics had completed the survey - 27 MOs (21.1%), 43 (33.6%) NOs and 58 (45.3%) Medics. This result was not unexpected given that Medics are the largest group within the RAN and RAAF Health Services Branch. It is therefore reasonable to expect that almost half (45.3%) of the respondents were Medics. The final part of this first section of the survey, asked participants if they had received formal trauma/resuscitation training.

The second component of the survey was conducted in order to elicit information regarding successfully completed training. Respondents were asked to provide details of courses they had successfully completed. The results highlighted that 118 (92.2%) of the 128 respondents stated that they had received and had successfully completed formal trauma/resuscitation training, with the remaining 10 (7.8%) stating that they had not received any formal training. Of this 10, eight (80.0%) stated that they had been a member of the ADF for longer than five years. This may be due to the fact that these respondents were not required to undertake this specific training for their individual career progression, however the possibility that some ADF health professionals could be deployed in trauma teams without formal training is a concern and should be further investigated.

Education and professional development

Trauma training completed

The purpose of this section of the survey was to establish a detailed understanding of the training undertaken by the respondents. In particular, the courses that individuals had completed, when they had completed them and any comments and suggestion they had to improving these courses. Not only was information gained in regard to the pre-described courses made available in the survey, in addition, a wealth of information and data was obtained when asking about additional courses that respondents had completed. Some of the courses were undertaken by reserve members, in what may have been part of their civilian employment.

Following completion of this component of the survey, 181 course completions had been reported involving 21 different courses. A question could be raised as to the need for such a variety of courses. However, the study found that 80% of the course completions occurred in the reported top 10 courses. In addition to the training courses mentioned in the initial survey, the participants of the survey also highlighted numerous additional courses that RAN and RAAF personnel have undertaken. As previously mentioned, some of these courses were undertaken by reserve personnel and may have been a requirement of their civilian employment. However, these courses would be potentially advantageous to their roles as reserve personnel and the knowledge and skills they obtained as a result of these courses would benefit the military trauma teams in which they were working. When comparing the results of this survey to those of the systematic review (Baird, Kernohan & Coates, 2004; Tippett, 2004), similar courses were found to have been undertaken by both the ADF respondents and those involved in the civilian sector. This is not surprising given that many of the courses completed by the ADF participants are civilian run courses.

The survey also attempted to elicit details and comments regarding the use of a clinical attachment during the courses. The results indicate that the majority of clinical attachments associated with these training courses occurred in courses specifically conducted for the Medics. Many of the courses for the medics are relatively long in duration (with the CMC running for approximately nine months), whereas courses run for the other two disciplines range in length from one-day workshops to three-month trauma rotations and postgraduate degree courses. This indicates that the use of clinical placement during courses is still

focused primarily on the training provided to Medics. Further investigation of this would be useful (Pender & de Looy, 2004).

Participants were also asked for the type of teaching style used in the courses they had attended and their feelings regarding this type of teaching. Most courses were reported to have used a mixed teaching approach. This elicited a high level of satisfaction by the respondents to this method of instruction.

Currency of training

The survey identified a total of 170 course completions that occurred in the 2000-2010 period (courses completed by more than one respondent). It also highlighted that of these 170 completions, 81 (47.6%) completions occurred during the period of 2006–2010, that is in the last five. When further analysing this specific data, during the period 2009–2010, a total of 49 course completions were reported. This equates to 28.8% of the overall reported course completions occurred during the last two years of reporting (2009–2010).Therefore, the respondents involved in the study were relatively current in their training. The only training course, which was not reported as being undertaken during 2006-2010, was the ATNM course. This would be due to changes to the FNC/MARC made to encompass some of the content of the ATNM course and the ADF no longer felt the need to send NOs on this course.

Training to work in a multidisciplinary and tri-service environment

The ADF continues to experience a relatively high operational tempo, and as such is required to continually deploy trauma teams to provide trauma care in the field. As a result tri-service trauma teams are needed to work in all areas of operation. It is essential that ADF health personnel be appropriately prepared to work outside their respective service and work in a tri-service environment. Training and teamwork practices need to be appropriate to all environments in order for these teams to work effectively.

Although multidisciplinary health personnel usually make up military trauma teams, 11 of the training courses were completed by single discipline participants. When examining the overall results for this component of the study, it was found to be an almost an even split between unidisciplinary and multidisciplinary courses. However, when considering the top

10 courses completed, 80% of these courses were only offered to unidisciplinary participants. This suggests that there is still an issue relating to the courses being undertaken and the need to prepare individuals to work in a multidisciplinary team. However, the EMST course, although a single discipline course is open to observer (usually nursing) participants. Comments made by participants about the appropriateness of this included: the increase or introduction of more multidisciplinary and tri-service courses, and the acknowledgement of participation and completion of courses. When comparing these results with those found in the systematic review conducted by (Baird, et al., 2004) the concerns surrounding the attendance of nursing personnel in the ATLS courses as an observer was highlighted. ADF NO personnel participating in the cross sectional study also identified this as one of their concerns.

Not only are the ADF often required to deploy multidisciplinary trauma/resuscitation teams, there is also, at times, a need to deploy teams from multiple services and in particular tri-service teams to meet operational needs. This survey aimed to identify courses which were offered to tri-service personnel. This was seen as vital to the outcome of the study as the study identified that the majority of teams deployed were of a tri-service composition. Although this study only examined responses made by the RAN and RAAF health personnel, respondents were asked if the courses they had completed were open to tri-service participants. Of the 21 courses identified, nine courses were identified by the respondents as being open to tri-service participants. This proportion of tri-service courses jumps to 80% when considering the top ten courses by completions. This result should be taken with caution as the responses related specifically to the course intake to which they were exposed. Participation of all of these courses may change with due to the availability of personnel when panelling for courses occurs.

Perceived levels of improvements to clinical and teamwork skills

Respondents were asked for their thoughts regarding the perceived improvement of their clinical and teamwork practice skills following completion of the course(s). In order to gain this information, a Likert scale was used. The respondents reported scoring of (with one being no improvement, and 10, significant improvement) between 6.25 for the CCISP course to 9.58 for the CMC. Overall, the majority of respondents felt that following completion of their training their level of clinical and teamwork skills development had

improved. However, much of the skills development related to clinical skills rather than to teamwork skills. Both clinical and teamwork skills development is essential to providing quality trauma care to patients. Further specific research into the advancements in teamwork practices could be explored.

Participants' thoughts and suggestions for future training

Overall the study highlighted that the training provided to the respondents was satisfactory to their needs. The use of a mixed method of course delivery elicited a high level of satisfaction from the participants. The survey provided an opportunity for respondents to voice their opinions regarding the training they had received. In particular, the respondents provided the following suggestions for future training. In regard to course content, respondents stated that they felt that training would be enhanced using a multidisciplinary approach. This is evidenced in statements made by some respondents.

Therefore, the assumption that can be made from these comments is that courses that are focused more specifically on team processes need to be available to all disciplines who work in trauma/resuscitation teams. This is particularly relevant given that the majority of trauma teams are comprised of multidisciplinary team members. In addition to this, it was stated that many of the courses should be open and attended by members of all three services. Given that many of the deployments are tri-service in nature, adequate and appropriate preparation to work in tri-service teams is necessary.

In regard to the delivery of course content, major areas identified of concern and which if addressed would enhance current training include: the continued use of simulation, a focus on multidisciplinary and tri-service course delivery of course material and the use of appropriately trained and experienced instructors. Respondents stated that they felt that the increased use of simulation to assist in clinical and teamwork skills development would be beneficial. Comments were made by participants regarding the use of high fidelity simulation and skills stations to enhance their training. They felt that the use of such teaching technologies would support theory they received during the course(s).

The systematic review (study one) identified studies, which dealt with teaching methods used. In particular, the use of simulation (Shapiro, et al., 2004) was examined. The Shapiro et al. (2004) study found that although the use of simulation was felt to be beneficial there

were no discernible differences in skills development between the control and experimental groups. The authors of this study did however feel that the use of simulation (when used in conjunction with other teaching tools) was useful.

Overall the respondents who had completed trauma/resuscitation training were satisfied with both the content of the course(s) and the method of instruction/delivery. Some respondents made minor complaints, but upon closer examination of these comments, it was believed that these comments related to a specific course intakes on which they reported and not specifically to the course as a whole. However, the particular comments made by the respondents should be considered and attempts to address these concerns and suggestions made for future courses.

Ongoing professional development

The use of ongoing professional development was seen by those who had been involved in it as a method to further prepare them to work as members of trauma/resuscitation teams. Of the 80 respondents who had successfully completed formal training, only 32 (40.0%) provided details of the ongoing professional development training that they had completed. This training was undertaken by 14 (43.75%) of RAN permanent members, three (9.4%) RAN reserve members: and five (15.6%) RAAF permanent members, and 10 (31.25%) RAAF reserve personnel. When analysing the results of this component of the survey, it was found that of the 32 respondents who provided details of this ongoing training, approximately 85% of these respondents undergo ongoing professional development training at least annually. The training that was reported highlighted that the majority of it was mandatory for these participants. These results show that of these participants who had completed formal training, ongoing professional development to enhance trauma clinical and teamwork practice skills is occurring for less than half of these individuals. This highlights the need to increase ongoing professional development training of all RAN and RAAF health personnel who have successfully completed formal trauma/resuscitation training. Those respondents who had completed ongoing professional development in preparation to deploy as members of trauma teams were also asked for their comments about what they found beneficial from this training. Major areas that participants found beneficial included:

- The use of scenarios during the training

- Team building exercises

- Clinical attachment(s) to civilian health facilities

- Train and practice to work as part of a military resuscitation team.

Least beneficial aspects of the training were stated as the lack of opportunity to develop clinical and teamwork skills in a civilian setting and the repetitive nature of the training they were receiving. The continuing development of MOUs to more health facilities that are civilian may assist in increased opportunities for individuals to gain clinical experience outside the military setting. It should also be noted that many of the participants may be unaware of competing issues and the reasons behind them not being able to attend a civilian setting to gain this experience (Barnett, et al., 2008).

In conclusion, these results indicate that the ongoing professional development training undertaken is perceived as overall satisfactory, although the amount of training conducted could be increased in order to ensure that all members of the RAN and RAAF health services who are trained to work as members of a trauma team are constantly being prepared to work as members of these teams.

Putting theory into practice

Following on from the training completed by the respondents, details pertaining to the deployments of these individuals were examined. This was undertaken in order to identify those who had completed formal and ongoing professional development training who were then deployed as a member of a trauma/resuscitation team.

Experiences as a member of a military trauma team

Of the 80 respondents who had completed formal training, 37 (46.25%) were subsequently deployed to work as a member of a trauma team in a military field environment. Of these 19 (51.4%) respondents were from RAN and 18 (48.6%) from the RAAF. The discipline of these individuals was comprised of nine (24.4%) MOs, 14 (37.8%) NOs and 14 (37.8%) Medics. In regard to the service status of these individuals, of the MOs, three members belonged to the permanent forces and six to the reserve forces. This distribution may be due to the fact that many of the reserve MOs are senior civilian specialist health

practitioners who deploy as specialist officers during times of need. Of the 14 NOs, ten reported being members of the permanent forces with the remaining four reserve officers. In regard to the 14 Medics, 13 belonged to the permanent members and one was a reservist. The length of service for all of these respondents identified that the majority 32 (86.5%) had served for longer than 10 years. This indicates that those deployed as members of a trauma team have been in the ADF for a significant period of time and highlighted that these members were experienced personnel. The survey did not assess their level of seniority in military rank or to which level of trauma clinical experience these personnel were trained when they deployed. This is evident in the number of participants who had served for 1–4.9 years and although these individuals can be seen as junior (in time of military service), further examination of these individuals may highlight that they may have been experienced practitioners prior to entering the ADF. Details of the deployments of the individuals were also examined. Of the 37 respondents who provided details of the deployments in which they had been involved, a total of 78 deployments were reported. This data indicates that the majority of individuals had deployed at least 2.2 times (mean) and the most common length of deployment was one to six months in duration.

Service composition of teams

The survey identified little change to service composition of the teams over a 15 year period (1996–2010). During this timeframe, the incidence of single service deployments (that being either RAN or RAAF deployments) occurred in 47.3% of the deployments, whereas service combination teams (Tri-service, RAN/RAAF, Army/RAN or Army/RAAF teams) occurred in 52.7% of the deployments. Although relatively close, it still remains a fact that the majority of reported deployments occurred as tri-service compositions. The data also indicates that the service composition of the teams has not changed significantly over the reporting period. This result should be taken with caution due to the small sample size. A larger sample group may highlight a different result given that Army personnel were unable to participate.

Composition of teams

Following examination and analysis of the results regarding composition of teams, the most common team composition was identified as being:

One Medical Officer,

One Nursing Officer, and

Three Medics

It should be noted that the study identified that the composition of the teams mentioned by the participants that the team composition has not significantly changed over the reporting timeframe (1996–2010). The study also found that the participants felt that there was no problem with the size of the teams in which they had worked. The composition of these teams will vary depending on deployment requirements, anticipated injury types and severity, and the level of expertise of the team available. It should also be remembered that changes to a team's composition may be required in the field environment when more knowledge of the local requirements are known.

In the systematic review (study one) a study conducted by (Deo, Knottenbelt & Peden, 1997), found that in the population they were examining, the most common team composition comprised of; one doctor (usually a relatively junior doctor), two nurses and a radiographer. This differs from the team compositions reported in this cross sectional study. However, the study highlighted that if a small team is experienced and found to work well together, it is more effective than a larger team. This was also identified by the participants of the cross sectional study.

Size of teams

Of the 82 deployments reported, a total of 65.8% of these teams were comprised of four to five team members. When asked if this team size was appropriate 77.6% of the responses indicated that this team size and skill mix of the team was appropriate in order to meet the needs of the patient. When comparing these results with the findings of the previously conducted systematic review, similar findings were found in the Driscoll and Vincent study (1992), however, these authors found that it was believed that an optimally sized trauma team would be from five to eight members. However, these results could not be confirmed statistically. This cross sectional study (study two) also found that at the beginning of the reporting period sizes were somewhat larger, however over the reporting period the numbers decreased. It is appropriate to assume that the size of a trauma team must be as a result of a comprehensive assessment of the availability of appropriately trained team members, the types of patient presentations and the facilities available for

trauma care. Although these results indicate that the most commonly sized team experienced by the participants is four to five members, it should be noted that the size of teams may change as military requirements demand.

Roles of team members

The survey also identified the varying roles of individuals within teams. The roles of the specific disciplines may appear to be different from those of their civilian colleagues. This may be due to the fact that the roles undertaken by individuals will be dependent on the specific deployment, the composition of the team and an evaluation of the potential number of casualties and injuries is assessed. It is important to point out that in a military environment, health personnel often perform roles and duties, which they would not normally undertake within an Australian civilian environment. Although required to meet the conditions stipulated by the professional health registering body, many ADF health personnel (in particular the Registered and Enrolled Nurses) undertake additional training (outside of their normal scope of practice) in order to adequately prepare them to deliver care in a field environment. These individuals are trained and fully assessed prior to be given an extended licence of practice. Although not included in the results of the systematic review a number of background papers from the review reported on roles that have some degree of similarity to the extended licence of practice. The role of the Emergency Nurse Practitioner (Bache, 2001), the Critical Response Nurse (Gunnels and Gunnels, 2001), and the Trauma Nurse Coordinator (Yeang et al. 2006) are all roles beyond the normal scope of practice of RNs. The extended licence of practice however, is only valid in certain situations and is withdrawn on return to normal duties. Information gained as a result of these studies may assist in the continuing development of the extended scope of practice and additional role that may be used in ADF trauma teams in the future.

The current study also found details relating to the use of a horizontal team approach. A horizontal team approach is one in which each team member carries out their individual roles simultaneously. This is vital during a trauma/resuscitation situation where time is essential to the outcome of the patient. If role and care are performed simultaneously, the risk of things being missed is reduced and care is provided more rapidly. The survey asked participants if the teams they worked in employed this type of approach to their work. The responses indicate that of all the deployments reported, 93.2% employed a horizontal team approach.

The role of the leader

The role of a leader is vital to the smooth running of any team (Rainer & de Villiers Smit, 2003). This is also true of a military trauma team. They work in remote localities with, at times, limited supplies and personnel to deliver quality trauma care to their patients. In 91.25% of the responses, the Medical Officer was the individual in the team who held this position. When asked who participants believed would make the most appropriate team leader, 50.0% of the respondents still acknowledged that they felt that an MO was the most appropriate person for this role. However, 44.0% of the respondents claimed that this role would be better suited to the individual in the team who had the most trauma/resuscitation experience and training.

When comparing these results with the systematic review, no specific studies were identified in which explicit details of the most appropriate team leader were identified. Results regarding the role of the leader remain unconfirmed by published research into the topic. However, in a study conducted by Cole and Crichton (2006) comment was made that the role of the leader in a team was seen as vital to the smooth running of the team. It also stated that the participants of the Cole and Crichton study (2006) felt that performance of the team was dependent on the abilities of the leader to lead. In addition to these findings (Cole & Crichton, 2006), the Hoff et al. study (1997) found that the role of the leader needs to be an individual who is appropriately trained and chosen for their leadership abilities. These were viewed as being essential to successful outcomes for the team.

Changes over time to ADF trauma teams

Although this study did not focus specifically on changes to ADF trauma teams over time, it does identify small changes over a 15-year period. Changes were identified related to the size and composition of teams, the role of the leader within these teams. Much can be gained as a result of this survey and used to better prepare individuals to work in these environments. The ADF, as with all health services, continually assess their current and recent methods of conducting business and attempt to learn from these experiences. The information and knowledge gained as a result of this study is vital to the continuing enhancement of trauma teams within the ADF, and also within the civilian sector.

Limitations with the survey

Some significant limitations were encountered while undertaking this study. Firstly, the ADF is comprised of the RAN, the Australian Army and the RAAF. As previously mentioned, support for this study was only obtained for participation of RAN and RAAF personnel. However, the senior Army health representative was unwilling to support the study. Numerous attempts were made to gain this support, however, it was not forthcoming. Subsequently, members of the Army were not able to participate. This was seen as a major deficit to the study, but one that was unavoidable. The military sponsor of this study, on numerous occasions attempted to speak to the Army representative, but was also unable to gain their support for the study.

This study elicited 128 respondents to the online survey. However, given the fluid nature of the ADF and the short notice of some individuals to deploy, this is understandable and felt to be a reasonable response rate. The researcher, throughout the process of monitoring the online responses, made the following observations. Firstly, there was a delay in the distribution of the survey to RAAF personnel with only a small number of participants completing the survey. This delay, appeared to be due to the fact that the contact to distribute the survey was a RAAF senior officer and the survey may have been perceived to have been a low priority.

The third problem encountered involved the delivery of the survey to RAN personnel. Initially the survey was only sent to Nursing Officers. This may have been due to the fact that the Staff Officer distributing the survey to RAN personnel knew the researcher and thought the survey was only directed at NOs. This may have occurred because in the initial correspondence between the researcher and the RAN Staff Officer, it was not made clear that the survey was available for completion by MOs, NOs and Medics.

Discussions with the Staff Officer and the resending of the ethics approval alleviated this problem and the survey was immediately sent to all RAN Medical Officers and Medics. These final two issues were resolved but the delays may have reduced the number of respondents.

Access to the online survey

Difficulty accessing the survey may have been caused by two major reasons. Firstly, the link to the survey may have been difficult for some prospective participants given the 'firewalls' implemented to maintain defence security. In addition, deployed personnel may have been without easy access to the defence intranet and unaware of the invitation to participate in the study. Future research utilising an online survey format with the ADF could be available also in paper format and sent to prospective participants so that they are able to participate.

The use of online surveys

The use of online surveys remains an appropriate way in which to reach this group of healthcare professionals. Trying to capture this very movable group, often with filtered communication, was one limitation with this survey. However, one that was overcome with the assistance of the Staff Officers assisting in the distribution of the survey URL details. It should also be noted that although the survey tool was peer reviewed and piloted the tool was not further tested for validity or reliability.

Completion of the survey

In regard to the question asking the respondents if they had received any formal trauma training, 118 (92.2%) respondents stated that they had received this training. However, they did not all proceed and complete the survey. Finally, the researcher observed that some respondents stated that they had not undertaken any professional development following the completion of their initial training. This is appropriate; however, many did not continue with the survey and provide details of their deployment history, if indeed they had any. This may have been as a result of poor instruction provided by the researcher to the respondents.

Although this section provided details of concerns observed and encountered by the researcher into the conduct of this survey, the researcher still believes that the survey succeeded in providing worthwhile statistics and current data in relation to the research questions posed. Given the varied locations of the respondents and at times limited access to the ADF intranet (during high operational tempo times during deployments) the overall research reflects an appropriate response rate. It also provided details data regarding the

trauma training completed by the respondents. Details provided regarding the strengths and weaknesses, as perceived by the participants offers a unique understanding of the training and teamwork practices of these healthcare professionals, details that are not normally released outside of the ADF.

Where to from here…

Training of ADF health personnel will continue as these members are required to provide health care to ADF members in both times of peace and conflict. Therefore, training courses will be undertaken to ensure that health personnel are adequately prepared to deliver this care. The information gained as a result of this survey will assist senior health planners to determine appropriate training courses. Courses, which are aimed at preparing personnel to work as members of multidisciplinary and tri-service teams, will assist with the deployment of these teams.

Summary

The aim of this chapter was to provide discussion of the results of the survey. Current information regarding the completion of formal training was gained with an appreciation of the variety of courses completed by participants. The knowledge gained has provided an introduction and insight into the training and ongoing professional development of health care professionals of the ADF, in particular, that of personnel of the Royal Australian Navy and the Royal Australian Air Force. The participants in this study have indicated in their responses that they feel that they are well prepared to work as members of trauma teams within a conflict / humanitarian situation. They have also provided their perceived levels of improvement in regards to the clinical and teamwork practice skills and overall believe that this is appropriate for the roles they are required to undertake. Issues were raised by the respondents in regards to the training to work in a multidisciplinary team and teamwork practices this should be taken seriously, and appropriate changes made to the current courses seem to address this.

Chapter Seven

Conclusion

The purpose of this study to gain an understanding of the current training of RAN and RAAF Health personnel and the training provided in order to prepare these personnel to work as members of a military trauma/resuscitation team in a conflict or humanitarian crisis situation. The two major questions guiding this study were:

> *What training have individuals received and is this training perceived as adequate as preparation to work in a multi-disciplinary and tri-service trauma/resuscitation team?*

> And

> *What is the nature of trauma/resuscitation team practices currently being used during recent ADF deployments and is this perceived as appropriate?*

The findings have shown within the study sample that the majority of personnel undertaking this training are senior (in years of service not necessary rank) Medical Officers, Nursing Officers and Medical Assistants. Although training was undertaken by some relatively junior personnel (those who have been a member of the ADF for 1–9.9 years), the majority of personnel being deployed as members of these teams have been serving members for over 10 years. This is not surprising given the remote and harsh locations that these personnel are required to work in. It is understandable that the training of personnel to deliver this care in a field environment takes time and the ADF is one such organisation that recognises that this training cannot be done in a hurry. Personnel need to be adequately prepared to work in these environments and an appreciation of this is evident in the seniority of personnel being prepared to work in these teams.

The knowledge gained from this study and in particular the comments and suggestions made by many participants should be used by the ADF to ensure that the training provided to their personnel is appropriate and relevant to the areas in which these health personnel will be conducting their duties. The findings highlighted that, the majority of personnel undergoing this specialised training were largely satisfied with this training and felt that

they were adequately prepared to work in these teams. However, the survey raised some issues regarding training and teamwork practices and it could prove fruitful that these be assessed by ADF senior health planners.

Practical application of this knowledge

The knowledge gained as a result of this study provides a summary of the current trauma/resuscitation training courses being completed by RAN and RAAF health personnel. It also adds to the body of knowledge within this area of health. It is fair to say that those outside of the ADF are unaware of the workings of the ADF Health Services Branch and this information will assist those unfamiliar with this organisation, an opportunity to gain an appreciation of its working as military trauma/resuscitation teams in a field environment.

In addition to this, the knowledge gained will assist senior ADF health planners when determining which training courses to send their personnel on. The details obtained regarding the additional courses completed will support future training decisions. These decisions for future training courses will assist with the continuing development and enhancement of trauma/resuscitation clinical and teamwork skills of personnel. Adequately preparing personnel to work as members of an ADF multidisciplinary and tri-service team will be beneficial to not only the team members, but ultimately the patient for whom they are caring.

Recommendation for future practice

The following recommendations are made as a result of this study. Firstly, the study identified a large number of courses available. This may lead to inconsistencies in the training of personnel and subsequent differences in clinical skills and teamwork practices. It is recommended that training of trauma team members is undertaken using a structured approach to ensure consistent training and practices. It is recommended that when considering which courses should be promoted to ADF personnel those that are multidisciplinary should be prioritised. This is particularly important given the results of the study identify that the majority of trauma teams are comprised of multidisciplinary team members. The results of this study also highlight the need for more ongoing

professional development of its trauma team members. The use of on the job training and clinical placements will assist in the continuing development and enhancing of clinical skills for these individuals. A final recommendation is the need to focus on the importance of teamwork practice development in the training courses provided. Additions to training courses to include teamwork practice education will assist in the continuing development of these much needed skills. It is the responsibility of all senior health planners to ensure that the training provided to individuals meets the needs of the individual, the team in which they work and ultimately the patients they will treat.

Recommendations for future research

The information gained from this study will not only assist the ADF Health Services by providing current data regarding the education and professional development, and teamwork practices of the teams they deploy, but when publically available, may highlight both the positive and negative aspects of current civilian trauma teams educational processes and team practices to either reinforce their current methods and models, or provide the impetus for a critical review of their current practices (NHS Centre for Reviews and Dissemination, 2001). Given the close working relationship between the ADF and many of their civilian counterparts and the continuing need to share gained knowledge, this study provides an avenue to continue to foster this relationship. This new knowledge may also assist individual civilian health facilities to enhance their current trauma clinical and teamwork practices. This may not only be of benefit to the individuals and the teams in which they work when providing this care, but would ultimately be of great benefit to the patient who is in such vital need of this specialised care.

Only two of the three services of the ADF participated in this study. As the Army Health Services Branch of the ADF comprises of the highest number of ADF Health personnel, it is hoped that future research into this topic will included the Army's preparation of their personnel and team make-up may be undertaken at a later date. The researcher's military sponsor (a requirement of the ethics application process) is fully aware of this and tried on numerous occasions to personally enlist the support by the Army representative to participate. It is hoped that when reports of this survey are made available to senior Army health personnel, the value of the study may become apparent to the Army and a similar study is conducted.

Future research into the lived experiences of these health professionals would further enhance an understanding of this unique field of health and contribute greatly to the body of knowledge of military trauma/resuscitation. This study has formed the basis for a final study focusing on the lived experiences of ADF Nursing Officers during their time working as a member of a trauma/resuscitation team. Future research should also consider examining the lived experiences of other health professionals in ADF (Medical Officers and Medical Assistants) trauma teams.

Conclusion

The results of this study will be made available to the ADF Director-General Strategic Health Policy and Plans, and at his/her discretion, to the Chief of the Australian Defence Force. The study will also form a component and requirement of a Doctor of Nursing Degree (through the University of Adelaide) to be submitted by the researcher. The results of the study will also be made available to all participants upon request and made available publically via the thesis/dissertation library following completion of the researcher's portfolio of studies.

This study has afforded an opportunity to gain an appreciation of the training of some ADF health personnel who have been trained and deployed as members of a trauma team in a conflict or humanitarian crisis situation. Details of the participants' deployment history with information of the teamwork practices of these teams is an opportunity for many who are unfamiliar with a military environment to learn about them. This is the first known study of this topic and as such is unique to date. Much can be gained from the knowledge and experiences of these healthcare professionals.

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Appendix 2-1: Email to participants

Dear Participant,

Thank you for taking the time to read this email and for your consideration in taking part in this survey.

Purpose of the survey. The purpose of this study is examine the way that members of the Australian Defence Force Health Services Branch are trained to undertake a role in a trauma/resuscitation team in conflict and/or humanitarian crisis situations. This information will be used to provide defence with up to date information regarding:
1. The training you have received,
2. The deployments you have been involved in,
3. Details of the trauma/resuscitation teams you have worked in, and
4. Your comments regarding these topics.

I am currently undertaking research and am working towards completing a Doctor of Nursing Degree at The University of Adelaide in the Discipline of Nursing. The information gained will also be used to assist civilian trauma/resuscitation teams in their development and team practices.

Length of time needed to complete the survey. The on-line survey will take approximately 20 - 30 minutes.

Confidentiality. All responses are confidential and anonymous. No identifying data such as email addresses will be collected and therefore responses are not able to be linked to an individual. This will allow for your honest comments and suggestions. The survey is conducted using a commercial data collection tool, SurveyMonkey. The Discipline of Nursing at The University Of Adelaide, holds the license for this survey tool.

Consent to participate. Completion of the on-line survey will indicate that you have consented to participate in the survey. This is not a compulsory survey, but the details you provide will assist in the future development of personnel to carry out this important trauma/resuscitation care. Your information will make a difference to future trauma/resuscitation teams.

Information sheet. This email is provides information regarding this study and your involvement in the study. It is provided for your future reference and can be printed and retained.

Support of research. The Australian Defence Human Research Ethics Committee and The University of Adelaide's Ethics Committee (Reference Number: 559/09) have supported this research.

If you require further information or have any concerns regarding this research, you may contact:

Australian Defence Human Research Ethics Committee
CP2-6-104
Department of Defence
CANBERRA ACT 2600
AUSTRALIA

Ph: +61 2 6266 3837
Fax: +61 2 6266 3881
E-Mail: ADHREC@defence.gov.au

Time frame for survey. This survey is being run to a short time-frame. Please login as soon as possible so that I can include your information and feedback in this research.

Access to survey.

Please allow approximately 20 – 30 minutes to complete the survey. In order to complete the survey please log into the following URL.

https://www.surveymonkey.com/s/CB3G98F

Thank you for agreeing to participate in this very important survey. The information you provide will enhance the education and professional development of future members of a trauma/resuscitation team in both the ADF and civilian sector.

Lisa Conlon

Tel: 02 9514 4805 (Working hours)
         0414 742 750 (After hours)

Email: lisa.conlon@uts.edu.au

Appendix 2-2: Information sheet

INFORMATION SHEET

Dear Participant,

Thank you for taking the time to read this information sheet. The following information is given to provide you with information regarding research that I am undertaking as part of my study towards a Doctor of Nursing degree through The University of Adelaide, Adelaide, South Australia, Australia.

The purpose of this study is to gather information and data regarding your preparation to work in a trauma team, the composition of the teams you were working in and the scope of practice you worked within while in that team.

The questionnaire is quite short and should only take about 30 minutes to complete. The information that you provide will not only be used to enhance the practices in regards to the preparation of ADF medical personnel to provide high quality health care to trauma patients, but may also provide information to civilian Emergency Departments regarding their preparation, team composition and scope of practice for their trauma/resuscitation teams.

I would like to ask you for your assistance by agreeing (and completing the enclosed consent form) to complete the attached questionnaire in relation to your experiences as a member of a trauma team within the Australian Defence Force. A consent form, with details of the study, is also enclosed. Full confidentiality will be maintained throughout and following the completion of the study. All completed questionnaires will be stored under lock and key and appropriately destroyed five (5) after completion of the study. Those not wishing to participate will do so without detriment to their career.

If you are willing to participate and complete this questionnaire, could you please return it and the consent form in the envelope provided.

The outcome of the study will be available on request at the completion of the research. In addition, a further study will be undertaken which will involve direct interviews with interest personnel in regards to their suggestions in order to enhance current practices with the ADF to prepare personnel to carry out duties within a trauma team.

If you would like further details or to speak to me directly, I can be contacted on:

Tel: 02 9514 4805 (Working hours)
        0414 742 750 (After hours)

Email: lisa.conlon@uts.edu.au

Should you have any complaints or concerns in regards to this study you may also contact:

Executive Secretary
Australian Defence Human Research Ethics Committee
CP2-7-124
Department of Defence
CANBERRA ACT 2600

Tel: (02) 6266 3837
Fax: (02) 6266 4982
Email: ADHREC@defence.gov.au

Your assistance in this study is greatly appreciated.

Kind regards,

Lisa S Conlon
DNurs (Candidate)
Discipline of Nursing
The University of Adelaide
Adelaide, South Australia

Appendix 2-3: Online Survey

Australian Defence Force (ADF) trauma teams: Current practices of ADF trauma team personnel.

Section 1 - General information

1.1   How long have you served in the ADF?

Less than 1 year ☐   1 – 5 years ☐   5 – 10 years ☐   > 10 years ☐

1.2   Which service do you belong to?

Navy ☐   Army ☐   Airforce ☐

1.3   Do you belong to the permanent forces or the reserve forces?

Permanent Forces   ☐   Reserve Forces   ☐

1.4   Are you a:

Medical Officer ☐   Nursing Officer ☐   Medical Assistant ☐

1.5   Have you deployed as a member of an ADF trauma team in either a conflict or crisis situation?

Yes ☐   No ☐

1.6   Which statement best describes your situation?

☐   I have received formal trauma training and have deployed as a member of a trauma/resuscitation team

☐   I have received formal trauma training, but have not deployed as a member of a trauma/resuscitation team

☐   I have not received formal trauma training, but have deployed as a member of a trauma/resuscitation team

If you have answered 'No' to question 1.6, but have undertaken trauma/resuscitation courses and training, please continue with the survey. However, if you have not undertaken any trauma training, thank you very much for taking the time to complete this component of the survey. This information is also valuable as it provides details necessary in determining the current level of trauma/resuscitation preparation being provided to ADF health personnel.

Section 2 - Education and Professional Development

The following section asks questions relating to the trauma courses you have undertaken with questions related to your experiences when undertaking theses courses.

2.1   Early Management of Severe Trauma
2.2   Rural-Remote Trauma Course
2.3   Care of the critically ill surgical patient
2.4   Definitive Surgical Trauma Care (DSTC)
2.5   Advanced Trauma Life Support (ATLS®)
2.6   Advanced Trauma Nursing Management Course (ATNM®)
2.7   Pre-hospital Trauma Life Support Course
2.8   Trauma Nursing Core Course (TNCC)
2.9   Advanced Trauma Course
2.10   Field Nursing Course/ Military Advanced Resuscitation Course
2.11   Clinical Managers Course (trauma/resuscitation component of course)
2.12   Other courses

2.1   Early Management of Severe Trauma (EMST®)

Last time course completed   _____

Was it previously completed, and when?   _____

The following questions relate to the most recent time you undertook this course, unless otherwise indicated.

2.1.1   Were you a participant of this course, or an observer?

Participant   ☐   Observer   ☐

2.1.2   Was this course delivered as a multidisciplinary (including MOs, NOs and Medics) course or a single disciplinary (MOs only, NOs only, or Medics only) course?
Multidisciplinary   ☐   Single disciplinary   ☐

2.1.3   Was this course undertaken with other members of the ADF tri-services (Army, Navy and AirForce) or was it a single service course?

ADF tri-service course   ☐
Single service course   ☐

2.1.6 On a scale of 0 – 10, how would you rate the improvement in your trauma/resuscitation clinical skills after doing this course?

0   **5**   **10**

|_____ |_____|

No improvement   Slight improvement
Significant improvement

2.1.7 On a scale of 0 – 10, how would you rate your improvement in regards to your teamwork practices?

0   **5**   **10**

|_____ |_____|

No improvement   Slight improvement
Significant improvement

What aspects of this course do you feel were most useful?

What aspects of this course do you feel were least useful?

The following questions relate to the delivery method of this course and your satisfaction with this/these delivery methods.

2.1.8 Was this course delivered in the following methods, and how satisfied were with this delivery method?

Didactic (Involves spoken instruction and used to give large amounts of information)
Yes ☐   No ☐

How satisfied were you with this type of teaching?
Options available to respondent
Satisfied
Somewhat satisfied
Neutral
Somewhat dissatisfied
Dissatisfied

Simulation
Yes ☐   No ☐

How satisfied were you with this type of teaching?
Options available to respondent
Satisfied
Somewhat satisfied
Neutral
Somewhat dissatisfied
Dissatisfied

Skills stations (including the use of part-task trainers and scenario role play)
Yes ☐   No ☐

How satisfied were you with this type of teaching?
Options available to respondent
Satisfied
Somewhat satisfied
Neutral
Somewhat dissatisfiedDissatisfied

Mixed teaching methods (lectures, simulation, skill station activities)
Yes ☐   No ☐

How satisfied were you with this type of teaching?
Options available to respondent
Satisfied
Somewhat satisfied
Neutral
Somewhat dissatisfied
Dissatisfied

2.1.9 Rank from 1 – 4 (1 being the most preferred to 4 being least preferred) learning method you preferred.Which learning method did you prefer?

Didactic
Simulation
Skill stations
Mixed teaching methods

2.1.10 Overall, how satisfied were you with the delivery of this course?
Options available to respondent
Satisfied
Somewhat satisfied
Neutral
Somewhat dissatisfied
Dissatisfied

2.1.4   Overall, how satisfied were you with the content of this course?
Options available to respondent
Satisfied
Somewhat satisfied
Neutral
Somewhat dissatisfied
Dissatisfied

2.1.11 Have you any suggestions about improving the delivery of this course?

2.1.11 Have you any suggestions about improving the content of this course?

2.1.12 During the course, was there any clinical attachment in a civilian hospital undertaken?

Yes ☐   No ☐

If 'Yes, how long did you undertake this attachment?

Less than 1 day   ☐   1 – 2 days   ☐   More than 2 days   ☐

1.4   If you are in the reserve forces, do you work in a trauma/resuscitation team in your civilian job?

        Yes   ☐   No   ☐

2.1.13 Have you been attached to a civilian facility to consolidate the training you received in this course?

Yes ☐   No ☐

2.1.14 How long after completing this course did you do a clinical placement?

Less than 3 months ☐   3 – 6 months ☐   > than 6 months ☐   Never ☐

2.1.15 If you have completed a clinical placement in a civilian facility, long did you work in this clinical placement?

Less than 2 weeks ☐   2 – 4 weeks ☐   More than 1 month ☐

2.1.16 If you have attended a clinical placement related to the knowledge and skills gained from this course, how satisfied were you with the placement?
Options available to respondent

Satisfied
Somewhat satisfied
Neutral
Somewhat dissatisfied
Dissatisfied

Ongoing professional development

2.1.18 Does your workplace/unit regularly provide follow-up training?

Yes ☐   No ☐

If you answered yes to this question, how often does this training take place?

Every 3 months ☐   3 – 6 monthly ☐   6 – 12 monthly ☐   > 12 months ☐   Not as yet ☐

2.1.19 Is this mandatory training for the position(s) you currently hold or have held?

Yes ☐   No ☐

2.1.20 Do you feel this amount of training is/was adequate?
Options available to respondent

Appropriate
Somewhat appropriate
Neutral
Somewhat inappropriate
Inappropriate

2.1.21 How satisfied are you with the on the job training you receive?
Options available to respondent
Satisfied
Somewhat satisfied
Neutral
Somewhat dissatisfied
Dissatisfied

2.1.22 Which do you feel is the most appropriate method of carrying out this training for you?

Simulation

Skill stations

Mixed teaching methods

Section 3 - Composition of trauma team and scope of practice

The following section asks questions relating to the trauma/resuscitation team(s) you have been a member of. Details regarding the deployment, your role in the team, the number or team members and the type of team is requested. If you have been involved in more than four deployments, please provide details of the four most recent deployments.

3.1   Deployment details to a maximum of four deployments

Deployment details	Date of deployment (approx)		Duration of deployment (Months)			
Role in trauma team	Primary Role		Additional role(s), if any			
Usual number of personnel in team	☐ 2 – 3 members		☐ 3 – 5 members		☐ > 5 members	
Composition of team	☐ Medical Officers Number in team 1 – 2 ☐ > 2 ☐		☐ Nursing Officers Number in team 1 – 2 ☐ > 2 ☐		☐ Medical Assistants Number in team 1 – 2 ☐ > 2 ☐	
Type of team	☐ Army	☐ Navy	☐ Airforce	☐ Tri-service	☐ Army/Navy	☐ Army/Airforce	☐ Navy/Airforce

3.1.1 Did each member of the team have a dedicated/specific role to carry out?

0   5   10

|_____ |_____|

All of the time   Some of the time   Never,
ad-hoc

Arrangeme
nt prior to
patient
Arriving
for
treatment

3.1.2 Were these roles carried out simultaneously by the dedicated team member at the same time (a horizontal team approach) as the rest of the team, if appropriate to the patients needs?

Yes ☐   No ☐

3.1.3 Do you think the size and skill mix of the team was appropriate for the care required by the patient?

0   5   10

|_____ |_____|

All of the time   Some of the time
Not at all

If you answered 'Yes' to the previous question, what do you think is an optimally sized trauma/resuscitation team?

2 – 3 ☐   3 - 5 ☐   5 – 10 ☐   > 10 ☐   Dependent on the deployment, anticipated trauma cases ☐

3.1.4 Do you feel that there should be alternatively sized trauma teams which are activated after triaging of the patient(s) and assessment of the patients needs?

Yes ☐   No ☐

3.1.5 In the team that you worked in during this deployment, who carried out the role of the team leader? More than one member of the group may have been the team leader.
Options available to respondent

Medical Officer
Nursing Officer
Medical Assistant

3.1.6 Who do you feel is the most appropriate person to be a team leader?
Options available to respondent

Medical Officer
Nursing Officer
Medical Assistant
Member of the team with the most trauma/resuscitation experience

3.5.1 Did you have an extended licence of practice while being part of the trauma team?

Note: An extended licence of practice is any role of duty that you perform when you are part of the trauma team that you can't perform when you are part of this team (for example: intubation, insertion of chest tubes…).

Yes ☐   No ☐

If you answered 'Yes' to this question, please provide details of your extended licence of practice.

3.5.2 Do you feel this allowed for flexibility of the team members working within this team?

Yes ☐   No ☐

If you answered 'Yes' to this question, please provide details.

Once again, thank you very much for taking the time to complete this survey. I would be very happy to provide you with the outcome of this study. If you would like me to send you these results, please provide me with your contact details via email (mlconlon@optusnet.com.au) and I will send them to you as soon as the results are completed.

If you would like to be involved in the next component (a one on one interviews about your lived experiences as a member of a trauma team) of this study, please send me your details via email (mlconlon@optusnet.com.au) and I will contact you shortly to discuss this. There will be no costs associated with this and timing for the interview will be when you are available to speak to me.

Deployment Details

Deployment details	Date of deployment (approx)		Duration of deployment (Months)		
Role in trauma team	Primary Role		Additional role(s), if any		
Number of personnel in team	☐ 2 – 3 members	☐ 3 – 5 members		☐ > 5 members	
Composition of team	☐ Medical Officers Number in team 1 – 2 ☐ > 2 ☐	☐ Nursing Officers Number in team 1 – 2 ☐ > 2 ☐		☐ Medical Assistants Number in team 1 – 2 ☐ > 2 ☐	

Type of team	☐ Army	☐ Navy	☐ Airforce	☐ Tri-service	☐ Army/Navy	☐ Army/Airforce	☐ Navy/Airforce

Date of deployment (approx)	Location (if not operation sensitive)	Role in trauma team
		Primary role
Duration (Mths)		Additional roles (if any)

Appendix 2-4: Australian Defence Force ethics approval

JOINT HEALTH COMMAND

ADHREC, CP2-6-104, Campbell Park Offices, Campbell ACT2600

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Study Three

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Chapter One:

Introduction

The roles and responsibilities of Australian Defence Force (ADF) Nursing Officers (NOs) are unusual (Biedermann, et al., 2001). They are Commissioned Officers of the ADF and Registered Nurses (RNs) who carry out a variety of roles when working in Australian military establishments and when deployed within Australian defence facilities and internationally. Although they are RNs, their role in the ADF is different from that of their civilian counterparts. They carry out the role and responsibilities of an RN, but their primary mandate is to provide nursing care to ADF personnel during peacetime, and to provide operational health support to meet the needs of the ADF and its commitments during times of conflict (Stendt, 2006), and in humanitarian crisis situations (Agazio, 2010).

ADF NOs, as with all military nurses, work in a range of environments and not only carry out the role of a civilian RN, but also that of a military officer (Kennedy, et al., 1996). This means that they are required to be clinically competent as RNs (Clifford, 2007), but are also simultaneously required to perform the duties of a military officer. In addition to this, their military career is developed in order to perform their duties to a high standard, while displaying a high degree of initiative and flexibility. They are often required to carry out their role in remote localities, sometimes for long periods, with reduced equipment, and in hazardous locations (Andersson, et al., 2007; Duncan, et al., 2005; Lindblad & Sjöström, 2005; McLeod & Francis, 2007; Scannell-Desch, 2000).

One of the roles that an ADF NO may undertake is that of a member of a military trauma/resuscitation team. Many of these teams have NOs who play a vital role in the delivery of quality trauma care to both ADF and allied defence force personnel and civilians injured during times of conflict and disaster situations. This chapter provides an introduction to this topic. Included are the research question posed, the aim, purpose and significance of the study, and finally the format to be used to present it.

Study research question

The research question posed for this study is:

> *What are the lived experiences of ADF Nursing Officers when working as members of an ADF multidisciplinary and tri-service trauma/resuscitation team?*

Aim of the study

The aim of the study is to provide a rich description of the participants" (ADF NOs) experiences and will contribute to the body of knowledge within this area of practice. ADF NOs have a proud and distinguished history of providing competent quality nursing care to their patients (Biedermann, 2002, 2004a; Biedermann, et al., 2001; McLeod & Francis, 2007). However, these stories are rarely shared outside of the military environment. This study will provide a mechanism to share some of their stories. No published research has been identified which specifically relates to the experiences of ADF NOs and their time when working as members of a trauma team in either a conflict or humanitarian crisis situation. The experiences of the participants in the study will assist future ADF NOs and positively enhance their preparation to work within a military trauma/resuscitation team. It should be acknowledged that ADF NOs have a wealth of invaluable information to share within both the military and civilian sectors. This study will provide an opportunity to learn from their experiences.

Purpose of the study

The purpose of this study was to examine the lived experiences of ADF NOs while in their roles as members of an ADF trauma/resuscitation team in either a conflict (including peacekeeping missions) or humanitarian crisis situations. This study will focus solely on ADF NOs and their experiences in these situations. Future research into the lived experiences of ADF Medical Officers (MOs) and Medical Assistants (Medics) may be undertaken at a later date. Beachley (2005) states that a great deal of trauma/resuscitation knowledge and associated clinical skills originate from military conflict and battlefield experiences. This knowledge assists with the continuing development within military

trauma/resuscitation teams, but also has been utilised to enhance the practices within the civilian sector.

It is often believed that research undertaken utilising a phenomenological approach and the subsequent results from these types of studies cannot be generalised to the broader population. It is, however, envisaged that the results from this study will provide an opportunity to understand and learn (Scannell-Desch, 2005) about the role and issues faced by ADF NOs when working as members of a military trauma/resuscitation team. The study will also provide an opportunity to learn from their experiences in order to appropriately prepare future ADF NOs to work in these uncommon environments.

Significance of study

Previous research has been undertaken to gain an understanding of experiences of ADF NOs (Andersson, et al., 2007; Lindblad & Sjöström, 2005; Scannell-Desch, 2005). This research focused on military nurses (including ADF NOs) and primarily examined the physical and psychological hardships faced by these nurses, including the conditions that these individuals have faced as military NOs. However, no study has been identified which specifically examines ADF NOs working in trauma teams in conflict or humanitarian crisis situations. This study will provide information not previously available to this specialised area of military nursing practice. The results will have implications for both the military and civilian setting in regards to the training, teamwork practices and potential psychological aspects encountered by the participants. The knowledge gained as a result of this study offers a significant contribution to the body of knowledge in this topic. It also provides an opportunity to assist with the training and preparation of both ADF and civilian nurses who work in trauma/resuscitation teams.

Study Three outline

Chapter One: Introduction

Nursing Officers of the ADF are registered nurses who are also commissioned officers in the ADF. The purpose of this chapter has been to provide details of the aim and purpose of the study. The research question guiding this study has also been presented. In addition to this, the format to be used to present this study is provided.

Chapter Two: Background

NOs of the ADF have a distinguished history stemming back to the Boer War. The lessons we can learn from not only long ago, but also from current NOs, may assist with the continuing development of the ADF military nursing profession. The purpose of this background chapter is to provide information regarding the history of the ADF military nurse, and current information pertaining to the ADF NO of today. Details of their roles when working as members of a military trauma team are also provided. The story of the researcher is also shared.

Chapter Three: Methodology

When undertaking a study that involves learning from others, time must be taken to identify a suitable methodology. This chapter provides details of the methodology to be employed in this study, that being a hermeneutic phenomenological approach. Information pertaining to the way in which to gather this type of data is also mentioned. Analysis of phenomenological data is also vital to ensure that the maximum possible information is gained from the study. Maintaining impartiality when conducting this type of research is often a challenge, therefore ways to overcome these issues are also addressed.

Chapter Four: Method

Chapter Four details the methods employed to undertake this study. The chapter provides a description of how the interpretations of the respondents „experiences were undertaken. As the purpose of phenomenological research is to gain a deeper understanding of phenomena, and this often involves participants sharing personal experiences and stories, a brief description of mechanisms used to maintain confidentiality is essential. This is also important given that the ADF Nursing Branch is relatively small and protection of the participants‟ identities is vital. Details relating to the interviewing process to be employed are also highlighted.

Chapter Five: Findings

With the assistance of six ADF NOs, in-depth data was collected, collated and analysed. The purpose of Chapter Five is to provide the details of the findings from this study. Major themes identified include: Their role – who are they and what do they do?; The environment – is it so different? Training – will it ever fully prepare you? Working in teams – there‟s no „I‟ in teams; and Leadership – will the real leader please stand up. The

participants" words are used to illustrate their experiences of working in these teams, and to provide details of the environment(s) in which they work and aspects of teamwork practices in which they are placed.

Chapter Six: Interpretation of findings

Chapter Six will provide an interpretation of the findings from the study. Details of the major, minor and sub themes found as a result of the interviews conducted provide a depth of knowledge, resulting in a greater understanding of the lived experiences of these Nursing Officers.

Chapter Seven: Conclusion

ADF NOs provide a distinctive service within the ADF and within the greater nursing profession. This final chapter presents a conclusion to the study and provides recommendations for future practice and proposed areas for future research.

Summary

The purpose of this chapter has been to provide an introduction to the study. The research question posed is provided as too the aim, purpose and significance of this research is offered as a means of situating the study. The outline to be used in the presentation of this study is offered as a means of summarising the chapters. The following chapter will now provide an introduction to ADF Nursing and the officers who make up this group.

Chapter Two:

Background

Not only has the ADF Nursing Service of today been built upon the service of those before us, but, increasingly, it is the ADF Nursing Service who lead the way. (Cooper, 2009)

Learning from the past

It is important to remember that „History has taught us that we need to study and learn from the past" (Scannell-Desch, 2005, p. 600). Scannell-Desch (2005) goes further to state that we, as nursing professionals (both civilian and military), can learn a great deal from those who have gone before us. This study was undertaken in order to gather details and to develop understanding of the experiences of ADF NOs during their time(s) as a member of a military trauma/resuscitation team. In order to do this a detailed description of their experiences is reported. The purpose of this chapter is to provide an introduction to the world of the ADF Nursing Officer. It is in no way meant to diminish the extraordinary contribution that civilian colleagues make to the profession of nursing, but is presented in order to introduce the reader to another avenue of nursing available, that of the Australian military nurse.

The Australian Nursing Services Branch

Although only one branch of the ADF, the ADF Nursing Services Branch is comprised of NOs from the three services, the Royal Australian Navy (RAN), the Australian Army, and the Royal Australian Air Force (RAAF). All ADF NOs are registered nurses and commissioned officers of the ADF. They are not only required to work in their capacity as registered nurses, but carry out duties involved with being an officer. This branch of the ADF has a long and distinguished service spanning from the Boer War in the late 19th century and one, which continues today.

History of ADF Nursing

Military nursing has a long and distinguished history (Finucane, 2004). In Australia, nurses have been employed in the Australian Defence Force (ADF) since the late 19th century with nurses providing nursing care in the Boer War (Australian War Memorial, 2010b). However, prior to World War I (WWI), the role of the Australian military nurse had been that of a glorified first aid worker.

Australian military nurses in World War I

By the end of World War I (1918), it became evident that the contribution made by these military nurses was not only that of a competent nurse, but was crucial to the war effort. Over the course of this war, the role of the military nurse continued to develop, involving the development of their ability to carry out the increasingly complex role required to provide appropriate nursing care in a military environment (Australian War Memorial, 2010b).

In World War I (WWI), Army nurses contributed to the war effort with approximately 2,100 nurses serving in the Australian Army Nursing Services. In addition to these numbers, approximately 130 Australian nurses were employed and subsequently deployed as members of the British Nursing Services. Interestingly, during WWI, female doctors were unable to join and serve in the Medical Services Branch and see active service. It was believed that women would be too "delicate" for war medical work. However, during WWI nurses would see and be constantly exposed to the horrors of war. During the conflict, Australian military nurses became a vital component in the provision of health care to injured allied and enemy patients. They also continued to develop their ability to carry out appropriate and timely treatment and the associated decisions. They were indispensable team members of the busy operating theatres, as well as keeping the military hospitals they were working in running smoothly. By 1917, some of these nurses were sent to casualty clearing stations. This was a major advancement for the profession of military nursing as casualty clearing stations were the first point of entry for wounded patients from the frontline. This demonstrated the respect that these nurses had gained (Australian War Memorial, 2010b).

Military nurses had a distinct role in this time of conflict (Wynd, 2006) and their roles varied from their time and positions in the civilian sector. They cleaned wounds and at

times, were required to perform minor surgery. This was a new role for any nurse of that era. They worked and lived in difficult conditions. The health facilities that they were posted to were usually understaffed, with limited supplies available, and were, at times, also under threat of attack. The work these nurses carried out and their outstanding contribution to the war effort earned them a new found respect within the medical profession and all who knew or benefitted from their work (Australian Government, 2009; Australian War Memorial, 2010b).

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Figure 3.1 1st Australian Casualty Clearing Station, November 1917 (location unspecified). (Australian War Memorial, 2010c)

ADF nurses in World War Two

Nurses serving during World War II (WWII) carried a similar role to that of their predecessors in WWI. They remained the largest group of females serving in conflict (Australian Government, 2009). As with Australian troops serving in WWII, nurses also suffered losses in their numbers. Approximately 3,500 Australian nurses served in WWII, with 71 dying as a consequence of their service. One of the major losses to Australian military nursing was the loss of a total of 33 nurses following the sinking of the Vyner Brooke off Sumatra and later during the Banka Island massacre. It is often forgotten that military nurses suffered similar fates as their combatant colleagues, during WWII; Australian military nursing suffered its biggest losses.

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Figure 3.2 Australian nurses Singapore October 1941. (The National Archives, 2010)

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Figure 3.3 Arrival of some staff for the Australian and New Zealand hospital in Crete. (Australian War Memorial, 2010a)

Following WWII

ADF Nurses continued to serve in conflict zones following WWII. The Korean War (1950–1953), Vietnam War (1955–1975) and the subsequent conflicts involving ADF personnel in the Gulf (1990–1991) saw the continuation of the already well-respected nursing branches of the Royal Australian Navy, Australian Army and the Royal Australian Air Force. In addition to their contribution during times of conflict, ADF NOs have also been involved in humanitarian crisis situations. Many have deployed as members of the United Nations as peacekeepers and peacemakers, for example in Rwanda and East Timor, now known as Timor Leste. Their involvement should be seen as vital to any involvement made by the ADF (Australian War Memorial, 2010b).

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Figure 3.4 RAAF Nursing Officer preparing a patient for medical evacuation – Korea (date unspecified). (Australian War Memorial, 2010d)

ADF nursing today

It is acknowledged that the role of these healthcare professionals has changed considerably since the first Australian nurses were involved as members of the Australian Defence Force in the Boer War. The following provides details of the ADF Nurse of today.

Joining the ADF as a Nursing Officer

Registered nurses wanting to join the ADF as a Commissioned Officer are required to successfully complete a selection process. This includes aptitude testing, psychological assessment and the individual must meet the medical and fitness requirements set by the ADF. An assessment of the individual‟s leadership qualities is also assessed and a formal interview with senior officers must be completed. If successful, the applicant will be commissioned into the ADF and will then undertake officer training in their respective service (ADF, 2010).

ADF Nursing Officers and their experiences

Nursing Officers in the ADF play a unusual role as compared to their civilian counterparts (Tricarico, 1998). They work in hostile and remote locations often for unspecified periods of time (Andersson, et al., 2007; Baker, Menard & Johns, 1989; Duncan, et al., 2005; Tschudin & Schmitz, 2003). In addition, they are also often faced with the burden of carrying out their duties while ensuring the safety of their patients, themselves and their medical equipment in areas of conflict (Kraemer, 2008).

When deployed, they often endure harsh living conditions; have limited access to, at times, much needed medical equipment and stores; and experience real and/or perceived personal danger(s) resulting from the area of operation(s) to which they are deployed (Biedermann, et al., 2001; Kraemer, 2008; Scannell-Desch, 2000, 2005). Some also experience psychological hardship relating to the pressures of caring for military personnel only to know that these „soldiers‟ will be sent back into battle as soon as they were fit to do so with the potential for future injury (Scannell-Desch & Anderson, 2000). The knowledge that many of these patients will return to these NOs for further treatment and care shortly after their discharge is an additional burden that many military nurses face (Scannell-Desch & Anderson, 2000). The „youth of patients and severity of injuries‟ (Scannell-Desch & Anderson, 2000, p. 533); the number of casualties received and the care subsequently

required are also highlighted as a stress experienced by many military nurses (Kraemer, 2008; Scannell-Desch & Anderson, 2000).

In addition to the clinical nursing care they provide, military nurses are responsible for providing management and leadership to junior personnel. This can be an extra burden to an already overburdened individual. However, this role is but one required of all military officers (Biedermann, et al., 2001; Kraemer, 2008). This highlights some of the stressors encountered by the majority of ADF NOs during active service. The actual or perceived stressors for those who work in military trauma/resuscitation teams may result in additional pressure associated with this role.

Members of military trauma/resuscitation teams

One of the many roles that may be undertaken by a military nurse is that of a member of a trauma/resuscitation team (Fecura, et al., 2008). Military trauma/resuscitation teams provide necessary limb and lifesaving treatment (Hendrickse, Ellis & Morris, 2001) and care not only for military personnel (allied and enemy) and affected civilians in areas of conflict, but also to patients requiring this specialised care in humanitarian crisis situations. Within the ADF, many NOs are trained, and subsequently deployed, to work in trauma/resuscitation teams. The majority of these teams are comprised of multidisciplinary healthcare professionals whose goal it is to deliver competent and clinically appropriate trauma/resuscitation care to their patients (Baird, Kernohan & Coates, 2004; Klein, et al., 2006). Within these multidisciplinary teams, effective teamwork is paramount for the successful functioning of the group. ADF NOs are often members of these teams and undertake a variety of roles.

Situating the researcher

This study and the previous two studies in this portfolio stem from the personal experiences of the researcher and her interest in the topic. My personal experiences are not mentioned again, so this section will provide my story and as such is written in the first person. The rest of the study is written by me as the researcher, for without the opportunity to share my experiences and feelings and situate the study, this research may be lacking. This is the only component of this study, which provides my personal details and experiences. I joined the ADF in January 1994 as a Nursing Officer. I successfully completed trauma training including; Advanced Trauma Nursing Course, Trauma Nursing

Care Course, Obstetrics for the military environment and Early Management of Severe Trauma (as an observer). In 1998 and 1999 I deployed to the Southern Oceans as a member of the healthcare team. During these deployments we delivered trauma care to crew members injured due to rough weather or onboard injuries. From February 2000 to the end of August 2000, I was a member of the United Nations Peacekeeping mission in East Timor. My primary role was as a member of ADF trauma/resuscitation team. Our health facility was located in the Dili Museum building with a great deal of modifications made to the infrastructure to convert it into a hospital. The team was comprised of five RAN members, one Medical Officer (MO), two NOs and two Medical Assistants (Medics). The team was cohesive and worked extremely well together. It was believed that this was primarily due to the training received by the team members and the appropriate choice of team leader (in this case the senior NO). The composition that this team employed is still distinct in the ADF. The casualties that we cared for included UN personnel and members of the local population who needed trauma care. Our living conditions were relatively good, however we were constantly on edge; working, living and even sleeping with loaded rifles and constantly on call for a casualty to arrive for treatment. We not only formed the trauma team but also worked in other areas (ward, Intensive Care Unit, Administration) during this deployment. There was nowhere to go and our only recreation was to go for walks or run around the compound or, in a group, walk to the airfield and either walk or run the eight-kilometre perimeter for exercise. We had one weeks leave during the deployment, but otherwise our home was in the museum compound.

Although this team was well run and successful in their team approach, other ADF members in the facility did not feel that this model was appropriate. In the previously conducted cross sectional study (Study Two), details of the teamwork practices used in ADF trauma teams from 1995–2010 were provided. Issues relating to team size and composition highlighted that the most common size for teams was four to five team members and was comprised of; one Medical Officer, one Nursing Officer and two Medics. In relation to the role of the leader, the most common team leader identified in the cross sectional study was the Medical Officer. This differed from the researcher"s experiences in East Timor where the team leader was a senior Nursing Officer. This study has resulted from my 12 years experience as an ADF NO and the need to share the stories and experiences of military health colleagues. Many of the experiences encountered by the

researcher encompass challenging times, not only physically, but psychologically. Working long hours in harsh conditions with colleagues who reacted differently to each situation has made each individual extraordinary and the person they are now.

Lessons to be learned

There is much to be gained from ADF Nursing Officers who have served in the past. Information and knowledge passed down through these generations of military nurses should be used to enhance current military nursing. In order to gain this valuable information and learn from those who have served before us, hearing of others" experiences will enhance our, at the moment, limited knowledge of this role of an ADF military nursing officer.

Summary

Nursing Officers of the ADF have had a distinguished career since they first were involved in the Boer War. They continue to serve within the ADF and afford ADF personnel and others with quality nursing care. The purpose of this chapter has been to provide a brief introduction to the Nursing Officer of the Australian Defence Force. Not only is a short summary provided of the role that ADF NOs have played since commencing in the ADF, but details of the current ADF NO are as well. They are no longer seen as handmaidens to Medical Officers, but are now officers in their own right. They command medical units and undertake a variety of roles that their civilian counterparts do not. They work in hostile and harsh conditions and do this knowing that they are making a difference and are proud to be part of the ADF. Details regarding the requirements for an individual to join the ADF as an NO, but also information relating to their role within a trauma team have been offered as a means of introduction. In addition, information regarding the researcher"s personal experiences is offered as it reveals the task of the researcher and the need to situate this individual in the research. This was also undertaken in order to provide suitable distance from the people being interviewed whose roles were experientially similar to the researchers. The following chapter will provide details of the methodology that was used to conduct this study.

Chapter Three

Methodology

The point of phenomenological research is to "borrow" other people's experiences and their reflections on their experiences in order to better be able to come to an understanding of the deeper meaning or significance of an aspect of human experience, in the context of the whole of human experience.

(van Manen, 1997, p. 62)

The purpose of this chapter is to provide information regarding the use of a phenomenological approach specifically relating to this research study. Details regarding the terms used in phenomenology will be presented and the reason for its use in this particular study offered.

Choosing a methodology

When conducting research, the researcher must determine which methodology is suitable to meet the study‟s needs and to the research question and the data needing to be collected to answer the research question. After examination of the methodologies available and given the research question posed for this study, the use of a hermeneutical phenomenological approach was deemed to be most appropriate. The following is provided as a means of explaining this methodology and why it is suitable. Van Manen (1997, p. 7) states that phenomenology is undertaken „to gain a deeper understanding of the nature or meaning of our everyday experience‟. Although being a member of a military trauma team may not be an everyday experience for many, to the participants of this study, it is just that - an everyday experience (Broussard, 2006). However, these experiences are rarely spoken of outside of the military environment. This hermeneutical phenomenological study will provide a mechanism through which to share their stories and experiences and to learn from them.

Phenomenology

The term phenomenology describes the function of studying phenomena; in particular it is the way that things appear to us in experience or consciousness. The aim of utilising a phenomenological approach is to gain a meaningful understanding of everyday experiences (Jasper, 1994; van Manen, 1990). The methodology attempts to describe an individual‟s lived experience (Byrne, 2001; Scannell-Desch, 2000). These feelings are specific to the individual and not the way others think that they „should‟ be felt (Valle, King & Halling, 1989). DePoy and Gitlin (2005, p. 116) state that „involvement by the researcher is limited to eliciting life experiences and hearing and reporting the narrative perspective of the informant‟. It is this concept that allows for the experiences of some to be told to others. This is another reason that this methodology is appropriate for this study. It is the gaining of a deeper understanding of the lived experiences of the participants, which is the aim of the study, with the researcher becoming the medium for sharing of the participants' stories. The stories provided by phenomenological research participants are retrospective accounts of their lived experiences and should not be seen as introspective in nature. In order to conduct a phenomenological study, the first thing that needs to be considered and achieved is the identification of the phenomenon to be studied. For the purpose of this study the phenomenon to be examined is the lived experience of ADF Nursing Officers working within trauma/resuscitation teams. The use of a phenomenological approach allows the researcher to gain a deeper understanding of the identified phenomenon, which is experience by several people (Creswell, 2007). A phenomenological approach provides a mechanism to describe the experiences of the participants and share their experiences with others.

Development of the phenomenological movement

Although the phenomenological movement is relatively new (it first appeared as an approach in the early 20th century), it was the work of Edmund Husserl, Martin Heidegger, Maurice Merleau-Ponty, Jean-Paul Sartre, and others who provided details of their thoughts and ways in which to conduct this type of research (Amedeo, 1997; Caelli, 2000; Hallett, 1995). These philosophers provided a mechanism for other researchers to systematically and appropriately examine the lived experiences of people. Many have contributed to the phenomenological methodological approach to research, but in reality learning from others about their experiences and sharing their stories has been something

that many have done without labels being attached to what they are doing. Having individuals who articulate this way of gaining a deeper understanding of others" experiences and accurately sharing their stories assists not only novice researchers but experienced researchers undertaking research in an alternative manner, this being a systematic and clear way of conducting this type of research. As opposed to quantitative research, qualitative research is often left open to the interpretation of individuals conducting their studies. These founding members of the phenomenological movement assist with understanding and subsequently conducting this difficult research. It is vital that the researcher has a passion for the topic being examined, but that they remain true to their participants and tell their stories, not interpret the participants" stories as a reflection of their own feelings about the topic.

Hermeneutical phenomenology

In order to gain more from a phenomenological approach the use of a hermeneutic phenomenological method is appropriate for this particular research. The concept of hermeneutical phenomenology involves the human sciences and explores the person (Baker, C., Wuest & Noerager Stern, 1992; van Manen, 1997). It provides a mechanism in which an individual is studied in a situation (Benner, 1985). This particular methodology is the study of people (Laverty, 2003; van Manen, 1997). It utilises both a descriptive (the phenomenological component) approach and an interpretive (hermeneutical components) (Laverty, 2003). The term is derived from the Greek god Hermes, whose role it was „to communicate messages from Zeus and other gods to the ordinary mortal" (van Manen, 1997, p. 179). This methodology is a process used to share stories of some to a reader. This research approach is systematic in its interpretation of data gained from the participant(s) (Benner, 1985).

Therefore, „phenomenology describes how one orients to lived experience, hermeneutics describes how one interprets the "texts" of life" (van Manen, 1997, p. 4). It is with this understanding that the researcher uses the information gained from interviews with the participants to interpret their stories (Laverty, 2003), and writes up the results of their stories to appropriately share them and provide a medium in which others can learn from them.

The concept of Being in the World

The concept of „Being in the world" was a term coined by Martin Heidegger. It is used to encompass the notion and way of articulating „the way human beings exist, act, or are involved in the world" (van Manen, 1997, p. 175). According to Heidegger (cited in: Laverty, 2003) in order to appropriately understand the concept of being in the world, a researcher must have a pre-understanding of the culture being examined. It has been acknowledged that this pre-understanding will not result in the individual being able to place him or herself outside the culture, but acknowledges that a researcher undertaking a hermeneutical phenomenological approach is a being within this particular world. In regards to this study, humans refer to military Nursing Officers (NOs). For the purposes of this study the concept of being in the world relates to each participant's existence as an ADF NO when working as a member of a military trauma team. This concept of being in the world is thought to assist in maintaining the ability to make sense of a „thing".

The use of bracketing in phenomenological research

The concept of bracketing or reduction was a term first provided by Edmund Husserl (Laverty, 2003). The term bracketing in phenomenological research refers to the concept of the researcher and their ability to put aside their own experiences in regards to the phenomenon so that they are able to look at the phenomenon from a fresh set of eyes (Byrne, 2001). It is believed that this is humanly difficult and as such it is held that this should not be attempted (Wimpenny & Gass, 2000). In contrast, Van Manen (1997) provides details of the concept of bracketing as provided by Merleau-Ponty. It has been stated that there are levels of bracketing. Firstly, the process involves the researcher having the ability to come to terms with the concept of having and „awakening of a profound sense of wonder and amazement at the mysteriousness of the belief in the world" (van Manen, 1997, p. 185). Following from this, the researcher must overcome their own thoughts and feelings in regards to the topic being studied. The third level involves the ability to break down the theories and or scientific concepts involved in the phenomenon. Finally, the researcher must develop the ability to „see past or through the particularity of lived experience toward the universal essence…that lies on the other side of the concreteness of lived meaning" (van Manen, 1997, p. 185). In order to accomplish these levels, it should be acknowledged that a researcher who decides to undertake a phenomenological study has a keen interest in the phenomenon and as such this should be acknowledged and used to its advantage. Strong and varying views are held in regards to the need for and ability to carry

out bracketing. Researchers undertaking phenomenological research should attempt to put their beliefs to the side to a certain point. However the aim of the concept of bracketing is to share, authentically, the stories and experiences of the participants of a study, to attempt to remain impartial to their stories and simply to allow each to be a story teller. It should also be acknowledged that many people undertaking phenomenological research will do so as they have an interest in the phenomenon to be examined and that they should recognise that link to the comments made by the study participants. This acknowledgement to the link should be made early in the study report.

The six steps of van Manen

For those researchers who value working in a systematic and methodical way, finding a process to appropriately conduct a phenomenology study is useful. Van Manen (1997) provides researchers with six steps to use while conducting phenomenological research. These steps involve:

1. Turning to a phenomenon which seriously interests us and commits us to the world;
2. Investigating experience as we live it rather than as we conceptualise it;
3. Reflecting on the essential themes which characterise the phenomenon;
4. Describing the phenomenon through the art of writing and rewriting;
5. Maintaining a strong and oriented pedagogical relation to the phenomenon; and
6. Balancing the research context by considering parts and whole.
   (van Manen, 1997, pp. 30-31)

Although this can be used as a step-by-step approach, it was also used as a guide by the researcher with the steps often revisited to ensure that the research remained robust. It ensured that no step was forgotten and that a mechanism in which to repeat the study at a later date was achievable.

Gathering data for phenomenological research

In order to conduct this study and after determination of the methodology to be used, data needed to be collected from participants who have experienced the identified phenomenon. Collection of this data can be done using a variety of methods including direct observations and personal interviews (Byrne, 2001). The use of an unstructured approach provides participants with the freedom to express what the phenomenon means to them rather than being unduly influenced by the researcher. This approach also allows participants to

provide some background about themselves which can then lead on to the phenomenon of interest.

Data analysis

In order to carry out analysis of the data for phenomenological research, the use of thematic analysis is one method used to ensure accuracy of analysis and the ability to recount the processes undertaken (Giorgi, 1997). This process involves the identification of major, minor and sub themes from the textual data obtained through interviews. Although this may appear to be a straightforward process, there is a risk of superficial themes being presented (Lindseth & Norberg, 2004). It is therefore, the aim of a serious researcher to delve deeper to find meanings in the participants‟ experiences. To facilitate this process, a researcher needs to become familiar with the data collected. This can be enhanced with the researcher personally conducting the interviews and transcribing them. This provides an opportunity to become closely absorbed in the data. Following the extraction of significant statements from the transcripts, the researcher‟s next task is to identify themes from these statements (Byrne, 2001). This is a difficult concept to grasp and an onerous task for many novice researchers to undertake. One such method that may assist with this process is to speak to more experienced researchers in order to gain knowledge of their expertise in this area. Once the major, minor and sub themes are identified, the researcher should be able to provide examples from the interview transcripts to illustrate how the statement supports the identified theme. The final component of any type of research is the writing up of the results. In regards to phenomenological research, this needs to be undertaken with due diligence in order to afford the information provided by the participants the greatest respect and accuracy (Laverty, 2003).

Challenges with undertaking a phenomenological study

Those deciding to conduct phenomenological research face many challenges. Firstly, the researcher must remain an impartial observer and report accurately the lived experiences of those being studied. This can be a difficult thing to complete as the researcher must have a passion about the topic being examined. Another potential obstacle facing the phenomenological researcher is writing the report in such a way that they remain true to the participants‟ stories and experiences and that this remains just that, their stories and experiences. By remembering these potential hazards and learning from other researchers‟

experiences in conducting phenomenological research, the most accurate representation possible of the participants" stories is presented.

Summary

In conclusion, van Manen states that „Phenomenological descriptions, if done well, are compelling and insightful" (van Manen, 1997, p. 8). It is important that the researcher pays the participants the appropriate homage for their time, their shared stories and mostly for the work they have done while working in their trauma/resuscitation team. This chapter has provided a brief summary of the researcher"s understanding of phenomenological research and the reasons why this methodological approach was the most appropriate way in which to conduct this particular study. The following chapter presents the methods employed.

Chapter Four:

Methods

Introduction

The purpose of this chapter is to describe the methods that were used to conduct this study. Included in this chapter is information pertaining to; the research question, the aim and objectives of the study, information regarding the recruitment of participants, ethical and specific considerations, including the need for consent. In addition to this information regarding data collection, the storage of the obtained data and analysis and synthesis will be provided. Finally, an introduction to the participants is presented.

The aim of the study was to provide a rich description of the participants" (ADF NOs) experiences when working as a member of a military trauma team that will contribute to the body of knowledge within this unique area. ADF NOs have a proud and distinguished history of providing competent quality nursing care to their patients. However, these stories are rarely shared outside of the military environment. This study will provide a mechanism to share some of their stories. The experiences of the participants in the study may assist in preparing future ADF NOs and could positively enhance their experience when working in a military trauma/resuscitation team. It should be acknowledged that ADF NOs have a wealth of invaluable information to share within both the military and civilian sectors and it is felt that this study will provide an opportunity to learn from their experiences.

Restatement of the research question

In this study, the phenomenon of interest is the lived experience of ADF Nursing Officers working within trauma/resuscitation teams. The research question posed for this study is:

> *What are the lived experiences of ADF Nursing Officers when working as a member of an ADF multidisciplinary and tri-service trauma team?*

Purpose of the study

As this is a phenomenology study, its purpose is to provide a better understanding of the experiences of the participants, with the results raising an awareness of the issues to be considered when preparing personnel to deploy. The results of this study will be presented to the Director of Defence Force Nursing – Group Captain Margaret Hine (military sponsor for the study) and at her discretion to those she thinks it is appropriate to distribute it. The report will also form the final component and requirement of a Doctor of Nursing Degree (through the University of Adelaide) to be submitted by Ms (LCDR, RANR) Lisa Conlon. The report resulting from this study will also be made available to all participants on request. Results may also be published in a peer-reviewed journal, if appropriate. Future research into the lived experiences of ADF Medical Officers (MOs) and Medical Assistants (Medics) may be undertaken at a later date. This knowledge will assist with the continuing development within military teams, but also has been utilised to enhance the practices within the civilian sector.

This study is also the last in a series of three studies conducted by the researcher, which examines the education and professional development, and teamwork practices of ADF trauma/resuscitation teams. The first study is comprised of a systematic review, which examined the education and professional development of civilian trauma/resuscitation team members, and the teamwork practices within which they work. The second study examined current serving Royal Australian Navy and Royal Australian Air Force health professionals in their training and teamwork practices in regards to working as a member of a military trauma team. These three studies are linked, in that the first study, the systematic review provided information regarding civilian trauma teams, with the results being used as a basis from which to assist in the development of the cross sectional survey of ADF Health personnel who have worked as members of a military trauma team. This study then led onto the third study where a focus on the experiences of ADF NOs who have been trained and who subsequently worked as a member of a trauma team was examined. This portfolio of studies aims to provide a greater understanding of civilian trauma teams (Study One), ADF health personnel who have worked as members of a military trauma team (Study Two) and ADF NOs and their experiences while working in these teams.

Protecting the identity of the participants

To maintain participant confidentiality, all participants" responses were de-identified. This includes the use of third party names by the participants. Any mention of identifying data of other personnel was discouraged during the interviews. Prior to the interviews, all participants were informed of this before signing a consent form. Data is stored at the primary investigator"s office and secured in a locked filing cabinet. This information will only be available to the primary investigators of this study. All data has been entered into an electronic database and is password protected. Printed data will continue to be stored for seven years and then shredded at the end of this period. Electronic data will also be stored for seven years following completion of the study and then deleted from the researcher"s computer hard drive.

Study setting

It was important to consider where the interviews would take place. After consultation with the participants, all felt that they would like to be interviewed in their homes. This afforded them the opportunity to speak honestly and freely about their experiences without the worry of being interrupted in their workplace. It also provided the participants with a safe environment in which to tell their stories. As all of the participants hold senior management roles, the chance of them being interrupted during the interview was seen as a barrier to their ability to speak freely. Therefore, all interviews were conducted in the participants" homes via Skype™ as the participants" had requested. Also, as the researcher was, at the time of the data collection phase, living in Sweden, this was the most appropriate method in which to conduct the interviews. The participants were asked for a time that would be convenient to them for the interview to take place. This was achieved via email and phone calls to the participant and resulted in appropriate timings being set.

Inclusion criteria

Participants

Recruitment of potential participants occurred through the distribution of an information email sent by the research team. The initial email from the researcher was sent through the Office of the Director of Defence Force Nursing. All correspondence between the researcher and the participants then took place directly between the two parties. There was no further correspondence with staff from the Office of the Director of Defence Force

Nursing. This was deemed to be important given the hierarchical nature of any defence force. The researcher wanted to recruit participants because of their interest in the study, not because prospective participants felt they had to. This study utilised purposive sampling (Groenewald, 2004) to identify appropriate and willing participants to take part in this research. In addition to purposive sampling, snowball sampling was conducted in order to identify any additional appropriate participants to contribute to the study. Nursing Officers from all three services (Navy, Air Force and Army) were contacted in order to undertake this sampling approach and resulted in three participants initially agreeing to take part in the study. The use of snowball sampling was employed which resulted in the addition of three further participants. A total of six participants therefore took part in the study. If, after completing initial interviews it was identified that the results did not elicit sufficient data, the researcher would then have attempted to recruit other participants in order to undertake further interviews. This was not required as the participants who participated in the study provided a wealth of information.

Number of participants

Determination of the appropriate number of participants was dependent on the richness of the data gathered as a result of the interviews. Six participants were involved in the study. This number achieved a sound cross section of participants from the three services of the ADF, with varying years of military and deployment experience.

Age range

As NOs working in the ADF are aged from approximately 22–65 years of age, this was the age range of the study. All participants were Registered Nurses who were currently (2011) serving officers (permanent or reserve forces) in the ADF.

Inclusion and exclusion criteria

In order to take part in this study, each participant had to be a Nursing Officer in the Australian Defence Force. They were required to have undergone training to work as a member in a trauma/resuscitation team and have worked in one of these teams during a time of conflict (including peacemaking and peacekeeping missions) and/or humanitarian crisis situations. There was no exclusion based on gender or military service of the

participant. Participants were recruited from the permanent or reserve forces of the Nursing Branch of the Australian Defence Force.

The recruitment process

As previously mentioned in order to commence the process of participant recruitment, purposeful sampling was undertaken. In this first instance, three participants identified themselves to the researcher and indicated their interest in being involved in the study. In addition to purposeful sampling, snowball sampling was employed. This allowed for the recruitment of participants through already identified participants. This resulted in an additional three participants being recruited. Direct contact was made by the researcher with the prospective participants to discuss the study and to confirm if they would like to be part of the study. All six participants were very keen to be involved and returned their signed consent form shortly after it being sent to them. Participants were therefore Australian Defence Force (ADF) Nursing Officers (NO) who were members of either the permanent or reserve forces and who had worked as members of an ADF trauma team. All participants had to be willing to participate and consent to be part of the study. Although there was no intent to recruit to equality, it turned out that two participants from each of the services contributed to the study. In addition to this, an appropriate cross section of gender was also achieved with three males and three females involved in the study. The military rank of the participants were; one Navy Lieutenant Commander, one Army Major, one Air Force Squadron Leader, one Navy Commander, one Army Colonel and one Air Force Group Captain. In addition to this, a variety of experience, length of military service and deployment history was obtained and will be provided. An introduction to the participants can be found at the end of this chapter.

Ethical issues

Ethics approval was sought and subsequently gained from the University of Adelaide Human Research Ethics Committee (H-048-2011) and the Australian Defence Human Research Ethics Committee (ADHREC 626-11). Confirmation letters from these ethics committees can be found in the Appendices 3-4 and 3-5. Details of the ethics approval were provided to all participants prior to gaining their consent to participate. An email containing an information sheet providing details of the study (Appendix 3-1) was supplied to each participant prior to their undertaking of the survey). This was distributed through

the Department of Defence Force Nursing with instructions to potential participants to contact the researcher if they were interested in contributing to the study. During the ethics application process a requirement was made to develop a „Distress Protocol‟. This was seen as a necessary precaution should the participants find the speaking of their experiences distressing at any time. This delayed the commencement of the study, but was a necessary requirement to ensure the safety of the participants given the stories and experiences of which they spoke. Fortunately, this has not been needed to date, but should any of the participants require assistance, they have contact details of those who can help.

Conducting the interviews

Gaining consent

Prior to commencing the interviews, all participants were asked to sign a consent form. Consent was obtained from all participants with a copy of the signed consent (completed by both the participant and the researcher) held with the researcher and the participant. Permission was sought and received for the recording of the interviews on the original participant consent form. The ethics committees also approved the consent form. A copy of the consent form can be found in Appendix 3-2.

Data collection

As ADF NOs are located at various defence force bases in both Australia and at international bases, interviews were conducted in the participants‟ homes via phone and utilising the online system Skype™. This is an economical method of contacting participants regardless of their country or location. This also allowed for audio recording of all the interviews using available software (ecamm Call Recorder for Skype™). This product is commercially available and was reliable for recording the interviews. Following recording of the interviews, the open source software program „Audacity‟ was used to assist in their transcription. The use of unstructured interviews (Laverty, 2003) also enhanced the ability to gain an understanding of the lived experiences of the participants. It is believed that this allowed for a richness of data to be gained.

Prior to the commencement of the interview phase, it was thought that the interviews would take no longer than one hour and this information was provided to the participant

prior to consent being obtained. It should be noted that although the researcher was leading the interview, the interview would continue until both the participant and the interviewer made a mutually agreeable time to end the interview. Details regarding the need to record the interview, issues surrounding the need for participant confidentiality and information relating to the ability of the participant to withdraw from the study at any time was provided in an information sheet (Appendix 3-1) provided to the participant prior to consenting to participate.

The interviews commenced with the researcher asking the participant to provide a brief summary of their background (gender, age, length of military service, service, if the person was a member of the permanent of reserve forces). As the Nursing Services Branch of the ADF is relatively small, all background data provided by the participant was reviewed by Commander Amanda Garlick (co-supervisor). This was to ensure that any identifying details of the participants were removed. Specific details which may have provided a way in which to identify the participant included: the age and gender of the participant and were subsequently not included. In addition, participants were asked to briefly describe an overview of the trauma training they had successfully completed and their deployment history.

Open-ended questions were used to allow the participant to provide details of their thoughts and experiences as a member of a trauma/resuscitation team. Prior to the commencement of the interview phase, the participants were provided with details regarding their contribution to the study. A consent form (Appendix 3-2) was signed by the participants acknowledging their understanding of participation. This consent form was also signed by the interviewer and a PDF copy provided and retained by both parties for future reference, if required. The consent forms held by the interviewer are secured in a password protected file and will be held for at least five years following completion of the study. Following this period, the consent forms will be appropriately destroyed by the research team. A guiding question was posed at the beginning of the formal component of the interview, which asked for participants" experiences while working in a military trauma team. Questions were asked throughout the interview in order to clarify ideas and feelings expressed by the participant. This was undertaken in order to ensure that an accurate account of the individual"s experiences was understood by the interviewer.

If following the interviews, an explanation or clarification of a point made during the interview was required, the interviewer contacted the participant for clarification. This was an agreement made between the participants and the researcher prior to the interview being conducted. When the interviews were transcribed and formatted into a Word document, the document was sent to the participant for their approval for use.

Recording and transcription of the data

As phenomenological research often involves interviewing of participants (Baker, C., et al., 1992), an accurate account of the interview should be ensured. One such method is to audio record the interviews (Byrne, 2001). Following the interviews, transcription of the data was undertaken by the researcher. In order to ensure that the transcript was an accurate record of the conversation, the researcher asked the participant to the read the transcript and, if there are any discrepancies, these resolved prior to the analysis of the data is commenced (Benner, 1985). This was a pre-organised agreement between the researcher and the participants. It was believed that this would also allow for ownership of the transcript by the participant.

Data analysis

Analysis and synthesis of this data involved the researcher reading and rereading the transcripts in order to identify significant statements, sentences and quotations made by the participants during the interviews. This resulted in the identification of themes (Jasper, 1994). These themes were then written in a report format and used to produce an account of the findings which provided „an understanding of how the participant experienced the phenomenon‟ (Creswell, 2007, p. 61). This was completed using the steps described by Colaizzi (1978). First, following transcription of the interviews by the researcher, the text of the transcript was read and re-read in order to become familiar with the content of the interviews. In addition to this, examination of the researcher‟s diary entries made during interviews was undertaken. This was done in order to understand and to convey the feelings and any expressions made by the participant during the interview, such as the inclusion of pauses. After becoming familiar with the content of the interviews, significant statements and phrases were identified. These had to be directly related to the phenomena being explored. The researcher, while examining the collected statements and phrases identified meanings to these. These were then put into themes, which then became

emergent themes. The next stage comprised of the incorporation of these themes to deliver a rich description of the lived experiences of the participants.

Conducting thematic analysis of the data

Thematic analysis is the most commonly used method to analyse qualitative data. Details of the thematic analysis process used in this study are provided. On examination of different methods that could have been potentially used to undertake this analysis phase of the study, the researcher decided that the steps formulated by Colaizzi (1978) would be appropriate. These steps provide a systematic approach, which reduce the risk of overlooking an important component of the analysis process. This process is comprised of the following steps.

1. Transcription of interviews.

2. Extraction of significant statements.

3. Initial formulation of meanings from statements.

4. Assessment of meanings from the statements and commencement of the identification of major, minor and sub themes.

5. Development of emergency themes from these theme levels.

6. Identification of themes relating to the topic.

7. Clarification of information from participants (if required).

These steps were followed by the researcher with the subsequent results found:

1. Transcribed interviews (n = 6)

2. Significant statements extracted from data (n = 176)

3. Formulation of meanings (n = 27)

4. Assessment of these meanings into the statements identified

5. Development of emergent major themes from the theme levels (n =7)

6. Identification of major themes relating to the lived experiences of ADF NOs working in military trauma teams n = 6

7. Clarification of this information with participants n=2.

Significant statement extraction

Following the reading and rereading of the six transcripts, the interviewer commenced the identification of significant statements from the interviews. This process identified 176 statements of interest and also allowed for recognition of common themes in the interviews.

Formulation of meanings

Following the identification of significant statements from the transcripts, classification of the meanings of these statements was undertaken in order for the researcher to understand them more. This is paradoxical as much of the data was interpreted in some way prior to this point in the study. The researcher developed charts with similar statements in an attempt to develop an overview of the comments made by the participants. This involved significant moving around of identified statements and determination of the most appropriate place in which to situate the statement.

Assessment of meanings from identified statement

Much time was needed to appropriately understand the meanings of things said by the participants. This was essential in order to most accurately reveal the comments made by the participants, and not to misrepresent them in any way.

Identification of themes

Once the preceding processes were completed, identification of major, minor and sub themes was undertaken. This involved the continuing reading and rereading of the participants" transcripts, so that the researcher could continue to identify significant statements and find the subsequent meaning of these statements were conveying.

Assessment of themes

After the identification of themes was completed, assessment of these themes was conducted. This involved multiple revisions of the identified themes in order to ascertain if in fact, these themes could be clustered.

Development of emergent themes

The process of identification of themes continued with the constant reading and rereading of the data. This allows for absorption of the information and affords the researcher the opportunity to fully immerse themselves in the data. This should result in the researcher knowing where they had read certain key point / words and concepts. The interviews highlighted a wealth of experience and provided invaluable stories of the participants‟ military history. All participants were very generous of their time and stories, some of which were hard for the participants to share.

Clarification of information from the participants

The final step in this process was the clarification of information with the participants. This occurred, on the whole, during the interview. However, following transcription of the interviews and commencement of data analysis, the researcher raised a couple of questions from the interviews. In order to ensure accuracy of comments, an email was sent requesting an explanation. This only occurred in two interviews with a timely response provided by the participants. During the interviews conversation flowed freely. This may be due to the fact that the interviewer is a military NO and had a rapport with the participants. The participants felt at ease and easily spoke of their experiences as the interviewer had also been deployed into a combat environment and knew what they were saying and what they meant by many of the terms and phrases used.

Introducing the participants

General summary of the participants

All participants are currently serving commissioned officers of the Australian Defence Force. Their years of service ranged from „almost‟ eight years to 32 years. All were above the rank of Major equivalent with the highest-ranking participant being that of an Air Force Group Captain (Army Colonel equivalent). All had been deployed as a member of a trauma team in either a conflict or humanitarian crisis situation. Conflict (including peacekeeping missions) experience included deployments to: Gulf War I, Bougainville, East Timor, Papua New Guinea and Iraq. Humanitarian crisis deployments included: Banda Aceh, Fiji, Nauru, Nias, Solomon Islands, and Sumatra. No specific details of the

deployments (specific locations, and mission details) will be made available in this report in order to maintain military security.

The participants

Six ADF NOs volunteered and consented to participate in this study. A brief history of these participants is provided here as a means of introduction. As previously mentioned not all personal background details provided by the participants are presented here. This is to maintain the confidentiality of the individuals. For the purpose of this study and to appropriately present the information from these participants, the use of Nursing Officer (NO) 1–6 will be used to denote each participant. As the ADF Nursing Service Branch is relatively small in numbers and with most NOs knowing each other, certain personal references such as length of military service and gender have been removed to further reduce the risk of identification. The following information was correct at the time of the interviews conducted in 2011.

Nursing Officer 1 (NO1)

The first participant to be interviewed for this study is a Nursing Officer in the Royal Australian Navy. NO1 has been an officer of the ADF for more than 10 years. When asked about their experience prior to joining the ADF, the officer stated that they had „Worked out in the bush for a long time, so I was pretty up to speed, I think, with trauma". Specific trauma training that had been successfully completed included the Advanced Trauma Nursing Management Course and the Early Management of Severe Trauma Courses (as an observer). NO1 has deployed four times. NO1 has deployed to the Solomon Islands to assist in the ADF humanitarian mission there and has also been posted to an international exercise called „Tandem Thrust". During this exercise the officer assisted with the care of patients who suffered injuries resulting from a military parachute drop. NO1 has also been posted to a further ADF mission in the Solomon Islands and lastly to one of the RAN"s Primary Casualty Reception Facilities in Nauru. This participant currently holds a senior management role.

Nursing Officer 2 (NO2)

NO2 is a Nursing Officer in the Australian Army who had also served for longer than 10 years. Prior to joining the ADF, NO2 worked as a tradesperson. Since completing a

Bachelor of Nursing degree and becoming a registered nurse, NO2 had also completed a postgraduate certificate in nursing science (clinical teaching). This officer had completed a Graduate Diploma of Nursing specialising in critical care with specialities in: Perioperative and Intensive Care nursing. NO2 has completed an array of both military and civilian trauma specific courses, which consist of: the ADF Field Nursing Course (now known as the Military Advanced Resuscitation Course), the Critical Care Rotary Wing Medivac Course (a United States Military course), and the ADF"s fixed and rotary wing Aero Medical Evacuation courses. NO2 has an extensive deployment history and has deployed on six occasions. Deployments have included the following locations: East Timor, the Solomon Islands, Iraq, Banda Aceh, Nias and Fiji. NO2 is currently posted to an ADF establishment in a senior nursing position.

Nursing Officer 3 (NO3)

NO3 is a Royal Australian Air Force Nursing Officer who has been an officer for longer than 10 years having joined as an undergraduate officer. After completing a nursing degree and gaining two years new graduate experience NO3 commenced full time military service. NO 3 had undergone numerous trauma training courses which consisted of; the Military Advanced Resuscitation Course, the Trauma Nursing Core Course, the Early Management of Severe Trauma course (as an observer) and the RAAF Life Support Skills course. This officer had been deployed on three occasions: firstly to Bougainville and following this to East Timor. The officer was a member of the United Nations Peacekeeping mission. The third deployment was to Iraq. NO3 is currently posted to an ADF establishment in a senior nursing role.

Nursing Officer 4 (NO4)

The fourth Nursing Officer (NO4) to contribute to this study was an Army Officer who joined the ADF more than 10 years ago, initially as a reservist Nursing Officer. After only a short time as a reservist, NO4 transferred to the permanent services and has remained a permanent member since then. Prior to joining the ADF, NO4 was a paramedic, St John"s Ambulance volunteer, and specialised in prehospital care and anaesthetics. The formal academic qualification of this participant is a graduate diploma in Nursing Education, which was obtained while in the ADF. This officer has successfully completed a Preventative Medicine Course at the United States Army Medical Centre. NO4 has been

deployed to the following: Papua New Guinea, Bougainville, and Dili, East Timor. NO4 has also deployed to the US Military Hospital in Iraq. This officer is currently posted to a senior management position.

Nursing Officer 5 (NO5)

NO5 is a Royal Australian Navy Nursing Officer. This officer joined the Navy more than 10 years ago. Prior to embarking on a military career, NO5 had 10 years civilian nursing experience, working in Melbourne and London, and specialising in general surgery and orthopaedics. Shortly after completing the New Entry Officers Course (a Navy specific officers‟ entry course), NO5 successfully completed the Field Nursing Course (now known as the Military Advanced Resuscitation Course). Within two months of completing this course, NO5 was posted to one of the Royal Australian Navy vessels. This officer has successfully completed the Critical Care Course at the Royal North Shore Hospital in Sydney. During this time NO5 states that they „ended up doing about six months in ED [Emergency Department] at North Shore‟. This officer is currently posted to an ADF establishment in a senior nursing position.

Nursing Officer 6 (NO6)

The final participant of this study (NO6) joined the RAAF more than 10 years ago. NO6 is a perioperative nurse who worked, prior to joining the ADF, in Melbourne and Ballarat. NO6 is also an Intensive Care Nurse and has worked in this role in both the civilian and military environment. Training courses completed include: the Trauma Nursing Core Course and the Early Management of Severe Trauma Course. NO6 has been deployed to Malaysia as a member of the healthcare team. This officer‟s combat experience is comprised of a deployment to the United States Naval Ship (USNS) Comfort during Gulf War I. NO6 is currently in a senior management position.

Summary

The purpose of this chapter has been to provide details of the methods that were employed in order to conduct this phenomenological study. Details pertaining to the study have included; study title; aim, purpose and objective of the study and the significance of the study. Information regarding the use of thematic analysis is provided and was used as a

mechanism in which to ensure validity. As this study involved the use of human participants, ethics approval was gained from both the Australian Defence Human Ethics Research Committee and The University of Adelaide Ethics Committee. This was undertaken in order to ensure that all participants were protected. Details regarding the security of the study‟s documents were also provided. Information regarding data collection and the methods to be employed to analyse the gained data has also been provided. Finally, an introduction to the six participants was provided. This allows the reader to meet the participants and become familiar with them and their military history. The following chapter shares the findings of this study.

Chapter Five

Findings

Introduction

The purpose of this chapter is to present the findings of the study. During the course of the conversations between the participants and interviewer many military terms were used. If a specific military term or terms are used in the direct quotes the researcher has put a brief explanation of the term in square brackets within the quote to assist the reader. As a result of the analysis of the transcripts the following major themes were identified:

1. Telling their stories;

2. The role – Who we are and what we do;

3. The environment – It is so different;

4. Training – Will it ever fully prepare you;

5. Working in teams – There‟s no „I‟ in team; and

6. Leadership – Will the real leader please stand up!

These six major themes were further broken down to minor and sub themes, with quotes provided to substantiate the themes.

Telling their stories

The first major issue to be identified was that all of the participants wanted their stories told. At all times during the interviews, the participants emphasised the point that they felt this study provided the opportunity for them to share their stories and experiences. When commencing the interviews it was also found that as the researcher was a military nurse this allowed for more open communication between the participant and the researcher, an exceptional bond and one that allowed for discussions that were quite frank about some experiences of a more personal nature. The participants made the point that military people

only speak to other military people about their experiences. This was highlighted in the following comment made by NO 3.

> I know you‟re military so we subconsciously talk to people who we know will understand. (NO3, p. 15)

However, although the researcher is a military NO, the experiences of each of the participants are unique and much was gained by the researcher into what other ADF NOs had experienced. As a researcher and a military nurse, I have learned a great deal from these participants and this information will now be shared with others. As the aim of the study was to gain a deeper understanding of the lived experiences of ADF NOs when working in a trauma team, the identification of major themes provided a mechanism to „get to know‟ the participants and subsequently to learn from them.

The role – Who we are and what we do

The details presented by the participants offered a rare opportunity to gain an understanding of the role of an ADF NO. Although primarily the interview was to be focused on the participant‟s role as a member of a military trauma team, they also discussed their role within the ADF. This provided an additional benefit as it gave an insight into the participant‟s feelings regarding this role. After the identification of the major theme, minor themes were found. These minor themes were; the uniqueness of the being a military nurse; the roles they perform; and being valued as a member of the team.

The uniqueness of being a military nurse

One of the minor themes identified from the major theme of „The role – who we are and what we do‟ was that of feeling the uniqueness of being a military nurse. An issue facing many a military nurses is that they are often faced with working in an unpredictable environment. Some of the participants spoke of the unpredictable environment in which they often worked. All of the participants had worked as members of a trauma team in a combat or humanitarian crisis situation and were all posted to military establishments to undertake this role. One of the participants mentioned the areas and conditions they had worked in while working in a combat zone. This appeared to be „just the place they worked and lived in‟, nothing else. However, it highlights the unusual life and situations in which these health professionals work. Further information regarding the actual environment that

these participants have worked and lived in will be discussed later in this chapter and constitute a sub theme.

> You put yourself in harm"s way. (NO4, p. 11)

> We were in a war zone, [it was] very dangerous. (NO3, p. 12)

Another participant spoke of the conditions they have worked in.

> Very austere conditions. Very cramped to begin with. (NO3, p. 12)

> While we were in Fallujah we had up to five to ten contacts a day and it was pretty hairy. (NO3, p. 13)

Military nurses are required to undertake a variety of roles in their positions as Commissioned Officers of the ADF. This often includes non-nursing roles. This adds to the diversity of their role and is characterised by the following comments.

> My role there was to do, as the Senior Nursing Officer, to organise the nurses in the organisation. But to also do, I did rotary wing AME [Aero Medical Evacuation], I did resus [resuscitation], I worked on the ward. So all these things you do in that sort of environment where you"ve got 10 people to do the jobs of 20. (NO4, p. 2)

> I went to East Timor in 2000. Didn"t do a nursing job. I worked in the contingent Headquarters as the J1 [operational military role]. Which was a weird job for a Nursing Officer. The shop [department/section] was responsible for the personnel in the Headquarters. (NO4, p. 2)

As the participants hold a range positions within the ADF, that of a member of the ADF and the role they hold as a Nursing Officer, a sub theme arose regarding the often difficult position they are placed in when having to provide care for colleagues and other members of the ADF with whom they are deployed. The following comments highlight their feelings regarding their unusual situation. These situations are not usually encountered in civilian nursing (the range of roles and responsibilities), and further highlights the differing roles military nurses have from their civilian counterparts. One such difference is the chance that the patients that military nurses may be providing care to are in the same uniform as them,

therefore providing a tangible link between patient and carer. The following comments were made by some of the participants highlighting this:

> In the military environment, potentially the guy you are treating is the guy you sat and had lunch with yesterday. (NO4, p. 10)

> He talked about the fact that the guy that gets shot, the guy who gets blown up by an IED, he is a guy that used to live with, he worked and played with and all the rest of it. And that‟s the dynamic in the military. Anybody we treat, that wears the uniform that we wear, has made certain statements, sacrifices, whatever, and they are just different. (NO4, p. 10)

> When it‟s strangers that are being brought in an ambulance, for me, there wasn‟t an emotional connection. Whereas when somebody is brought in, in front of you and it could potentially be the same person that you were sitting next to at lunch four hours earlier, it brings you into a whole different sphere, (NO5, p. 3)

Another issue facing these participants was the ability to work cohesively in an international arena. This is something that the ADF is constantly faced with in its contribution to the United Nations (UN) and assistance with other allied defence forces. Some of the challenges that these participants have faced are summarised in the statements they made:

> Working with the Americans was a challenge because in an emergency situation you‟re yelling for things. I‟ll never forget asking for a y-suction catheter and being asked „A what? What‟s that?‟ Also for drugs they use a lot of brand names and we use generic. So that‟s a challenge as well. (NO3, p12)

This comment highlighted the point that differences encountered when working in a multinational environment were at times seen as being positive with the chance afforded to gain valuable knowledge and experience for future practices identified.

> Americans do resus differently to what we do and the role of the nurse. Realistically we probably should be taking a look at what they do and changing the position of what nurses do in the space. I think we actually use nurses wrongly in our doctrine, certainly in Army‟s doctrine on resus. (NO4, p. 4)

In addition to the differences identified while working with the US military, NO3 also spoke of the mechanisms that were used during this deployment to overcome the differences between the contributing nations. The following comment was seen by the participant as a learning opportunity for both parties.

> We had to learn from them and they had to learn from us. (NO3, p. 12)

The roles they perform

Leading on from the previous minor theme, information pertaining to some of the additional roles that these participants perform was highlighted. This identified the variety of roles that these people undertake. In addition to their general nursing role, the following extra roles, that of a mentor and supporter were reported to be performed and seen as important by the participants. The role of a mentor was seen as particularly important given that much of the ADF NO time is taken supervising subordinate members of staff. Many of the officers identify that their role as a mentor is important to them and is often viewed as what makes them a good officer. When being a mentor for staff, NO2 commented that:

> I see myself as a mentor and or facilitator for the junior medics and other nurses in the team. (NO2, p. 5)

The interviews conducted not only identified the participants‟ role as mentors, but the importance of this mentoring role on their individual development. One of the other participants also said that when as a junior NO they were deployed, they felt supported and mentored by other, more senior NOs.

> There was a theatre nurse sort of took me under her wing…I felt supported by the theatre nurse. (NO3, pp. 4-5)

NO1 spoke of the dual role that they had individually performed while posted to Bougainville. Not only were they members of the trauma team, they worked in the ward and were the sole midwife for the contingent. While speaking about these varied roles, the participant did not appear to think this was unusual, in fact, it was ‚just the way it was‟ and they were proud of the varied roles they played.

Being a valued member of the team

Participants spoke of their sense of being valued within the trauma teams in which they had worked. Two of the participants spoke of their pride. The following comments illustrate the pride they felt as NOs and of their nursing colleagues.

> We've got nurses deployed in Afghanistan in autonomous positions, who are doing fantastic jobs…And wherever we do it, we do it really, really well. (NO6, p. 9)

> These girls are my heroes. The people we had, the nurses and medics were technically competent and I was as proud as punch that when we looked at things we wanted to do, the Americans wanted Australians on their team. (NO4, p. 5)

In contrast, although the two previous comments provide details of pride felt within the Nursing Branch and the role(s) they undertake, two other participants spoke of their concerns in regards to their perceived value from other ADF healthcare professionals. Terms such as „professional respect‟, „surplus to requirements‟ and „feeling like a second class citizen‟ highlighted an underlying sense of a lack of belonging with the ADF health community by these participants.

> Let's face it in the defence world; nurses are „surplus to requirements‟. Really it's all about doctors and medics. Not sure about Navy and Air Force, but really Army nurses have become full time „surplus to requirement‟, which is unfortunate. I really like being a military clinician, you know. (NO2, p. 7)

> There are many people in the ADF who don't think that nurses have a place. (NO6, p. 5)

Although the previous comments highlight the participants‟ feelings in regards to the perceived lack of respect afforded to ADF NOs in the teams, participants one and six felt that they were respected in their teams. Participant six also voiced this, but remembered and mentioned how difficult it was to be a member of a resuscitation team in civilian practice. This is evidenced by the following two comments.

> I know a lot of nurses say that they felt like a second class citizen, but I don"t think I ever felt like that in a resus team. (NO1, p. 6)

> Yeah look, the beauty of being in a resus team is that you are relatively well respected in your place in that team as opposed to, I have some negative experiences working in trauma teams in the civilian world before I joined the ADF. (NO6, p. 3)

Learning from experience

Another sub theme identified was that of learning from experience through personal reflection. One of the participant"s spoke of the reflection they had undergone in regards to their experiences and spoke of their methods for preparing with future deployments and how they would help themselves and others in these situations. This participant was very junior (both in age and clinical experience) when they joined the ADF and appeared to have reflected greatly about the way they have managed many of the situations they have been involved in and ways in which they will deal with situations in the future.

> So probably would be less hard on myself. (NO3, p. 14)

> I would debrief with people. (NO3, p. 14)

This participant also provided details of their process of reflection regarding the mistakes they had made on a deployment to Iraq. However, the mechanism used by this individual was seen as unusual by US nursing colleagues that this participant spoke to at the time.

> But even in Iraq we made big mistakes, we made very big mistakes with our patients and we were able to fix them, but when we mentioned, I would mention my mistakes to American nurses, and they would say „Why are you telling me that". And I"d say so that you don"t make the same mistakes I did. (NO3, p. 15)

The environment – Is it so different?

One of the major themes to be identified was that of the environment in which the participants worked. On the surface this environment may appear similar to that of the participants" civilian counterparts given the downplaying of this by the participants.

However, on closer examination, the environment differs immensely from that of a civilian trauma nurse working in a health facility, be it in a large urban hospital or a small country hospital. The deployments that the participants spoke about varied greatly from that of conflict situations to peacekeeping missions. The location of the deployments included:

- Banda Aceh

- Bougainville

- East Timor

- Fiji

- Gulf War I

- Iraq

- Nias

- Nauru

- Papua New Guinea

- Solomon Island

- Sumatra

The deployments to the above locations included both land and sea operations. Although officers from all three services participated in the study, many of the deployments they spoke about were tri-service deployments. The participants spoke about the environment(s) in which they had worked. The stories provided by the participants were examined and broken into two distinct sub themes: the physical environment and the psychological environment and the impact of these environments on the participants. The physical environment specifically relates to the tangible environment in which the participants worked, with these consisting of: combat situations, austere and harsh conditions, for example. The psychological environment focuses on comments made by participants regarding their feeling reactions when having to care for colleagues and other personnel wearing the same uniform as them.

The physical environment

Details were provided which offered a view of the environment in which these individuals have worked. Many highlighted the fact that the world they worked in was quite different

from that of their civilian counterparts. One participant (NO2) describes their feelings regarding the differences between military and civilian nursing by stating that:

> It‟s a different world. You can‟t compare the two. (NO2, p. 8)

Although it is assumed that military personnel, including health personnel, are appropriately prepared to enter into harsh and hostile environments, participants spoke of some of these environments and the subsequent impact and suffering by these personnel. In regards to the actual physical environment, the following is provided.

> Very austere conditions. Very cramped to begin with. (NO3, p. 12)

> You put yourself in harm‟s way. (NO4, p. 11)

The comment from NO4 was said in such a way that although it is known that when in a combat environment it is potentially dangerous, it was said without apparent affect and in such a way as to say, it is just our job and we just get on with it. Participants also highlighted the adaptive mechanisms they employed in the field, in particular when they did not have all the equipment usually available in a hospital environment. One participant (N03) spoke of the ability to use alternative resources to fit the need.

> When we got there our resus box was a fishing tackle box. (NO3, p. 12)

Other participants spoke of the environment encountered in a combat situation and the work they were doing. This further emphasises the harsh and dangerous conditions in which they worked.

> We‟d been there a week and we had a mass trauma come through. We‟ve got 35 patients that were all Priority 1 patients and they arrived in about an hour. The first four patients were categorised as T4 when they came off the helicopters. (NO4, p. 4)

> We had seen some stuff that no one had ever prepared for… so there was nothing that could really prepare us for what we saw. (NO2, p. 7)

As is often the case when working outside a hospital environment, the ability, flexibility and adaptability of the team members to work with little is a valued trait. Participants spoke of this ability:

> I think another thing for me was just working in those conditions. So obviously, you know, drugs. There were some drugs we had to put in the fridge, as well because of the heat the humidity and stuff like that. So just the mere fact of how much space you had, and the hygiene issues. So, you know it wasn"t very clean. We kept it as clean as possible (NO3, p. 13)

Following on from the previous comment, NO4 speaks of the way in which the team undertake their jobs in these, at times, adverse and challenging environments:

> And I think our guys did exceptionally well. Our guys are often very quiet and calm through their behaviour influence the rest of the place. Not by saying this is how you do things, just by doing the right thing. Doing things a little bit better. (NO4, p. 5)

This participant also stated that the reason for this pride was evident in the fact that the American team that the Australians were working in wanted Australians in their team:

> The people we had, the nurses and medics were technically competent and I was proud as punch that when looked at things we wanted to do, the Americans wanted Australians on their teams. (NO4, p. 5)

Working with less

Another physical environmental issue identified by the participants was the notion of having to work with little and not being able to take all of the equipment they would have liked to have taken with them. Deploying into a harsh, dangerous environment, often at little notice, means that many of the „usual" pieces of „kit" have to be left behind. One of the things mentioned by one of the participants was that of having to do trauma resuscitation with very little:

> But I did the best I could. Yeah, I did the best I could with what I had ...We did the best we could with what we had and it worked well. (NO3, p. 10)

At no time during the interviews did the researcher feel that the participants were justifying their actions or were blaming themselves for a poor outcome due the fact that they did not have all that they needed. Comments including; „It was just a reality", and something that they „just dealt with" and „made the best of" the situation" reinforced this. It again

highlighted the sub theme regarding the participants" ability to be adaptable and flexible in their workplace.

The set-up – A place for everything

Another physical issue identified by the participants was that of the need to have a place for everything and the „set up" to be able to accomplish their goals. As many of the teams were a combination of team members who may or may not have worked together previously, the issue of having a structured set up of the environment was seen to be of great benefit. A benefit to the patient is that staff knew where equipment could be found at little notice and a benefit to the team members who would have their, already heightened stress levels, decreased because they would know where to find things:

> Knowing that the set-up of the resus bay or the trauma environment we"re working in because it now has become a standardised set-up so that you can go from a resus bay on exercise and then end up in a resus bay in Afghanistan, East Timor or wherever. (NO2, p. 5)

> So Group Captain xx made sure we had it set up as we should and everyone was familiar. (NO3, p. 8)

These comments highlight the benefits seen by the participants for a formalised trauma environment, one with which all trauma team members are familiar. This is of great benefit given the team rotation that occurs at short notice.

The psychosocial environment

The previous section details the physical environment experienced by the participants during some of their deployments. The second minor theme identified within the „The environment – It is so different" major theme, was that of the psychosocial aspect encountered by the participants. When examining this minor theme, an additional two sub themes were also highlighted, these being the horrors of the environment and coping within this psychosocial environment. No published work is currently available to show the psychosocial effects on current ADF NOs who work as members of trauma teams. This provides an opportunity to learn from the participants about psychosocial environment they have experienced.

The horrors of the environment

Many of the participants discussed the environment that they had worked in with some providing details of the horrors they had seen and experienced. The stories shared by these participants provide a rare view of the world of the ADF NO when deployed and identifies the consequences of these environments of them and some of their colleagues.

> Iraq was a very hard deployment and unfortunately there are quite a few of us in that Australian contingent who have been medically discharged for medical reasons and for psych from the deployment. (NO3, p. 15)

One experience, which has greatly affected NO5, is that of the contribution when an ADF helicopter crashed killing seven of the nine crew members. One of the participants assisted in the provision of trauma care to the patients from this incident. The following comment was provided and highlighted this participant's personal thoughts and feelings regarding this devastating incident:

> It was unfortunately when the SeaKing crashed that the situation highlighted how well a resus can run when it needs to. After sitting there for three months and thinking, gee it would be nice to have something to do, when suddenly presented to you, it is not what you want to be doing at all. (NO5, p. 2)

This comment highlights the effect on healthcare professionals who work and live with their potential patients. In a defence force this will remain a likely event given the nature of deploying military health personnel. As yet, no method for preparing health personnel to deal with this situation has been found, nor may this be possible in the short term.

> It was a really challenging position to be in, in that you're there and you want to be contributing and you want to be making a difference. Yet the sort of thing you have to do, you don't want to be doing. (NO5, p. 2)

> In the military environment, potentially the guy you are treating is the guy you sat and had lunch with yesterday. (NO4, p. 10)

He talked about the fact that the guy that gets shot, the guy who gets blown up by the IED, he is a guy that he used to live with, he worked and played with and all the rest of it. And that's the really different dynamic in the military.

> Anybody we treat, that wears the uniform that we wear, has made certain statements, sacrifices, whatever, and they are just different. (NO4, p. 10)

> Now in a war zone we expect to see really shitty things. But you and I both know that if you put a uniform on you should really expect to see really shitty things. (NO6, p. 5)

Coping

Many of the participants spoke of their need to find way in which to cope with unfamiliar environments, particularly where inexperience in the environment caused additional stress. This inexperience could have been related to the participants themselves or the inexperience of others. After speaking of the horrors that some of the participants have experienced one participant (NO3) provided details of the way in which this has affected them and the way in which their personal coping was achieved:

> And I"m not saying that I"m the most resilient person in the world, but that"s how I process. My husband tells me I"ve changed since Iraq. He tells me I"ve changed quite significantly. (NO3, p. 15)

In addition to the comments provided regarding the horrors encountered by the participants, with three participants also discussing their thoughts and personal experiences regarding their inexperience when they first deployed and of others who had deployed with them. Comments made by these participants reflect the need for experience, not only in clinical skills, but also regarding military experience prior to entering these unpredictable environments when deployed:

> I was really quite junior and I really quite remember my experiences there as being, you know, quite a steep learning curve. (NO3, p. 1)

> That was actually the first time I"d seen a CPR for the first time as well. So that was pretty full on, and more vigorous and quite rough really. I was quite, it doesn"t look like that in videos. (NO3, p. 4)

> And having only been in just 12 months when I deployed. (NO5, p. 2)

NO1 also spoke of concerns regarding other team members. This incident relates to the Medical Officer working in the team and his lack of experience in clinical decision making.

> I also think he was not experienced enough to realise what he was doing. (NO1, p. 4)

> A trauma can be quite confronting and given that they've spent their time in RAPs [Regimental Aid Posts] and sickbays. (NO2, p. 10)

These comments were said without malice to the individual MO involved, but highlighted the fact that some healthcare professionals being deployed were clinically and militarily too inexperienced to deploy.

An additional issue facing another NO (NO5) was the inexperience of an Army team that was deployed to augment the Navy trauma team. This inexperience in the maritime environment for this Army team and their perceived inflexibility was of concern to the NO. This is highlighted by the comment made regarding the inflexibility of the Army team members.

> I also found at times because of the workload in other areas, we may have needed to take personnel out of these teams. But they [Army] had no flexibility whatsoever. They said, „We came as a team and we stay as a team". They had no flexibility to be able to say, „OK, we've got nobody here so we'll move a couple of guys in the HDU [High Dependency Unit] or whatever. There was no flexibility whatsoever. It was indoctrinated in them that this is what we do, we came as a team, we stay as a team. But from a Navy perspective, we have a lot more flexibility to cover a number of roles. (NO5, p. 5)

Although this can be seen as a disadvantage of deploying inter-service team members into other services environment, it can also been seen as a learning opportunity for those who receive team members into their group.

Training – Will it ever fully prepare you?

Although training is essential and has been undertaken by all participants in anticipation for their role in a trauma team, one participant (NO2) summed up their thoughts and feelings regarding the limitation of training given the environment in which many of them have worked.

> We had seen some stuff that no one had ever prepared for…so there was nothing that could really prepare us for what we saw. (NO2, p. 10)

When examining this major theme, minor themes were identified and included: preparing for an uncontrollable environment; Who am I working with in this team?; Training in the field; and The future of ADF trauma training.

Preparing for an uncontrollable environment

Although all participants had undergone some trauma training prior to deploying and working as a member of a trauma team, participants comments indicated that some aspects of their training worked well, but that there were also some experiences and situations that they felt that they were not prepared for and maybe could never be fully prepared for. Comments varied and were both positive and negative. Participants also provided details of their experiences when preparing to deploy. Comments regarding the benefits of their military training include:

> We"re getting better and better at preparing people. Our deployments are not a walk in the park. (NO3, p. 16)

> We"re currently rehearsing as much as we can. (NO2, p. 11)

> Nothing ever prepares you for that emotional response and when the adrenaline kicks in. That"s the biggest thing that I"ve taken away. And while nothing prepares you for that, once that happens your military training just kicks in. (NO5, p. 6)

They also highlighted the importance of training prior to deploying. One of the participants, a Navy NO who was posted to an Army unit spoke of the importance of

having a structured approach to resuscitation and the bay in which they would conduct this resuscitation:

> The Army had a very structured way of setting up the resus bay. (NO1, p. 5)

> Everything had its place and we all knew where these places were and how to get our hands on things. (NO1, p. 5)

This standardised approach to the trauma bay environment was also addressed by NO2, who provided the following comment:

> Knowing that the set-up of the resus bay or the trauma environment…has been a standardised set-up so you can go from a resus bay on exercise and then end up in a resus bay in Afghanistan, East Timor or wherever, and the big ticket items are in the same location. (NO2, p. 5)

Finally, a comment made by NO5, makes the point that although training is vital, it should be remembered that training can never really prepare for all that people will see. This is evidenced in the following comment:

> The biggest thing that struck me, in terms of preparation and training, and I'm sure everybody would say the same thing, is that no amount of training and simulation ever prepares you for the emotional reaction and the adrenaline rush when it happens for real, and when it's colleagues you're dealing with. (NO5, p. 2)

Who am I working with in this team?

As trauma teams are usually comprised of multidisciplinary individuals, the training provided to prepare these team members was identified as another minor theme of training. This sub theme entitled „Who am I working with in this team?‟ illustrates the participants‟ thoughts regarding training to prepare individuals to care for trauma patients, but also to work within a team as a team member. Information pertaining to the training provided in preparation of a team deploying was provided. This comprised of both the positive and negative aspects of this team training.

What was lacking was an intimate knowledge of each other's strengths and weaknesses…And this was something that could be really developed by being trained as a team. (NO2, p. 6)

I think to me the Australian Defence Force do single specialty training very well. There's a couple of gaps. But when it comes to team training, I think we've got a long way to go. (NO2, p. 6)

I think there's an assumption that people know how to put a needle in, that people know how to manage an airway. So the skill is not confirming that someone can put a needle in, manage an airway or any other skills, but how do they work as a group. (NO4, p. 7)

The way we designed the delivery of training lends itself nicely to members who aren't familiar with each other, just unconsciously knowing what to do. (NO2, p. 5)

Are we training for trauma? Yes, we are…the field nursing course I did really taught me the Australian way of managing trauma and then when we worked in the US Air Force Hospital, of course we didn't apply it, it wasn't their doctrine. Their doctrinal way of running a trauma team was completely different. So whilst we teach people trauma, and the role they play in a trauma team…you need to have an inherent flexibility. (NO4, p. 8)

Although some of the participants highlighted the positive aspects of their training and the developments, which have occurred since commencing their training, one participant spoke of differences to training opportunities afforded to ADF medical personnel and not to nursing personnel, and questions why this is allowed to occur:

We're looking at the Army developing and securing 10 training positions at xx Hospital. So they will train people in uniform to become anaesthetists, surgeons and intensivists and people like that. Why haven't we done this for nurses? (NO 6, p. 8)

There appeared to be no answer provided to this question, but at least this question is being posed by ADF NOs. However, mechanisms to enhance current training were provided and included:

> Using that Air Force model of crew resource management, that‟s what we need
> to get. (NO4, p. 8)

Training in the field

Information pertaining to the training of team members prior to deployment highlighted the strength and weaknesses of this training. However, training conducted during deployments appears to have only occurred for one participant. Therefore, in addition to pre-deployment training, training conducted while on deployment was also mentioned by NO3.

> We actually had training quite regularly in that deployment so that people
> knew what they were doing… we had regular training sessions as well. So we
> had a lot of inservices (NO3, p. 6, and 8)

Working in teams – There's no 'i' in team

The major theme entitled „Working in teams – there‟s no ‚i‟ in team‟ – was identified from comments made by some of the participants and which related to some of the participants‟ thoughts regarding issues and situations they had encountered while working in trauma teams. As a result of identifying this major theme, minor themes were identified and included: The team – Who are these people?: individuals in the team: formed versus ad-hoc team compilations: familiarity in the team: having a role in the team: and knowing what this role is.

The team – Who are these people?

In many ADF deployments specialist officers (surgeons, anaesthetists for example) deploy for a shorter time than the rest of the healthcare team. These officers are usually reserve members of the ADF and are afforded the opportunity to deploy for shorter periods of time in order to leave their practices and provide specialist services to the ADF. This is of great benefit to the patients that they care for, but is often a difficult situation for the team prior to their deployment and following their short term deployment. NO1 provided details of the difficulties associated with these specialist officers and the effects on the team:

> We would have specialists who would rotate through every couple of weeks.
> (NO1, p. 5)

We would get new specialists who would come in and they would think they would know how to do it better. (NO1, p. 5)

These guys came and said we can set this up much better for you and started to muck around with the way the whole thing was set up. This caused some angst, as you can imagine. (NO1, p. 5)

The above comments identify concerns raised by this participant in regards to the rotation of staff and the impact it had on the team.

Getting the team together

Although the interviews were unstructured in approach, participants were asked for details of the composition of the teams in which they had worked. The following team compositions occurred in these participants" experiences.

The composition of each of the teams was a nurse as the leader, there were three nurses, and about six medics. (NO2, p. 9)

I was airway… And then we had the doctor there, and then we had the medics there. One medic was actually pretty much scout, so getting stuff. Then there was another medic putting in IVs and doing drugs. And then we had a dentist who was actually scribe. (NO3, p. 6)

The composition, from memory, was we had a medical officer, myself doing the airway and then I recall a sergeant and I think two privates. (NO5, p. 4)

These participant"s provided specific details of the make-up of the teams they had worked in. It also highlights the fact that these teams were multidisciplinary in nature.

Pre-formed versus Ad-Hoc teams

Participants were also asked about the teams they had worked in, with an additional question relating to details regarding if the team was pre-formed or was an ad-hoc compilation of personnel at the scene of the deployment. The interviews identified that two types of teams were deployed: pre-formed teams and teams put together when required. Concerns were raised about teams that were formed ad-hoc and not prior to deploying into

the field. The following comments relate to the teams that were not pre-formed prior to deploying:

> Short answer is, no we didn"t. We didn"t have formal teams. (NO1, p. 2)

> No, it was rotated because the nurses worked shift work and it was whoever happened to be on that particular shift. (NO1, p. 5)

> A lot of the teams were cobbled together on the spot. (NO4, p.7)

In addition to the above comments, NO1 also spoke of experiences while deployed at sea and the method employed to put their team together at short notice:

> We had a doctor onboard…and it would have been a matter of them running around rounding up a couple of medics and rounding up the nurses and going „we"ve got a casualty". I can give an example. A man had malaria, cerebral malaria, so was quite ill and had collapsed and it was just a matter of who was around at the time, „Let"s go down and fix him up". Which we did. (NO1, p. 2)

Alternatively, another participant spoke of teams that they had worked in and in which were pre-defined prior to deployment.

> There was a dedicated trauma team. (NO2, p. 6)

> Yes, there was a dedicated trauma team. And most trauma teams were identified prior to our deploying into location except for Banda Aceh and we ended up on the plane on the way over splitting ourselves up into teams and coming up with a team roster. (NO2, p.6)

It was also identified through the interviews that the type of deployment also affected the decision when determining if a formed team would be used. Although NO1 spoke on experiences at sea which did not involve the use of a formed team, the participant also spoke of another deployment, which utilised a formed team approach:

> In Bougainville…we did have formed teams and we were on call for any trauma that came in. (NO1, p. 2)

These above comments highlight the fact that some of the participants had concerns about determination as to the use of a pre-formed as opposed to an informal (ad-hoc) team approach. Some felt that this was due to the need to determine the most appropriate team when details of the type of deployment and the type of personnel being deployed was available.

Familiarity within the team

Participants highlighted the concerns they had regarding the issue of deploying team members who did not know each other prior to deploying. Their comments also addressed the issue of tri-service and mixed service teams deploying at short notice. This should not be of concern, however, in the majority of cases these mixed teams were deployed to unpredictable environments and into environments that were not their own. One such story tells of an Army trauma team being deployed onto a Navy ship and having to deal with a mass casualty situation shortly after embarking on the ship – an unknown environment to some of the Army team:

> I was the only Navy person. All the rest were Army and had only been on the ship for 48 hours… And I remember looking at them at the time and thinking they were almost too clinical, almost too robotic in their ability to do what they had to do. But it was only when I had time I said „no they don‟t have the same emotional connections‟. For them these were strangers. So they were able to function very well. (NO5, p. 3)

This statement highlighted the fact that this individual felt that they were „the odd one out‟ in the team. Conversely, comments were made by some of the participants regarding the benefits of sending trauma team members who had worked together previously. This may not always be an option, but the comments made support this approach:

> We‟d worked together before and knew each other‟s strengths and weaknesses. (NO2, p. 9)

> I think that this one worked because not only were we familiar, we also had the respect of the medics because they‟d seen us doing stuff. (NO2, p. 9)

Contrary to the above comment, NO4 spoke of a different approach taken to identify the team members.

> It was an interesting thing because we were going to be „the team", but we didn"t actually meet as a team until we arrived. So a mixed organisation pushed together, cobbled together. The first resus was just after we arrived and that"s when we worked out who was who and what we were doing. And got an idea about what their individual capabilities were. (NO4, p. 7)

Although the previous comment provides details of a particular organisational team approach, the participant did not elaborate on the effectiveness of this team approach.

Having a role in the team

Within the military environment, a notion of place definition is made clear early on in an individual"s career. This is reinforced through the use of rank and discipline in the military. One of the participants NO2, provided details of their particular method of ensuring that all team members (including the Medical Officer) were aware of their roles in the team:

> I gave him my boundaries, or her boundaries, and I"ll say „this is my scope of practice, this is my role in the team, these are the other team members" roles in the team and your role is this. (NO2, p. 7)

> I make it a point of allowing the doctor to be hands-on in the primary and secondary survey. (NO2, p. 7)

Other participants spoke of the team composition they worked in:

> We had a role to play in that team. The Nursing Officer was responsible for the airway management. The medics would put drips in…Usually an allied health professional, like a radiographer, would be scribe and the doctor would be overseeing the whole thing. (NO1, p. 2)

> Even on the COMFORT [US Navy Hospital ship used in the First Gulf War], you knew your place in the team. (NO6, p. 4)

> You had a definite position in the team and you were respected for that. (NO6, p. 4)

Comments relating to the benefits of individual team members being made aware of their roles were made and that this and allowed for little role crossover. It appears from these comments that individuals had a role and knew what was required of them in this role.

Knowing your place in the team

The teams that these participants were members of were made up of multidisciplinary individuals. However, some of the participants provided details of their experiences in which they felt that they were clinically restrained. They stated that they felt that the military rank structure and the concept that „Doctor knows best‟ impacted on the care provided to their patients. It was also felt (from the comments made by the participants) that the role of the NO was diminished in the team. One of the other participants also spoke of similar concerns and the fact that although the individual was a healthcare professional, they felt constrained by the hierarchical military rank system. This was evidenced in the comment made regarding the treatment provided to a patient and the fact that the participant believed that a chance existed that a charge of insubordination may have occurred for voicing clinical concerns. The following comments show the participants‟ concerns in regard to knowing their place in the team, and more importantly that role in a military structured organisation.

> But because I was a nurse, it was like „well stuff you, I don‟t need to listen to what you‟re saying. (NO1, p. 4)

> A child with meningitis, obvious meningitis. It was a young baby with a bulging fontanel and the doctor decided to do a lumbar puncture and I could just not see the point in that. I do remember arguing with the doctor and saying „xx the kid could cone‟. And he said, „Well yes that‟s a possibility‟ and went ahead and did the lumbar puncture anyway. I thought it was putting the child at risk of coning. The kid didn‟t cone, I‟m glad to say. The sample was useless and the kid was put on broad spectrum antibiotics. (NO1, p. 3)

> I think the most poignant thing in the resus, it has nothing to do with drugs, but putting in an IDC [indwelling catheter] with a suspected fractured pelvis and I was putting in the IDC and said to the surgeon, „I think I can‟t go any further. I think there‟s some trauma there‟. And he told me to keep pushing and I wouldn‟t. So I withdrew the catheter and there were all these big clots came

out of his urethra. And I thought, looking at the surgeon, I probably give him the look of, see there you go. I was a Flying Officer, so I'm surprised I never got charged! (NO3, p. 9)

Leadership – Will the real leader please stand up!

When mentioning the military to anyone outside of it, connotations of a hierarchical system come to mind. One of the major roles of any military officer is that of leadership. Training is provided to all officers to ensure they are appropriately prepared to undertake this responsibility. This role is carried out in addition to their primary role and in the case of the participants, this being the provision of nursing care. However, as previously mentioned, the role of an ADF NO is multifaceted with direct patient care being just one of the roles they perform in their daily occupation. The participants offered their thoughts and feelings regarding the issue of leadership, not only about the leadership provided to them, but also their role as a leader. One of the NOs spoke of the team they worked in and the fact that a nurse was the team leader.

> The composition of each of the teams was a nurse as the leader. There were three nurses, and about six medics. The medics were split across the nurses, and we had two doctors. (NO 2, p. 9)

 When discussing this role, some of the participants spoke of their role as the leader, but also on their experiences of others who were called upon to provide leadership to them and others.

> I guess I had to prove myself as a team leader. Just by getting in there and doing it. And the reason I say I had to prove myself was that the notion is that nurses are great at the skills part, quote unquote, but we're just not crash hot on the command leadership and management stuff. I disagree with that notion. (NO2, p. 8)

> I think it's the nurse that was in charge of the resus the majority of the time. And I'm not saying that's the right person…It has to be someone in control of it, because it has to be coordinated. (NO3, pp. 10-11)

> Well the team leader was not identified, but from my memory the doctor was actually acting like the team leader. (NO3, p. 6)

> Nurses provide leadership by coaching, encouraging, deferring when appropriate and encouraging people to accept responsibility and accept other things. (NO4, p. 9)

> We have people who display leadership all the time. They're keen, they're enthusiastic; they understand what we're doing. Understand the environment we're working in and trauma in the military environment is really different. (NO4, p. 10)

Many of the comments provided by the participants focused on the topic of leaders and leadership within the teams they had worked and who the participant(s) felt the most appropriate person in the team to carry out this role. One of the participants provided thoughts about leadership and the role of an unofficial leader:

> Ah, there's assigned leaders and there's real leaders. So I have watched people who are clinically brilliant who can provide guidance, but don't necessarily lead a team and I've watched guys you would say are, alright looking at Iraq, looking at a team one of CSM's used to do a fair amount of work in the emergency department. So I'd say he was a seriously well trained medic, but he's working with doctors, physician's assistants, nurses, respiratory techs and all the rest of them. Is he running the resus? No he's not. Is he running the trauma bay? No he's not. Is he providing leadership in the environment? Hell yes. (NO4, p. 8)

Summary

The purpose of this chapter has been to provide details of the major, minor and sub themes identified following analysis of the data. Six major themes were identified. The first theme involved the telling of the participants' stories and their feelings that their stories should be told. This then lead on to the second major theme, „The role – Who we are and what we do". This theme provided information about the specific roles that the participants have held, and what is involved in their roles. „The environment – is it so different" was the next

major theme identified. Details in this theme included information and experiences of the participants in regards to the physical environment (minor theme) in which the participants have worked. The psychosocial environment (minor theme) spoke of the participants‟ stories regarding the horrors that they had witnessed while working in trauma teams and also the ways in which they cope with the psychosocial environment to which they have been exposed. Details of the training – „Training – Will it ever fully prepare you‟, undertaken in order to prepare the participants to work in uncontrollable environments. The theme and subsequent minor themes provided details of team members that the participants had worked with and the stories relating to these teams. The participants also provided details of the teams and issues surrounding the use of a formed team versus that of a team formed at short notice or ad-hoc. Additional minor themes in this major theme presented the participants‟ stories regarding the need for having a role in the team and knowing your place in the team. The final major theme to be presented was that of the issue of leadership with the major theme being entitled „Leadership – Will the real leader please stand up‟. This theme offered the thoughts and feelings of the participants in regards to being a leader and that of the role of leadership in the military environment. The themes identified as a result of the interviews and subsequent analyses of the transcripts have been presented and supporting comments and quotes provided by the participants included. The following chapter will present an interpretation of the findings and will summarise the study. The information and stories given by the participants highlight that the contributors to the study are proud of the work they do and are willing to share their stories, even if they are personal and at times difficult to share with others. Without their stories, this study would not have been possible and the world and experiences of some ADF NOs would not be told.

Chapter Six

Interpretation of findings

Introduction

This study aimed to gain a deeper understanding of the lived experiences of Australian Defence Force (ADF) Nursing Officers (NOs) who have worked as members of military trauma teams. The study has provided an insight into the lives and roles of these participants. The themes identified from the comments made during the interviews provided an appreciation of the working and living life of these NOs. It provides an exceptional opportunity to hear their stories and learn of their lives as military nurses. It is a reality that limited research has been published into the individuals who make up the ADF Nursing Service Branch. Many NOs downplay the things they have done, the places in which they have served and the sometimes personally difficult situations and experiences in which they have been involved. The stories they have shared are often untold and this knowledge should be shared with the participants wanting those outside the ADF to know and understand their role in the Australian military. This study has provided those who read it, a rare opportunity to learn what it is like to be a military nurse. Given that this knowledge and these stories are rarely articulated outside of a military environment (Doctors do cry, 2005), the study provides an opportunity in which to learn about these individuals and what they have experienced.

So what makes an ADF NO?

Throughout the identification of themes in this phenomenological study, certain traits of these individuals were continually identified. The stories and experiences told by the participants speak of their individual sense of being unique. These individuals shared their stories, the feelings they experienced while working in a trauma team. Of particular note, were the stories that told of their flexibility, and adaptability while working in combat and humanitarian crisis environments. Finally, their need for a sense of belonging within the ADF, specifically the Health Services Branch of the ADF, was particularly pertinent. Given that in ADF trauma teams, NOs play a vital role, their contribution is essential.

Finally, their need for a sense of being valued by this large organisation (the ADF) was also seen by the researcher.

The uniqueness of ADF Nursing

Participants spoke of their feelings in regards to the role they played as a member of the profession of nursing. However, this was not an issue regarding them *being* a nurse, but that their individuality occurred in regards to the context and environments in which they nursed. This is echoed in a number of other studies (Bassett, 1997; Biedermann, 2002, 2004a, 2004b; Biedermann, et al., 2001; Gawande, 2004; Scannell-Desch, 1996, 1999, 2000, 2005; Scannell-Desch & Anderson, 2000). The impression given was that they were ‚just doing their job" but they were very proud of the role they had in the ADF and in nursing as a whole. As previously mentioned, ADF NOs perform their roles in a variety of locations, many of which are unfamiliar to anyone outside of the ADF. They are deployed at short notice, for often, an undisclosed length of time, into hostile and harsh environments. Given that many of the deployments undertaken by ADF health personnel are at short notice and as a result of this are often tri-service operations, having a formalised and structured approach to training and teamwork practices has been seen as beneficial.

The conditions spoken of are not confined solely to ADF NOs, but to all military nurses and military healthcare professionals (Kraemer, 2008). Many of the deployments result in long periods of separation from families, friends and their homes, but this is the life they have chosen to live, and the careers they have chosen. However, this way of life can have a detrimental effect on some individuals, and as discussed by NO3, some individuals suffer both physically and psychologically as a result of their deployments.

> Now in a war zone, we expect to see really shitty things. But you and I both know that if you put a uniform on you should expect to see really shitty things. (NO6, 05)

Their role in a trauma team

The aim of the study was to gain a deeper understanding of the lived experiences of ADF NOs while working as members of a trauma team. Although the study specifically aimed to explore the experiences of the participants while working in a trauma team, so many aspects of the stories resonate with military NOs outside of this context and add to the overall study. Much insight has been gained into the role of the NO in a trauma team and the varying roles and responsibilities of ADF NOs who work in trauma teams. These are expressed in the stories provided about the role of US NOs and this knowledge may be appropriate for consideration in the ADF. With the continuing deployment into international teams these advancements of the profession of military nursing will be enhanced.

From the historical role of a handmaiden to the medical profession (Australian War Memorial, 2010b) to that of the leader of a dynamic and highly technically skilled trauma team, the role of the ADF NO has and will continue to progress. In addition to the details of their roles in trauma teams, the subject of leadership was a significant issue raised by the participants who spoke about this and their expectations of a leader"s behaviour. As one of the roles and responsibilities of a military officer is that of leadership, it was not surprising that participants spoke of its importance and the way in which this role should be undertaken. The participants also spoke of tension often encountered between the notion of a designated leader and the individual who was actually taking on the leadership role in the team. This may result from the interplay between military rank and the assumptions made about leadership in regards to discipline and the recognition of field experience both military and civilian. The tension surrounding the role of the leader often arises from the fact that these determinants of leadership at times do not match.

Learning from their experiences

Many of the comments made by the participants highlight the need to learn from others and to use this knowledge to appropriately prepare future military health personnel to enter and work in the environments to which they will be deployed. This knowledge should also be used to assist the civilian health sector to continue to work with the military and for both parties to learn from each other. However, the training provided a baseline of

knowledge into the training undertaken by the participants and their thoughts and recommendations for future training of ADF NOs who will work in a trauma team. This training, both the positive and negative aspects, will assist with the continuing development of NOs who work in these teams. Although it was stated by one participant that regardless of the amount of training provided in preparation to work in a trauma team, the fact still remains that there will be some situations for which no amount of training will comprehensively prepare all team members to manage. The mentioning of some of these experiences may help others to deal with difficult situations. The sharing of these stories and experiences can only help to assist with the preparation of future ADF trauma team members.

Some of the participants spoke of their experience when they first joined the ADF and during their first deployment. The feelings expressed by these participants about their concerns regarding the inexperience of team members is not confined to ADF NOs, as Baker, Menard and John (1989) also write of feelings of inexperience of American military nurses deployed to the Vietnam War. Participants also spoke of the horrors they had seen and encountered during their deployments and as members of these teams. This is not exclusive to these individuals. Horrors of military experience have been discussed by other military trauma team members (Sarcevic & Burd, 2008). It is hoped that through the sharing of these feelings and concerns, future military nurses will realise that they are not alone with these feelings. In addition, it is hoped that the knowledge shared will be used to enhance current preparation of both military and civilian nurses to work in these stressful teams and situations more easily.

Flexibility and adaptability

One of the major concepts identified from the comments made by the participants was that of the participants‟ ability to be flexible and adaptable in difficult circumstances. The environments in which they have worked highlighted the lack of equipment available to them and the need to have the ability to work with individuals from international organisations. Throughout the interviews and with stories and experiences shared, a feeling of flexibility and adaptability of these individuals was evident. Expressions like „working with little‟ and „doing the best with what we had‟ were often expressed and displayed a talent to adapt and to work with what they had. These situations were expressed as often

difficult when added to other burdens encountered when deployed - harsh working and living conditions, combat situations et cetera. At no time was an impression of feeling „hard done by" or voicing of complaints about this situation heard. It is „just the way they operate" and they accept and adapt to all the situations they work in appropriately. However, the knowledge gained from the participants also highlights the value of planning and providing structure within a trauma team so that NOs do not always need to go to „plan B".

Being valued as a NO, a team member and a member of the ADF

All Nursing Officers in the ADF are commissioned officers and are often seen as „one of the gang" in the ADF. However, some of the participants voiced their concerns regarding their place in the „gang". Participants spoke of their feelings of being valued as a member of a trauma team, however on closer examination of the comments a sense of being valued was seen to be broader than just that of being a member of a trauma team, rather they seem to have needed to feel valued in the wider ADF community. It was important to the participants that their stories be told not only within the military, but to the wider community. This allows the participants to share their stories and allows others to consider the value of these and other ADF NOs and the contribution they make to trauma teams, the ADF and the community at large. Although feelings of not being valued appeared in the comments made by some of the participants, these participants have the ability, through this study, to make a difference and to become valued not only in the eyes of the health colleagues, but within the wider civilian community.

As with almost all individuals, feeling valued is essential. Many comments were made regarding the participants" needs to be valued in a large organisation such as the ADF. Comments were made by two of the participants highlighting their feelings of pride in the individuals with whom they had served. Statements were also made identifying ways in which some of the participants felt that they were valued. Although these comments reflected these particular individuals" feelings, it is hoped that many others will, after reading this study, provide this feeling of value to others in the organisation. Nevertheless, it is still a military organisation and these feelings are often not encouraged. This is evident

in comments made regarding the need for „feeling valued" and „surplus to need". These concerns are important to hear and should be addressed.

Summary

This chapter has provided the interpretation of the findings from this study. Firstly, the study highlighted that the participants wanted to have their stories told and the fact that this requirement links to their need to be valued. It was found that these individuals make a choice about their work, but many aspects of this work remain frustrating and at times frightening to them, both in regards to the physical environment and the psychosocial environment in which they work. Some of the frustration faced by some of these participants comes from a sense of not being sufficiently prepared when faced with working in a very different environment. Having others hear about and understand this experience is a way of ensuring that these nurses are valued and their stories are told.

Chapter Seven

Conclusion

It is rare that the stories and experiences of current serving Nursing Officers (NOs) of the Australian Defence Force (ADF) are shared with those outside of the military environment. This study has afforded both the researcher and the reader the opportunity to gain a deeper understanding of the lived experience of these individuals. They play a distinct role in the ADF and do so, because it is „just their job". To many outside the ADF, it provides an initiation into the world of military nursing. This should not be construed as a way of devaluing the work undertaken by their civilian colleagues, but should be seen as an opportunity to explore another avenue available to registered nurses. Of particular note this study has provided knowledge about the way in which these individuals feel they are an ADF NO and their feelings of being unique. It offers details of the contribution the participants" feel they make to not only the trauma teams in which they work (the physical and psychosocial environment), but also to the ADF as a whole and the wider community. Details of the training undertaken by these participants, affords an opportunity to learn of their feelings regarding both the positive and negative aspects of this training and then the ability to learn from their experiences while members of a trauma team. The roles that these individuals undertake have also been presented, that of a leader and mentor, to name just two.

Without the assistance and support for this study by the participants, their stories and experiences would remain untold, therefore resulting in a lack of knowledge into this rare career and way of life. Although much has been written about those military nurses who have served in history (Agazio, 2010; Baker, R., et al., 1989; Biedermann, 2002, 2004a, 2004b; Biedermann, et al., 2001; Cooper, 2009; Scannell-Desch, 1996, 1999, 2000, 2005), the knowledge presented here extends the information currently available regarding the lived experiences of ADF NOs. The stories of their courage and determination to provide care to the injured in combat and humanitarian situations should be told and made available to all in order to learn from them and to continue to enhance the profession of nursing, be it military or civilian nursing.

Limitations to the study

As with any study, limitations to the study are encountered. A potential limitation of this study, was the ability of the researcher, as a novice in phenomenological research to ensure the interpretation was true to the stories of the participants. As someone who had experienced similar situations to those described, the stories provided by the participants resonated with the researcher and highlight the fact that these experiences are outstanding. The experience and knowledge of the supervisors of this study and the researchers intent to keep to the philosophical tenets of the methodology aimed to ensure the interpretation of text represented the lived experience of the participants. The reader must judge if this was achieved.

Recommendations for practice

Although the focus of this study was not to change current practices of ADF NOs who work in trauma teams, the information gained may be useful to health planners when examining training of trauma team members in the future. The findings of the study in regards to training and preparation of ADF NOs should be considered and taken into account when preparing trauma teams, not only for the preparation of NOs, but for members of the multidisciplinary team. Due to the unpredictable nature of military deployments and in particular military trauma teams, there will always be occasions where trauma teams are formed at short notice and then modified once the deployment is underway. In order to combat this, the ADF should consider strategies to maximise opportunities for team training and abilities for trauma teams to work together in a consistent manner. In addition to this, the sharing of experiences of those who have been deployed with more junior personnel may be of considerable benefit to all involved in future deployment of military trauma teams. The knowledge and experiences shared by the participants in this study should be seen a valuable tool to assist in the continuing development of health personnel who work in trauma teams.

Recommendations for research

This study has provided a deeper understanding of a usually closed section of the nursing profession, that of the military nurse. The study has highlighted ideas for future research in

order to continue to enhance this knowledge of ADF Nursing Officers. Firstly, the gaining of a deeper understanding the feelings of ADF Nursing in regards to their standing in the ADF could assist in establishing the significance of these individuals not only in the ADF, but more importantly in the ADF Health Services Branch, of which they are vital members. Also, ongoing recording of the stories and experiences of other ADF NOs would provide further opportunities to continue to allow those outside the Australian military community to learn from these individuals and to understand the role they play. Finally, exploration of issues regarding leadership should be examined as some of the participants voiced concerns about the role of the leader.

Conclusion

When thinking of the positive effects, this study has allowed the researcher to be a portal for ADF Health personnel to share their experiences in an otherwise closed organisation. A negative effect has been the fact that some emotions have resurfaced as a result of remembering and hearing the stories and experiences of the participants to the researcher. Issues that were put to the back of my mind were once again brought to the forefront and needed to be dealt with appropriately. It was interesting during the ethics process to be asked to develop a distress protocol to be used if a participant suffered from distress during or following the interviews. At the time of writing this document I felt that it was very straight forward, there were certain actions that I would employ should a participant experience difficulties when speaking about experiences. It was not envisaged that this distress protocol would be appropriate to my reaction to the study, but in hindsight this should have been also taken into consideration.

It has been a great honour to speak to these individuals and to share their stories and experiences. Thanks to their faith that their stories would be told as they told them, an opportunity has been afforded to us to learn from them and gain an appreciation of their lives and careers - lives and careers of which many are unaware. Their stories deserve to be told and it is hoped that they have been told in a manner, which reflects the researcher‟s great respect for them. They will continue to „just do their job‟, but thanks to them, the role of the military nurse will continue to develop.

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Appendix 3-1: Email to prospective participants

Dear xxx,

My name is Lisa Conlon and I have been given your name and email address from xxx. I am a reserve Navy Nursing Officer who served for 12 years in the permanent forces and then transferred to the reserves in 2006 to commence a career in academia.

I am currently completing my doctoral studies at the University of Adelaide focusing on the ADF trauma teams. In particular the training and experiences of working in these teams. My last study focuses on ADF NOs and their experiences.

I was wondering if you would interested in participating in this study? I have attached the information sheet which has been approved by the ADF Human Research Ethics Committee. It provides details of the study and how I propose to do the study.

If you are interested and have the time to contribute, would you mind writing to me by return email so that I can ring you to discuss all of this with you. I really do understand if you don't have the time, but would appreciate you letting me know.

I look forward to hearing back from you.

Kind regards,

Lisa

Lisa Conlon

Appendix 3-2: Consent form

CONSENT FORM

ADHREC Protocol 616-11: An exploration of the experiences Australian Defence Force Nursing Officers and their role in a military trauma/resuscitation team.

I,... give my consent to participate in the project mentioned above on the following basis:

I have had explained to me the aims of this research project, how it will be conducted and my role in it.

I understand the risks involved as described above.

I am cooperating in this project on condition that:

- the information I provide will be kept confidential,
- the recorded interview will be transcribed and sent to me for review prior to the writing of the report,
- the information will be used only for this project, and
- the research results will be made available to me at my request and any published reports of this study will preserve my anonymity.

I understand that:
- there is no obligation to take part in this study,
- if I chose not to participate there will be no detriment to my career or future health care, and
- I am free to withdraw at any time with no detriment to my career or health care.

I have been given a copy of the information/consent sheet, signed by me and by the principal researcher, Lisa Conlon, to keep.

I have also been given a copy of ADHREC's *Guidelines for Volunteers*.

....
Signature of volunteer

....
Name in full

....
Date

....
Signature of Researcher

....
Name in full

....
Date

Appendix 3-3: Distress protocol

Distress Protocol

The following is provided as a means of preparation should a participant become distressed during the interview phase of this study. Prior to the commencement of any interview, information regarding Australian Defence Force (ADF) support services will be provided to all prospective and actual study participants. This information will be made available at three points during the study. Firstly, prior to a participant consenting to take part in the study, secondly, in the introduction information sheet provided to the participant. Finally, this information will be provided to the participant prior to the interview commencing. An additional notification of this information will also be given to those participants should they become distressed during the actual interview.

Strategies to assist those distressed during an interview.

Should a participant become uncomfortable or distressed while discussing their experiences when working as a member of a military trauma/resuscitation team during the interview, the following actions will be taken by the interviewer:

1. The interviewer will suggest that it is appropriate that the interview be finished.
2. If the participant wishes this to happen, the interview will be completed.
3. Time will be spent with the participant and assistance provided, within the scope of interviewers abilities, to discuss their concerns and support them, if appropriate.
4. The participant will be recommended to speak to an ADF health professional to discuss their concerns.
5. A follow-up phone call will be made by the interviewer the following day to ensure that the participant is alright. During this time, the information previously provided regarding support services available to Defence personnel will be, once again, provided.

Contact details provided to participants

Details regarding the ADF‟s IMSICK helpline will be sent to all prospective and study participants. These details will include:

1. Phone number (1800IMSICK) of this organisation, and
2. Details of the organisation. This will include the following information:
   a. Goal of the organisation
   b. Information that they, the participant, will be required to provide to the ADF health personnel manning the helpline.
   c. Details of the likely assistance that they may receive from contacting the helpline.

Conclusion

Although it is unlikely that these interviews will result in a distressing result for the participant, it is the interviewers duty of care to the participant that these strategies are put in place prior to commencing the interviews.

Appendix 3-4: University of Adelaide ethics approval

THE UNIVERSITY
of **ADELAIDE**

RESEARCH BRANCH
RESEARCH ETHICS AND COMPLIANCE UNIT

SABINE SCHREIBER
SECRETARY
HUMAN RESEARCH ETHICS COMMITTEE
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SA 5005
AUSTRALIA
TELEPHONE +61 8 8303 8028
FACSIMILE   +61 8 8303 7325
email: sabine.schreiber@adelaide.edu.au
CRICOS Provider Number 00123M

28 April 2011

Dr R Wiechula
School of Nursing

Dear Dr Wiechula

PROJECT NO: H-048-2011
   An exploration of the lived experiences Australian Defence Force nursing officers
   and their role in a military trauma/resuscitation team: A phenomenological study.

I write to advise you that the Human Research Ethics Committee has approved the above project.
Please refer to the enclosed endorsement sheet for further details and conditions that may be
applicable to this approval.

The ethics expiry date for this project is: 31 December 2011

Where possible, participants taking part in the study should be given a copy of the Information Sheet
and the signed Consent Form to retain.

Please note that any changes to the project which might affect its continued ethical acceptability will
invalidate the project's approval. In such cases an amended protocol must be submitted to the
Committee for further approval. It is a condition of approval that you immediately report anything
which might warrant review of ethical approval including (a) serious or unexpected adverse effects
on participants (b) proposed changes in the protocol; and (c) unforeseen events that might affect
continued ethical acceptability of the project. It is also a condition of approval that you inform the
Committee, giving reasons, if the project is discontinued before the expected date of completion.

A reporting form is available from the Committee's website. This may be used to renew ethical
approval or report on project status including completion.

Yours sincerely

PROFESSOR GARRETT CULLITY
Convenor
Human Research Ethics Committee

THE UNIVERSITY
of ADELAIDE

RESEARCH BRANCH
RESEARCH ETHICS AND COMPLIANCE UNIT

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CRICOS Provider Number 00123M

Applicant: Dr R Wiechula

School: School of Nursing

Project Title: *An exploration of the lived experiences Australian Defence Force nursing officers and their role in a military trauma/resuscitation team: A phenomenological study.*

THE UNIVERSITY OF ADELAIDE HUMAN RESEARCH ETHICS COMMITTEE

Project No: **H-048-2011**   RM No: 0000011221

APPROVED for the period until: **31 December 2011**

Thank you for the detailed response dated 21.4.11 to the matters raised by the Committee. It is noted that this study will be conducted by Lisa Conlon, Doctor of Nursing candidate.

Refer also to the accompanying letter setting out requirements applying to approval.

PROFESSOR GARRETT CULLITY   Date: 2 8 APR 2011
Convenor
Human Research Ethics Committee

PROJECT NO: **H/O48/11**

THE UNIVERSITY OF ADELAIDE HUMAN RESEARCH ETHICS COMMITTEE
ETHICS APPLICATION COVER SHEET

SUMMARISING THE PROTOCOL AND INCLUDING INVESTIGATORS' SIGNATURES

COVER SHEET AND APPLICATIONS MUST BE TYPED

Applications will be considered according to requirements of the National Statement on Ethical Conduct in Human Research (2007).

An application should include: (1) this **cover sheet**; (2) the proposal addressing the **list of headings**; (3) participant **information sheet**; (4) participant **consent form**, and (5) **independent complaints procedure statement** (please access these online at http://www.adelaide.edu.au/ethics/human/guidelines/applications/).

Submit **ELEVEN** copies of the application to the Secretary, Human Research Ethics Committee, Research Ethics and Compliance Unit, Research Branch, Level 7, 115 Grenfell Street, The University of Adelaide SA 5005 Ph. (08) 8303 6028, Fax (08) 8303 7325, email sabine.schreiber@adelaide.edu.au

Please attach this to the front of the application.

APPLICANT Name include title Professor/Dr/Ms/Mr **and Position** Dr Rick Wiechula, Postgraduate Coordinator, School of Nursing If this is a student project the principal supervisor is to be the applicant.
DEPARTMENT including campus/institution contact address School of Nursing Eleanor Harrald Building Royal Adelaide Hospital Campus
Phone No and email address +61 8 8303 3594 Rick.wiechula@adelaide.edu.au
OTHERS INVOLVED Ms Lisa Conlon Commander Amanda Garlick (Royal Australian Navy) If this is a student project please indicate name/department/candidature
PROJECT TITLE An exploration of the lived experiences Australian Defence Force Nursing Officers and their role in a military trauma/resuscitation team: A phenomenological study.
LOCATION OF RESEARCH Various locations within the Australian Defence Force
DATE PROJECT TO BEGIN On receipt of ethics approval from The University of Adelaide Human Research Ethics Committee and the Australian Defence Human Research Ethics Committee.
ESTIMATED DURATION OF PROJECT Two months
SOURCE OF FUNDING Ms Lisa Conlon

AIMS OF PROJECT please give concise description in lay terms

The aim of the study is to provide a rich description of the participant's (ADF NOs) experiences and will contribute to the body of knowledge within this unique area. ADF NOs have a proud and distinguished history of providing competent quality nursing care to their patients. However, their stories are rarely shared outside of the military environment. This study will provide a mechanism to share some of their stories. The experiences of the participants in the study will assist future ADF NOs and positively enhance their preparation to work within a military trauma/resuscitation team. It should be acknowledged that ADF NOs have a wealth of invaluable information to share within both the military and civilian sectors. It is therefore felt that this study will provide an opportunity to learn from their experiences. In addition to the benefits to military nursing, knowledge gained may be used in the civilian sector to continue to develop and enhance the role of nurses in trauma/resuscitation teams.

PLAN/DESIGN OF PROJECT brief description in lay terms

The following research plan is proposed.

Proposed dates	Action to be undertaken	Proposed outcome date
February 2011	Submission of application to undertake study to The University of Adelaide Human Research Ethics Committee	Application presented to the next available committee meeting for consideration.
March 2011	Response to request from Ethics Committee	
March 2011	Submission of application to undertake study to the Australian Defence Human Research Ethics Committee (ADHREC)	
April – May 2011	Response to ethics application from ADHREC	
May 2011	Send out of information sheet to prospective participants.	
June 2011	Undertaking of phone interviews	Commence data collection and analysis
July - August 2011	Completion of analysis of data	
September - October 2011	Write-up of results	

PARTICIPANTS

- **Source:** Australian Defence Force (ADF) Nursing Officers (NOs)
- **Age range:** 22 – 65 years of age
- **Selection criteria:** Australian Defence Force Nursing Officers willing to speak about their experiences while working in an Australian Defence Force trauma/resuscitation team in a conflict or humanitarian crisis situation
- **Exclusion criteria:** Those ADF NOs who do not wish to participate or have not worked in an military trauma/resuscitation team in a conflict or humanitarian crisis situation will be excluded from the study. In addition, those NOs who are deployed during the data collection phase of the study.

ETHICAL IMPLICATIONS OF PROJECT

Ethical considerations are vitally important to the researcher. Formal approval to conduct the study will be gained from The University of Adelaide and the Australian Defence Human Research Ethics Committees prior to the commencement of the study. The researcher will ensure that all information regarding the conduct of the study is freely available to all participants. Should any prospective participant have any hesitations regarding their involvement in the study, they will not be considered to participate in the study. All participants will be asked to sign a consent form prior to the commencement of the study and will be informed of their freedom to withdraw from the study at any time. These consent forms will be signed by both the participant and the interview and a pdf copy of the consent form held by both parties. As the participants of this study will be ADF personnel, they will be informed that should they decide not to either commence in the study or elect to withdraw at any time during the conduct of the study, they will not be penalised by the ADF

All participants will be informed of issues regarding confidentiality and anonymity. They will be informed that a pseudonym will be used to de-identify them when the transcripts are written up by the interviewer and in the writing up of the results of the study. In addition to this information, the participant will be told that only the interviewer and her research supervisors will see any components of the transcripts. This said, should the participant wish to see the study report they can do so on request.

DRUGS

Will drugs be administered to participants?	NO
· If so give name of drug(s)	
· Dosage:	
· Method of administration	
Is the administration for therapeutic purposes?	NO
Will the project be conducted under the	
Clinical Trials Notification (CTN) Scheme?	NO
Clinical Trials Exemption (CTX) Scheme?	NO
Is Commonwealth Department of Health permission required?	NO
If so, has permission been obtained?	N/A

SIGNATURE OF ALL INVESTIGATORS NAMED IN THE PROTOCOL

Amanda Garner

Date

Appendix 3-5: Australian Defence Force ethics approval

JOINT HEALTH COMMAND

ADHREC, CP2-7-100, Campbell Park Offices, PO Box 7911, Canberra BC ACT 2610

NOTE:
This appendix has been removed to comply with copyright regulations. It is included in the print copy of the thesis held by the University of Adelaide Library.

Portfolio Conclusion

Portfolio Conclusion

The purpose of conducting any research is to enhance the knowledge base of a particular topic and to increase the research capabilities of those involved. The three studies in the portfolio of studies have achieved this aim. The following portfolio conclusion provides a summary of the studies conducted and presented. It also provides details of the researcher's personal feelings regarding the research. The three studies were conducted from 2005 to 2012 and were comprised of a systematic review, a cross sectional survey and a phenomenological study. The portfolio of research provided an opportunity to gain a deeper appreciation of the education and professional development of both civilian (Study One) and ADF (Study Two) trauma teams and the teamwork practices employed when these teams provide care to their trauma patients. Study Three provided a unique opportunity to learn of the experiences of six ADF Nursing Officers when they worked as members of a military trauma team. Although the first two studies are directly linked, the third study allows for a closer focus on one of the healthcare professional groups (ADF NOs) who work in trauma teams.

Study One

Study One provided the findings of a systematic review, which evaluated studies specifically related to civilian trauma teams. This was the first of the three studies conducted and was completed in December 2006. The aim of the systematic review was to evaluate studies relating to the education and professional development of civilian trauma team members. It also evaluated studies relating to teamwork practices of trauma teams. The knowledge gained as a result of this systematic review was used to inform the design of Study Two, a cross sectional survey. As the two studies are linked the systematic review has not been updated to maintain the flow of the reporting of the portfolio. The systematic review evaluated studies published from January 1990 to August 2006. Initial examination of studies highlighted 271 articles and manuscripts for potential inclusion. This number was further reduced to only 13 studies that were found to meet the inclusion criteria. Following critical analysis of these 13 studies, a total of 12 studies were finally included in the systematic review. As only 12 studies were included in the results of the review, it highlighted the lack of quality studies into the topic. Of the 12 included studies, five studies specifically related to trauma team training. In particular, information pertaining to

course content and delivery methods used for training was identified, for example the use of simulation. The remaining seven studies provided details regarding teamwork management practices. Results highlighted details regarding the use of a formed team as opposed to ad-hoc team formation, and the use of a tiering system to provide optimal care to all trauma patients by the most appropriate sized and manned trauma team with the benefits to not only the patient by the trauma team provided. Knowledge relating to what was considered optimally sized teams, and the use of a horizontal team approach was also identified. The review also identified knowledge relating to the role of the leader and fact that trauma teams with a dedicated team leader were more successful than those teams who did not have an identified team leader.

In regards to the implications for practice, the following was identified. As many of the included studies failed to reach statistical significance; no strong recommendations can be made. There are however, some issues that should be considered. Firstly, when providing trauma courses, organisations should consider having these courses available to multidisciplinary participants, where all disciplines are active in the course and not observers. Course content should also include elements that address teamwork in addition to clinical skills acquisition and which specifically addresses the development of leadership skills. In regards to teamwork practices, the use of a horizontal organisational approach has considerable potential and when teams are appropriately trained to undertake this approach; it should be considered a base level of service provision. Finally, the use of simulation has the potential to enhance skills for an area of practice where real life experience is unpredictable.

The purpose of this systematic review has been to gain an appreciation of civilian trauma teams in regard to their education and professional development, and the teamwork practices used. This review was conducted in order to gain a deeper understanding of the topic. Recommendations for future research into training includes; the undertaking of high level studies and more focused studies into the topic. It would also be beneficial to conduct further research into the evaluation of courses as many courses may currently present the same or at least very similar content. In addition, further research should be conducted to explore if courses should be conducted for multidisciplinary participants as opposed to unidisciplinary courses. This would be beneficial given that the majority of trauma teams comprise of multidisciplinary team members. Finally, research to measure the outcome for

patients needs to be undertaken in order to determine the courses effectiveness in the long term. In regards to future research recommendations regarding teamwork practices, the following should be considered. Firstly, further examination into trauma team sizing and investigation into the use of a tiering approach would be beneficial. Further evaluation of the use of a horizontal team approach and the issue of a formed trauma team as opposed to units that do not have formed teams would be valuable. The results of this systematic review were invaluable for the development of the cross sectional survey (Study Two) and provided a basis of information regarding education and professional development of healthcare personnel.

Study Two

The second study of this portfolio initially aimed to present a research study of Australian Defence Force personnel and their role as members of trauma/resuscitation teams. However, after many attempts to gain support from the, at the time, senior Australian Army Health Officer, only health personnel from the Royal Australian Navy (RAN) and the Royal Australian Air Force (RAAF) were permitted to participate in the study. An online survey was developed and conducted in order to gather current data (at the completion of data collection in February 2011) in regard to the education and professional development of health care professionals of the RAN and the RAAF. It also provided an appreciation of the teamwork practices of the trauma teams on which the respondents had worked during conflict including peacekeeping missions, or during humanitarian crisis situations.

The survey was responded to by 128 RAN and RAAF health personnel, with 80 of these individuals providing details of the education and professional development training they had completed. Details of the variety of courses that the respondents had completed were considerable with the respondents highlighting both the positive and negative aspects of their experiences. This was in regard to the development of clinical and teamwork skills and teaching methods used, when undertaking these courses. Information was also provided regarding the ongoing and professional development training that some of the respondents had completed following their initial training. The study highlights that the majority of respondents who reported that they had completed trauma training and deployed as a member of a trauma team had served in the ADF for longer than 10 years. The study also provided details of the variety of courses completed by both permanent and

reserve personnel, and highlighted the fact that inconsistencies remain in the training provided. Results found also included the fact that of the 80 respondents who had completed formal trauma training only 38 respondents subsequently provided details of the deployments they had been involved in as a trauma team member. The study identified many issues related to the number and variety of courses completed. Consideration into ways in which to ensure consistency of training should be further examined. The outcome of the study identified that respondents feel that they were well prepared to work as members of a military trauma team in a conflict/humanitarian situation. However, issues were also raised regarding the need to train in order to prepare to work in a multidisciplinary team and that teamwork practices should be taken and courses tailored to include this in addition to the acquisition of clinical skills.

This study has afforded an opportunity to learn of the education and professional development of RAN and RAAF personnel in preparation to work as members of military trauma teams. It has also offered a deeper understanding of the teamwork practices employed in these teams and when read in conjunction with the findings of the systematic review, affords the reader an opportunity to learn from both the military and civilian sectors, and if appropriate or needed, to use this knowledge to enhance current trauma practices within both areas.

Study Three

The final study presents the findings of a hermeneutical phenomenological study of Australian Defence Force (ADF) Nursing Officers (NOs) who have trained and subsequently worked as a member of a military trauma team. As all three studies underpin the researcher's interest in military trauma and is a member of the ADF Nursing Services Branch, it was felt appropriate that the final study of this portfolio be conducted to gain a deeper understanding of ADF NOs who have trained and worked in military trauma teams and to share their stories with others. Six NOs participated in this study. The participants provided details, some of which are very personal, in relation to their training and experiences when working as members of military trauma teams. The shared experiences and stories offered by these participants provide an opportunity for anyone who is unfamiliar with military nursing, to hear of their stories and to learn from them. Six major themes were identified from the interviews. These included; Telling their stories; The role – Who we are and what we do; The environment – Is it so different?; Training- Will it ever

fully prepare you?; Working in teams – There's no 'i' in team; and Leadership – Will the real leader please stand up.

The participants provided details of their stories and their want for their stories to be told. Information of the role(s), for example clinical nursing duties, leadership, management, mentor, that the participants held with details regarding the uniqueness of being a military nurse and the need to feel a valued member of the team was reported on. The participants also provided details of the environment in which they work. This included details of both the physical environment in regards to the need to work with less and the fact that in the environments in which they are required to work, the need to have a place for everything and the challengers relating to the areas in which they work. The psychosocial environment they had encountered and which included details of the horrors of the environment and the ways in which they cope when placed in these situations was also provided. Details of the training undertaken by the participants, in particular the need to prepare them for uncontrollable environments was spoken of, as too, the training conducted in the field. The theme regarding working in teams provided information about the team and who made up these teams and the need to get to know the team members was spoken of. Finally, details relating to the issue of leadership were identified with information pertaining to the role of the leader in the team discussed by the participants. This study has provided a unique opportunity to gain a deeper understanding of a usually closed section of the nursing profession, that of the military nurse.

Their life experiences as members of military trauma teams and the ADF highlight their uniqueness as military nurses; and their role in these teams and in the ADF. The study to demonstrated the participants' ability to be flexible and adaptable given the, at times, harsh and hostile environments in which they have worked. As their stories often remain untold outside of a military environment, this study has given their experiences a voice. The experiences of the courage ADF NOs and determination deserve to be heard in order for others to learn from them.

Personal reflection

This journey started as a way in which to share the knowledge of ADF military trauma teams. As an ADF Reserve Nursing Officer, I am often asked what it is like to be a military

healthcare professional. This portfolio of research is one way to tell of the way in which ADF health personnel carry out their roles in both conflict and humanitarian crisis situations. It also provided me with an opportunity to learn of the training and teamwork practices of civilian trauma teams and their members. The purpose of a Doctor of Nursing degree is to conduct research and to develop a deeper understanding of different methodologies available to meet the research aim. The journey has been long, but worthwhile. It has given me as way in which to not only learn of the work of trauma teams in the civilian sector, but to share the knowledge of the ADF Health Services Branch and its personnel. At times this journey has been personally difficult. In particular, hearing of stories from nursing colleagues of the hardships they have encountered while working as members of a trauma team brought back my own memories of difficult times when serving in hazardous locations. However, on reflection this has been beneficial to me as many times I felt that I could not speak to anyone about military experiences. Giving my nursing participants a way in which to voice their stories has given me the strength to tell my own stories.

On a professional note, this portfolio of studies has afforded me the opportunity to gain knowledge of three very different methodologies and has increased my ability to conduct research at a higher level. It has allowed me to commence on the road of research and no longer be afraid to undertake such an adventure.

Conclusion

This portfolio consists of three studies and offers knowledge relating to the education and professional development of both civilian and ADF trauma team members. It also presents details of the teamwork practices employed within these teams. This research is the culmination of knowledge gained from the civilian health sector and that of members of the ADF Health Services Branch. It is a unique opportunity to bring both sectors together, to maintain close working relations, and to continue to learn from each other. Both civilian and military personnel have a wealth of knowledge to share. This portfolio of research offers a way in which to impart this wisdom.

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