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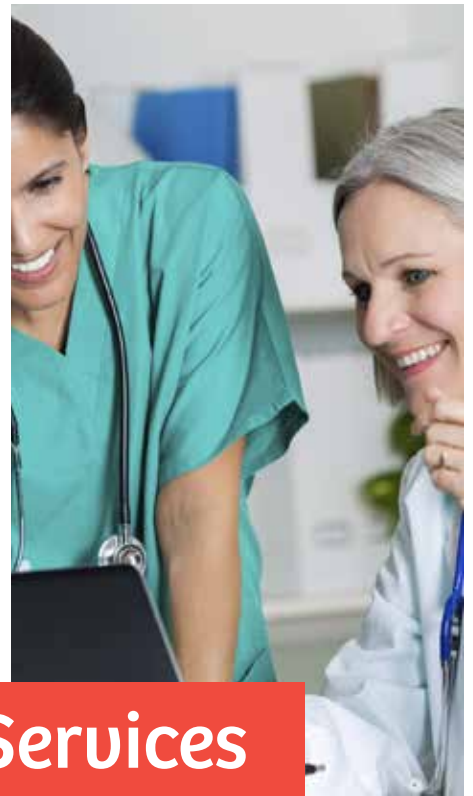
Journal of Military and Veterans' Health



- A History of Australian Navy Health Sailor Uniforms and Ranks (Part 1)
- Tobacco Use in a National Sample of United States Service Member and Veteran Students
- The Dark Night of the Veteran's Soul

The Journal of the Australasian Military Medicine Association





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Front Cover

Title: The Isurava Battlefield 70 years on.

Photo courtesy of Dr Barry Reed

Journal of Military and Veterans' Health

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STATEMENT OF OBJECTIVES

The Australasian Military Medicine Association is an independent, professional scientific organisation of health professionals with the objectives of:

- Promoting the study of military medicine
- Bringing together those with an interest in military medicine
- Disseminating knowledge of military medicine
- Publishing and distributing a journal in military medicine
- Promoting research in military medicine

Membership of the Association is open to doctors, dentists, nurses, pharmacists, paramedics and anyone with a professional interest in any of the disciplines of military medicine. The Association is totally independent of the Australian Defence Force.

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Editorial

Battle of the Atlantic

On 24 May 1943, Grand Admiral Karl Donitz withdrew his U-boats from the north Atlantic, signalling the end of the Battle of the Atlantic. During that month, 41 U-boats were lost to escort ships and patrolling aircraft. While they continued to operate until the end of the war, the U-boats were never to pose a significant threat again. The U-boats highlighted the potential of submarines in naval warfare, which has carried through to today. While Australia did not have a large part in the Battle of the Atlantic, it did have a role. HMAS Nestor, one of 5 Australian N-class destroyers, sank U-127 in December 1941 and the Royal Australian Air Force's 461 and 462 Squadrons were involved in attacking U-boats in the Bay of Biscay in mid 1943. The cooperation and coordination of Allied ships with Allied aircraft was an important factor in defeating the U-boat offensive.

Understanding the military experiences of our serving members and veterans is a key factor in delivering appropriate health services to this group. The papers that we publish in the Journal are focused on the impacts of military experiences on members and veterans, and how we can manage any adverse impacts from that service. To that end, I would like to highlight the important role of Associate Editors in identifying reviewers with the subject matter expertise to review the diverse papers, the Reviewers in their constructive comments on the respective articles, and, importantly, the Authors, who consider the comments in refining and improving their articles. All of these people are critical in building a Journal like ours into a useful addition to the medical literature, and I would like to thank them all.

There is a further person, often unnoticed in this process, who ensures that the Journal is published, the Editorial Board stays on track and the website is updated. This is our managing editor in Hobart.



Naomi Searle, who has been doing this role for the last three years, is leaving the Journal for the wilds of London, and, on behalf of the Editorial Board, I would like to thank for all her efforts, support and patience over that time. We all wish her well in her next endeavour. We would also like to welcome Ebony Abblitt into this role.

Our second issue of 2018 addresses a range of diverse areas. Spiritual wounds, soldier identity, reintegration following discharge and Gulf War Illness, are addressed in four excellent articles. There is also a focus on public health, with articles on tobacco use and sexual health looking at these areas. Finally, there is an interesting historical perspective on Naval uniforms.

We continue to get a good range of articles, but other military and veterans' health articles are always very welcome and we would encourage all our readers to consider writing on their areas of military or veterans' health interest. Our themes are now available for both 2018 and 2019 to allow for authors to research and develop their articles – we certainly welcome articles in these areas but welcome any articles across the broader spectrum of military health. We would also encourage authors who are preparing to present at the AMMA Conference in October to consider writing up their presentations early for publication in the Journal.

Dr Andy Robertson, CSC, PSM

Editor-in-Chief

Dear Editor,

HMAS *WESTRALIA* REMEMBERED

May 2018 marks 20 years since the multiple fatality fire in HMAS *Westralia* during a training exercise off the coast of Western Australia. It should serve as a reminder of the dangers inherent in military service including training exercises. For those of us in the health professions the fire in HMAS *Westralia* should also lead us to reflect on the long-term mental health impacts for those involved in such incidents. The fire in HMAS *Westralia* resulted in the immediate deaths of four of our personnel and the management of a further four personnel treated for injuries—with both immediate and long-lasting impact on the injured and their family and friends. However, it also resulted in significant and long-lasting mental health problems for other personnel involved. A review of about half of the personnel from HMAS *Westralia* who were still in the Navy 6 years after the fire suggested that nearly one in five reported significant symptoms of post-traumatic stress disorder (PTSD). This review was prompted by the death, by apparent suicide, of a survivor of the fire who was medically discharged

from the Navy, primarily due to PTSD resulting from the fire. This study only looked at those still in the Navy after 6 years—with speculation that this figure may be conservative, as the sample may have overly represented those who were still well enough to remain in the Navy, and not included those who may have been most affected and who had to leave the service in the years following the fire. There were also at least seven publicly reported legal cases by personnel claiming significant mental health problems arising from their involvement, from the 94 survivors. The fire in HMAS *Westralia* came at a time when PTSD was known and understood in the Royal Australian Navy (RAN), a structured response was provided, and a mental health screening program was in place. Reflecting on the fire in *Westralia* should remind us of the need to be vigilant for the potential long-term mental health care needs of people involved in trauma in the military.

Stephen Rayner

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Air Vice Marshal Eric Hay Stephenson AO, OBE

22 July 1922 - 13 April 2017

Dr Warren Harrex

Doc Stephenson, as he was affectionately known by many, had three passions in his long life – his flying career, his medical career and his beloved wife Freda.

He was born in Jarrow on Tyneside in the north of England on 22 July 1922. His family moved to north-west London soon after and he completed his education at Kilburn Boys' Grammar School. He was offered of a place in Medicine at University College London. At the end of first year he was sent to Kingsbury County School to complete a short stint in pure science, and it was here he was captivated by a long-legged girl in a brown pleated gym slip who was full of energy and fun.

This girl was Freda and they quickly became friends despite the disapproval of Eric's father who forbade his 19 year old son from seeing her. Eric disobeyed his father, left home, put his medical training on hold and joined the RAF in late 1941. As he says in his autobiography – *Three Passions and a Lucky Penny*: 'I would volunteer for aircrew and get a pair of wings on my RAF tunic, grow a moustache and Brylcreem my hair and wear a casual silk scarf, and, be altogether irresistible to Freda'.

Following initial training and flight assessment he was assigned for navigator training and formed a close friendship with two other trainees. When the time came for the trainee navigators to pair up for flying, Eric lost a coin toss and had to find another flying partner. Shortly afterwards his two close friends were killed on a training flight when the Avro Anson they were navigating flew into a mountain. A lucky penny indeed.

He joined 207 Squadron to fly Lancaster bombers from Skegness in Lincolnshire. The flying over Germany proved to be very dangerous with mid-air collisions and shoot downs by ground fire or enemy fighter aircraft ever present hazards. As an increasing number of his friends were killed on operations, Eric decided to propose to Freda before he too was killed. Freda accepted his proposal and a wedding date was set, but fate intervened.

On 16 December 1943 his Lancaster was shot down by a night fighter on a bombing raid to Berlin. Fortunately he was able to bail out and as he floated on his parachute into captivity in Germany he recalled in his autobiography: 'And then I thought about Freda – how livid she would be just two weeks before our wedding. I did not see the church steeple that snagged my parachute slamming me into the wall and knocking me unconscious. What a mess, the wrong church, on the wrong day in the wrong town!'

He was captured and eventually incarcerated in Stalag Luft III – the Great Escape camp. Because of his medical training he was put to work assisting injured airmen. In early 1945, he and the other prisoners of war were force marched 100 kilometres over several days to Spremberg, then moved to Luckenwalde by cattle train before being liberated by the Russians some depressing three months later.

After 18 months of captivity, considerably thinner, he returned to London, mentally and emotionally scarred. His family home had been destroyed by a bomb but his parents and sister survived. The promised church wedding now seemed less important, so Eric and Freda were married in a registry office on 11 June 1945.

His wartime experience with the deprivations and horror of his time as a POW, confirmed and deepened his resolve to become a doctor. Supported by Freda, he completed his medical studies and, graduated in 1951 and began working in general practice in Norfolk.

In 1955 he was recruited into the Royal Australian Air Force and was initially posted to RAAF Base East Sale with Freda and their daughters, Jill and Elizabeth. The conditions and accommodation were a startling contrast to the first class travel from the UK, but they made the best of it with Eric providing primary health care for the military people at the base and Freda teaching at the kindergarten.

In 1958 he was promoted to Squadron Leader and posted as medical registrar to No 3 RAAF Hospital, Richmond, NSW. The following year he accepted a Permanent Commission, was granted acting rank of Wing Commander and posted as the acting Command Medical Officer at HQ Operational Command at Glenbrook for 18 months, then in 1963 was posted on exchange to London as the Command Medical Officer in RAF Training Command.

On return from the UK some two years later, he became Commanding Officer No 3 RAAF Hospital at Richmond and then in 1967 was promoted to Group Captain and posted as Commanding Officer No 4 RAAF Hospital in Butterworth, Malaysia. He visited Vietnam during this time and discussed aeromedical evacuation procedures. Butterworth was an important staging facility for aeromedical evacuation during the Vietnam war using the C130 Hercules aircraft for which he had advocated a medevac role a decade earlier.

He was posted to the USA and performed the role of Deputy Command Surgeon & Chief of Professional Services at USAF Air Training Command, Lackland Air Force Base Texas from 1969-71. His performance reports from the USAF included the following comments: *"His bearing and behavior exemplify top military standards."*; *"He is an officer and a gentleman"*; and *"This physician is a gifted administrator...He is an admirable speaker, a wit who on occasion pricks our consciences and moves us to further explore our policies and procedures. He writes in a horrible hand, as do all physicians, but what he writes is concise, clear and communicates his ideas in an outstanding fashion."* He was awarded an OBE for this service and, at his request, he received his OBE from the Queen at Buckingham Palace in 1972 so his father could attend the ceremony.

This US posting subsequently led to a regular exchange of medical officers between the RAAF and the USAF. Several of those officers have since become Surgeons General.

He returned to Canberra and was appointed the Director of Air Force Medicine from 1971-74. Wishing to broaden his education, in 1975, he was posted to the UK and completed a Master of Science in Occupational Medicine before returning on promotion to Air Commodore as the Deputy Director-General Air Force Health Services from 1975-80. He was also appointed the Queen's Honorary Physician.

In 1980, he was appointed Director-General Air Force Health Services. As Director-General from 1980-84, he became a father figure to the health

staff, both in stature and manner. He had that ability to endear himself to people and the relationship was one of mutual respect. Not surprisingly, he was soon affectionately known as 'Father' among many of the staff. He was an innovative manager and there was a "breath of fresh air" through the health services when he took over. He managed to institute policy changes which made the Health Branch far more effective. He was also held in respect by the Air Force's senior management because of his wartime service in Bomber Command. He could command respect while encouraging subordinates to increase their knowledge. This was noted to be one of his hallmarks over the next forty years. He enjoyed the company of young health professionals and it helped keep him mentally alert and the questions he asked undoubtedly contributed to maintaining the currency of his medical knowledge

He actively promoted the health and well-being of all who worked in the Air Force, not just aircrew. He encouraged medical officers to visit the working areas of air bases, in order to observe first-hand the conditions under which service personnel worked, and which may have adversely affected their health. He strongly supported post graduate training in aviation medicine and occupational medicine in the UK and this continued for two decades. He understood more than most the importance of training in giving the next generation of health staff an understanding of the complexities of the functions of a military health service.

Under his guidance, there was an increased emphasis on the emerging areas of health promotion and occupational health and safety, and this influenced a generation of Air Force Health staff. By the mid to late 1990s, the RAAF was regarded as an exemplar organisation when it came to OH&S and the health care of its personnel.

For the last two years of his service, he was the Chair of the Services Health Policy Committee, a position later to be formalised as the Surgeon General Australia Defence Force. AVM Stephenson formally retired from the RAAF in June 1984, having earlier that year been appointed an Officer of the Order of Australia (AO).

Following his retirement, Doc Stephenson remained medically active, performing aircrew medical examinations at Russell Offices and RAAF Base Fairbairn and administering medical fitness assessments in Campbell Park. He was a member of the Veterans' Appeals Tribunal, and he provided advice to the RSL on veterans' issues.

He remained a valuable ally for the Health Services, successfully lobbying behind the scenes for retention of training of medical officers in aviation medicine in the UK despite cost pressures for its cessation. Again, his credibility from his wartime aircrew operational experience was successful in preventing the loss of this important training for support of aircrew.

In September 2005, while CDF, Sir Angus Houston hosted a special luncheon at Fairbairn to recognise Doc Stephenson's 50 years of dedicated service and association with the RAAF and the ADF.

Doc Stephenson remained an active member of the Australian Society of Aerospace Medicine. He was awarded honorary membership of the society in 1999. In 2010, the annual scientific conference of this society was held in Canberra. Many of the members present recall with fondness the conference dinner held in the Aircraft Hall at the Australian War Memorial. Steve was wearing his kilt, dancing with Freda, under the Lancaster wing of G for George. His three passions all in one.

Doc Stephenson will be remembered by the aviation medicine community with the annual award established in 2011 named in honour of

his commitment to aviation medicine. The Eric Stephenson Award comprises a financial prize and a commemorative certificate, and is awarded for the best scientific paper presented at the annual conference by a member of the Society. Sadly, Freda, his avowed best friend, passed away in 2012. Later that year, he was awarded honorary Fellowship of the newly formed Australasian College of Aerospace Medicine with its aim of training the next generation of aviation medicine specialists.

Medical student, courageous Bomber Command navigator, caring medical assistant to his prisoner of war mates, doctor, aviation medicine specialist, Air Vice Marshal, Director-General Air Force Health Services and always a gentleman, devoted father and husband.

Air Vice Marshal Eric Hay Stephenson was an inspiration to all of us.

Acknowledgements:

Air Chief Marshal Sir Angus Houston, AK, AC, AFC (Ret'd), former Chief of the Defence Force and the Royal Australian Air Force for their contributions.

Veterans' attitudes towards discussing sexual practices and sexual orientation with therapists

M Vendlinski, G Simons, J Yen, S Larsen

Abstract

Background: It is widely recommended that sexuality be discussed during health-care assessments and treatment. Health-care providers often do not raise the topic of sexuality, even though patients typically welcome these conversations.

Purpose: The current study examines whether veterans report having discussions about sexuality with their psychotherapists.

Material and methods: Seventy-two veterans receiving individual psychotherapy at a US Veterans Affairs medical centre completed anonymous surveys. Surveys queried whether patient sexuality was discussed in psychotherapy, how the topic was broached, opinions on the relevance of sexuality in psychotherapy, and concerns associated with disclosing sexual information.

Results: The majority (76%) of veterans reported their psychotherapists were aware of their sexual orientation. It was much more common for veterans to broach the topic (51%) than for psychotherapists to ask (4%), even though the majority of veterans either believed psychotherapists should ask (44%) or were neutral on the topic (25%). Many veterans (43%) viewed their sexuality as relevant to their mental health problems, and most veterans (82%) reported that concerns over what would be entered into the medical record did not keep them from discussing their sexuality.

Conclusion: Psychotherapists often leave it to their patients to broach the topic of sexuality even though patients typically welcome the discussion or feel neutral. Since many veterans see their sexuality as relevant to their mental health problems, psychotherapists could play an important role in addressing problems of sexuality if they regularly raised the topic in psychotherapy.

Key words: veterans, sexuality, psychotherapy, LGBT, sexual orientation

Introduction

Discussions of sexuality and sexual orientation are recommended in the provision of comprehensive, culturally competent care,¹ and a recent policy within the US Veterans Affairs health-care system now mandates asking all patients about sexual orientation and sexual behaviour as indicated.² Initial studies find that civilians seeking medical treatment welcome discussions with their medical providers regarding sexuality.³ Inconsistent with patient preferences, however, most health-care providers do not initiate discussions of sexuality with their patients.⁴ Embarrassment and inadequate training are common barriers for medical providers,⁵ and providers tend to vastly overestimate the possibility of giving offence by asking about sexual orientation and gender identity.⁶ While this

phenomenon has been documented in the private sector with civilian patients, less is known about the attitudes of veterans towards discussing sexuality or sexual orientation with health-care providers in the Veterans Affairs health-care system, though that is starting to change.⁷

It is especially important to assess sexual practices and sexual orientation in the veteran population. Active duty women engage at elevated rates in high-risk sexual behaviours such as inconsistent condom use, multiple concurrent partners, and unintended sexual behaviour under the influence of alcohol or drugs.⁸ Compared to nonveterans, female veterans report higher rates of lifetime sexual activity, younger age at first intercourse, greater number of both male and female sexual partners, and higher rates of sexually transmitted infections.⁹ For male veterans

returning from Iraq and Afghanistan, a significant proportion experienced sexual dysfunction.¹⁰ Male combat veterans diagnosed with post-traumatic stress disorder (PTSD) experience significantly higher rates of sexual dysfunction compared to veterans without PTSD.¹¹

Much of the extant research on discussions of sexuality between health-care providers and patients has focused on interactions with physical health-care providers (e.g. physicians and nurses). Less is known about these discussions between psychotherapists and their patients. Discussions of sexuality in mental health treatment are particularly relevant as sexual dysfunction is more prevalent in those with common mental disorders including PTSD,¹¹ major depressive disorder¹² and substance use disorders.¹³ Further, those seeking psychotherapy are often prescribed psychotropic medications that carry sexual side effects.¹⁴ Given the increased risk for sexual dysfunction in psychiatric populations and appreciation for the value of holistic and culturally competent health care, there is growing sentiment that care providers should broach the topic of sexuality with their patients.¹⁵ Psychotherapists may be able to help address sexual dysfunction through direct intervention or referral, and it may be easier for some veterans to address such issues with a psychotherapist (with whom they have more time and regular contact than a primary care provider). **Additionally, discussions of sexuality and sexual health address a more fundamental need for assessing general health risks, as well as attending to the functioning of relationships which can provide potent buffers against psychological stress.**

Given the relevance of sexuality and sexual orientation to veteran mental health and to health more broadly, as well as the dearth of information about whether and how these topics are discussed in this population, we undertook a survey of veterans receiving mental health care to better understand whether and how such topics are discussed.

Materials and methods

Participants

We conducted an anonymous survey at a Veterans Affairs hospital in a large US city. Data were collected within three separate mental health clinics (psychiatry, female mental health, and psychotherapy—both general and PTSD). Blank surveys with cover sheets (asking veterans to complete surveys only if they received individual psychotherapy) were placed in the waiting rooms, and veterans completed them at will. Participants

could deposit the completed survey into a locked box in the waiting room or use a reply-paid envelope to send in the survey by post. The study was approved by the organisation's Institutional Review Board, and de-identified data were collected from March to June 2013.

In total, 72 surveys were returned. The sample was 51% female, 45% male, and 1% **transgender-identified** (3% missing data). Most respondents (57%) were aged between 46 and 65 years, ranging from 18 to over 76 years. In terms of sexual orientation, 82% of respondents identified as heterosexual, 13% as homosexual, 4% as bisexual and 1% as pansexual.

Measures

Demographics. We assessed demographics (age, gender, sexual orientation). To encourage frank responding, we did not collect identifying information.

Discussions of sex life and sexual orientation, barriers and comfort. A measure was designed for this study, which assessed nine factors: whether the individual psychotherapist knows patient sexual orientation; how psychotherapists learned about it; how long into treatment before psychotherapists learned about it; whether veterans purposely withheld information about their lifestyle to hide their sexual orientation; whether sex life or sexual orientation is considered relevant to mental health or therapy; what would increase comfort with these discussions; psychotherapist response to hearing about sex life or sexual orientation; concerns about these discussions being recorded in the medical record; and desire for additional mental health services related to sexuality and sexual orientation.

Results

In this sample of veterans, most (76%) reported that their psychotherapists were aware of their sexual orientation, while 22% were unsure.¹ Only 4% of veterans reported that their psychotherapists had asked them explicitly (51% brought it up with the therapist themselves). Forty-four per cent agreed that psychotherapists should ask their patient about sexual practices and sexual orientation (17% disagreed, 25% were not sure, and 7% indicated 'other'). Anecdotally, participants mentioned in open-ended responses that they would appreciate if psychotherapists would raise these issues or initiate discussions. Many (43%) believed their sex life or sexual orientation was relevant to their mental health problems or therapy (e.g. erectile dysfunction, depression, anxiety, substance abuse, relationship problems, reduced sex drive), and the same number (43%) did not (11% were not sure). Many (43%)

reported that after discussing their sex life or sexual orientation with their psychotherapist, they were 'more comfortable now' and only 4% endorsed that they were 'less comfortable now'. Most (82%) veterans reported that concerns about what would be entered into their medical record did not keep them from discussing their sex life or sexual orientation with their psychotherapist.

Though exploratory given the small sample size, we also examined whether lesbian, gay, bisexual and transgender (LGBT) and heterosexual populations differed in their responses to relevant questions. Interestingly, many responses were very similar (e.g. 46% of LGBT and 44% of heterosexual respondents agreed that providers should ask about these topics; 46% of LGBT and 42% of heterosexual respondents agreed that sex life or sexual orientation was relevant to care). Both LGBT (54%) and heterosexual (41%) respondents were more comfortable after discussing these issues. However, some responses differed: LGBT veterans were more likely than heterosexual veterans (15% vs. 2%) to indicate that they withheld personal information so as not to disclose their sexual orientation; and LGBT veterans were more likely to indicate that they wanted more services related to sex or sexual orientation (61% vs. 32%), though both populations wanted more of these services.

Discussion

Overall, most veterans' psychotherapists were aware of their sexual orientation, but rarely because psychotherapists had asked about it. Most of the sample agreed that psychotherapists should ask about these issues or were neutral on the topic, and nearly half believed sex life or sexual orientation were relevant to therapy. Results were largely similar in the LGBT subgroup, and both groups indicated a desire for more services related to sex or sexual orientation.

Limitations of this sample primarily involve the small sample size and self-report nature of the data (e.g. memories of discussions may not be accurate). This was not necessarily a representative sample and, indeed, it included a higher than average proportion of female and LGBT veterans. Nevertheless, given that this is a new population for this study question, our results provide relevant information.

The findings indicated that most veterans either want to discuss sexuality and sexual orientation with their psychotherapists or were neutral on the subject. Veterans recognise these topics as valuable and relevant to their mental health treatment. In fact, the majority of veterans in both LGBT

and heterosexual groups felt more comfortable in therapy after discussing their sexuality with their psychotherapist. **Our results suggest indirectly that even psychotherapists are often uncomfortable asking about sex life or sexual orientation.** Therefore, psychotherapists are encouraged to seek training when appropriate, and initiate these discussions with veterans as part of providing comprehensive, culturally competent health care.

As psychotherapists broach the topic of sexual practices, they can play an important role in guiding veterans to the providers that can best meet their needs. Given that sensitive topics are often discussed in psychotherapy, therapists are well-placed to broach this topic and to serve as a bridge between veterans and relevant providers in other disciplines. For instance, psychotherapists can help identify veterans who would benefit from referral to a prescriber for erectile dysfunction medication, or to a couples therapist. Psychotherapists could also encourage discussion of the sexual side effects of medications between patients and prescribers. **Additionally, further training could position psychotherapists to assess for sexual history and risk identification around HIV, blood-borne viruses or sexually transmitted infections.** Even if veterans do not wish to disclose information related to sexuality when first asked, asking about this topic opens the door for future discussion. Asking can send the message that sexuality is an important aspect of behavioural health, and that providers are ready to help if and when the veteran would like. **Along with Veteran Affairs' new mandate to ask all patients about sexual orientation and health, a training course has been created on how to do so for veteran- or civilian-oriented providers.**¹⁶

Our findings, taken together with civilian empirical literature and general calls to include sexuality in comprehensive care, should encourage psychotherapists to ask veterans about their sexuality and sexual orientation, thereby opening the door to better overall care.

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1 US Department of Veteran Affairs - Psychology

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A History of Australian Navy Health Sailor Uniforms and Ranks (Part 1)

Commander Neil Westphalen, Royal Australian Navy Reserve

Purpose

Mariners have been identifiable by their clothing for centuries. This reflects their ongoing need for attire that allows free movement for negotiating ladders, doorways and hatches, and performing physically demanding tasks such as hauling lines on cluttered decks and moving heavy weights. In the past, their garments also had to permit climbing masts and yards, and manning windlasses and capstans. More recent requirements include facilitating fighting fires, floods and toxic hazards, and preventing vector-borne disease. All these tasks have been performed in climates ranging from tropical to polar, in winds up to 300 km/h, and despite sea states ranging from flat calm to 'phenomenal'.¹

More than a century after its establishment, many Royal Australian Navy (RAN) uniforms and ranks still reflect those used by the (British) Royal Navy (RN). This first of a three-part article describes the history of Navy sailor uniforms or 'rigs' since 1509. The second explains the development of male and female Navy health sailor uniforms since 1879, while the third describes the evolution of Navy medical and dental sailor rank and rate badges since 1827.

A subsequent article will do likewise for RAN health officers.

Background

During the five centuries after the 1066 Norman conquest,² English maritime power was mostly limited to the North Sea and English Channel. It was used for trade with northern Europe, transporting armies and providing their logistic support, countering (and sometimes engaging in) piracy, and defence against the French after most of the English-ruled territory within France was lost in 1453.³

Even so, it was not until 1509 that Henry VIII founded the Royal Navy in its current form, as a force of state-owned dedicated warships with their own shore-based infrastructure. Until then, the term 'navy' referred to ships of all sizes and types throughout

the realm, whether they were owned by the monarch (if he had any), or his merchant subjects. The monarch would hire his ships out to the merchants for trade, and could 'arrest' their ships and crews for his own purposes when required. The same ships were therefore used for both warlike and peacetime purposes.⁴

Furthermore, there were no dedicated English shipyards until the early 15th century. Rather, ships were built and maintained anywhere where temporary iron foundries could be built, with access to deep water and suitable timber supplies. Although a Clerk of the King's Ships provided administrative support for all royal and 'arrested' ships, this only entailed managing the finances.⁵

Consequently, medieval and early Reformation English mariners were employed interchangeably between their monarch and private merchants. They performed their duties in accordance with the *Laws (also Rules or Rolls) of Oléron*⁶ and the *Black Book of the Admiralty*,⁷ which applied to all English ships irrespective of who owned them.

Sailor Uniforms

The *Laws of Oléron* and the *Black Book of the Admiralty* did not require shipmasters to provide clothing for their crews. They also gave mariners the right to choose their captain, which endured until the 1870s.⁸

Although these conditions of service mattered little while voyages lasted for only a few days, they became problematic after 1415, when Prince Henry the Navigator of Portugal⁹ began sponsoring a series of long-duration voyages along the West African coast. The ensuing Age of Exploration led to voyages by Bartholomew Diaz to the Cape of Good Hope in 1487-88,¹⁰ Vasco da Gama to India in 1497-99,¹¹ Christopher Columbus to America in 1492-1504,¹² and Ferdinand Magellan's world circumnavigation in 1519-22.¹³

England followed suit from the 1490s, with voyages to North America by John Cabot¹⁴ and his son

Sebastian,¹⁵ to Russia by Sir Hugh Willoughby,¹⁶ and to West Africa and the Americas by luminaries including John Hawkins¹⁷, Francis Drake¹⁸, Martin Frobisher,¹⁹ and Walter Raleigh.²⁰

Many of these voyages led to the near or total annihilation of their crews, often from a range of shipboard medical conditions.²¹ These included cold injuries such as frostbite, hypothermia and non-freezing cold injuries caused by inadequate clothing,²² and typhus²³ caused by the crews bringing fleas and lice on board via their apparel.²⁴ Yet the latter danger was first documented by English physician Gilbertus Anglicus, whose *Compendium Medicinæ* (written between 1230 and 1250), noted that 'frequent changes of clothing will palliate the annoyance of fleas and pediculi' when at sea.²⁵

Henry VIII had approved a uniform for men from the Cinque Ports prior to his death in 1547, albeit more for ceremonial than hygiene purposes.²⁶ In 1595, Richard Hawkins was one of very few commanders who provided clothing for his ship's company,²⁷ while other ship's companies were issued with Arctic attire in 1602.²⁸ Otherwise, clothing for Elizabethan and early Stuart sailors was only provided on an ad hoc basis, by the occasional Admiralty official as a for-profit personal speculation.²⁹

While successful in preventing a Spanish invasion, England's Armada campaign from July to September 1588 ended with multiple logistic shortfalls. These included clothing, resulting in high rates of illness and death. The fleet commander, Lord Howard of Effingham, wrote (to no avail):

'My Lords, I would think it a marvellous good way that there were a thousand pounds' worth... of hose, doublet, shirts, shoes and such like sent down... for else in very short time I look to see most of the mariners go naked'.³⁰

Thirty years later, English operations in the Mediterranean against Algerian corsairs in 1620-21,³¹ the 1625 attack on Cadiz,³² and the operations against the French at La Rochelle in 1627-28³³ all failed, largely because of disease outbreaks. In 1627 Sir Henry Mervyn, Admiral of the Narrow Seas, wrote:

'The more than miserable condition of the men, who have neither shoes, stockings, nor rags to cover their nakedness... all the ships are so infectious that I fear if we hold the sea one month we shall not bring men enough home to moor the ships.'³⁴

Although 'slop' clothing was made available from that year,³⁵ its effectiveness as a preventive hygiene measure was generally negated by financial considerations. The ongoing occupational mobility between private merchantmen and the King's ships meant that entrants joining the latter were ineligible for new clothing during their first month aboard.³⁶ This was extended to two months in 1663, but was cancelled a year later because of its adverse health effects.³⁷

Even then, sailors had the cost of their slops deducted from their wages on discharge from their ship.³⁸ The clothing provided was also poor quality yet expensive: in 1628 seamen were paid 15 shillings a month,³⁹ while one full suit officially cost 1 pound 7 shillings (nearly two months' wages),⁴⁰ plus a 10% commission to the supplier, and 5% each to the paymaster and the purser. These expenses did not include various unofficial and often illicit charges.⁴¹

Furthermore, the provision of slop clothing from multiple suppliers meant it was not standardised. By comparison, the first British Army uniforms were introduced with the return of King Charles II to the throne in 1660,⁴² and for Navy officers in 1748.⁴³

The itinerant nature of British sailors' employment meant this situation remained extant for nearly 250 years. Yet in 1704, Surgeon Patrick Campbell was the first of a succession of Navy medical officers who, among a range of other hygiene improvements, recommended the free issue of uniforms.⁴⁴

Meanwhile high levels of shipboard morbidity and mortality continued. This culminated in the loss of 1300 out of 2000 men during Commodore George Anson's circumnavigation in 1740-44, only four of whom were killed in action. While this deployment had one of the worst death rates from scurvy ever recorded, typhus and cold injuries caused by inadequate clothing also played their part.⁴⁵

However, in 1757 the Admiralty approved a uniform for hospital patients ashore, albeit less of a hygiene measure than to prevent desertion. In 1781, it also introduced harbour-based 'slop ships' to receive new entrants, who were issued new clothing prior to joining their ship. A major hygiene initiative saw soap being issued from 1796, although in 1815 the quantities were still considered inadequate.⁴⁶

The century following Anson's voyage also saw the gradual evolution of approved patterns for winter and summer attire, which began to resemble the present junior sailors' 'square rig' dress uniforms from the 1830s. However, this did not prevent aberrations: in

the 1830s the Captain of HMS *Blazer* dressed his boat's crew in striped jackets, while as late as 1853, Captain Wilmott of HMS *Harlequin* paid for his boat's crew to be dressed as harlequins.⁴⁷

Even before the 1853-56 Crimean War, the Royal Navy had a manning crisis, caused by a lack of volunteers, the end of forced recruitment (press gangs) at the end of the Napoleonic Wars in 1815, and in particular, the inability to retain sailors between the end of their ships' commission and the beginning of the next.⁴⁸ There was no trained reserve to get additional ships to sea, while the lack of a shore-based recruiting organisation meant captains still had to find their own crews.⁴⁹ For example, in 1857 the new battleship HMS *Renown* required 860 men,⁵⁰ yet despite waiting 172 days she still sailed 62 men (7%) short.⁵¹

Among other responses, continuous service with ten-year engagements was introduced in 1853.⁵² Although it did not completely displace non-continuous service until the 1870s,⁵³ this initiative finally overcame the financial objections to free uniforms from 1857. These took two forms: one had a short open-front 'bluejacket' (not very dissimilar to the current 'battledress' jacket, apart from the latter's pockets), the other with a loose 'frock' jumper-like top that tucked into the trousers.⁵⁴ In 1890 the 'bluejacket' was abolished, while the 'frock' top was replaced by a tight-fitting jumper worn outside the trousers, which became the current dress uniform worn by RAN junior sailors.⁵⁵

These uniforms generally reflected the seagoing workplace requirements of the time. They lacked pockets, to prevent men from carrying objects that could fall out when working aloft. For the same reason, clasp knives for cutting lines in an emergency were secured with lanyards, as were bosun's calls (pipes) used for signalling orders though the ship.

Contrary to popular belief, blue jean collars were not worn to protect sailor's clothing from the tar used for their pigtailed during the Napoleonic Wars. Rather, they were introduced in the 1830s for ornamental purposes, after pigtailed were no longer worn. The collars initially had a rounded edge similar to contemporary fashion ashore but were later cut square, so seamen could make their own more easily. The three white collar stripes likewise do not represent Nelson's victories over the French, but are simply decorative.⁵⁶

Bell-bottom trousers or 'bells' allowed rolling the legs up for swabbing decks and working aloft. Rather than a button-up fly, they had a wide 'piss flap' at

the front that buttoned up the trouser sides. In order to make best use of limited messdeck storage space, the trousers were turned inside out and folded vertically at hands-breadth intervals, and taped into a rectangular block. The number of folds did not represent the seven seas but varied from five or more, depending on the wearer's height.⁵⁷

Sailor caps lacked peaks, to enable looking up when working aloft and for watching the wind on the sails when steering the ship. Wide-brimmed 'sennet' straw hats were worn in the tropics for sun protection until 1921. Officer and sailor caps both had blue and white covers for winter and summer wear, with the latter being used all year round from 1953.⁵⁸

Sailors often painted the name of their ship on their caps from the late 18th century until the introduction of 'cap tally' ribbons in 1857. For security reasons, ship names were omitted during both World Wars, leaving only 'HMS' (or 'HMAS' for Australian personnel).⁵⁹

Although boots were worn ashore, most men at sea went barefoot until sometime before the First World War.

Double-breasted jackets, ties and peaked caps, which became known as 'fore-and-aft rig', were introduced for all Chief Petty Officers in 1879,⁶⁰ and were extended to all 'civil branch' (non-seaman) junior sailors in 1890.⁶¹ 'Fore-and-aft' rigs will be described in Parts Two and Three of this article.



English seaman, 1597⁶².



Seaman's slop clothing, 16th to 18th century⁶³.



Seaman's clothing, 1833.⁶⁶ Note the straw hat, blue jean collar, black neckerchief and short 'bluejacket'.



Seaman's slop clothing, early 18th century⁶⁴ Note the bare feet.



Sailor uniform worn by the Prince of Wales, c1846.⁶⁷ Note the collar, tucked-in 'frock' jumper, and bell-bottom trousers with front 'piss flap' rather than a fly.



Seaman's slop clothing, late 18th century⁶⁵. Note the short blue jacket and black neckerchief.



Seaman uniform with short 'bluejacket', 1857-1890.⁶⁸ Note the blue jean collar, silk neckerchief and 'piss flap' trousers.



Seaman tropical uniform, c1879.⁶⁹ Note the blue jean collar, tucked-in frock jumper, and 'piss flap' trousers.



Recruit graduation parade, HMAS *Cerberus*, 2017⁶⁹ Note the blue jean collars, black neckerchiefs, lanyards, and jumpers outside the trousers.

RAN Sailor Uniforms

The uniforms for the Australian colonial naval forces from 1865 to 1901, the Australian Commonwealth Naval Forces from 1901 to 1911, and the RAN from 1911 to 1966, were all generally similar to their RN counterparts. RAN sailors in particular were distinguished only by RAN-specific buttons, and the 'HMAS' on their cap tally ribbons.⁷⁰ Bell-bottom trousers were worn in the RAN until the 1990s.

The use of the current dress uniform in combat was modified during the First World War, by adding anti-flash hoods and gloves to protect personnel from burning cordite,⁷¹ and anti-gas respirators in response to the use of chemical weapons on the Western Front.⁷²

Khaki uniforms for Navy personnel were first worn ashore by the Victorian and NSW contingents to the Boxer Rebellion in China in 1900-01. They were reintroduced for RAN officers at the end of 1942, and

for RAN sailors two months later, to prevent vector-borne disease.⁷³ This became the blue Action Working Dress for all male RAN personnel from 1948.⁷⁴

Action Working Dress were replaced for both male and female personnel by one-piece grey overalls from 1992. These had 'Proban'® anti-flash fire protection treatment, in response to high rates of burn injuries during the 1982 Falklands War.⁷⁵ The 'Proban'® overalls also had reflective tape on the upper arms, to improve the ability to see 'man overboard' victims.⁷⁶

'Proban's' were replaced by the current two-piece Disruptive Pattern Naval Uniform (DPNU) from 2009. These used the same 'stealth bunny rabbit' camouflage pattern as the contemporary Army field uniform, albeit in grey, blue and green colours consistent with the maritime environment.

DPNUs will be replaced by the Maritime Multi-cam Pattern Uniform (MMPU) from 2018. DPNUs and MMPUs are both intended for daily wear in non-office Navy workplaces, and in joint workplaces as for Army and RAAF personnel.⁷⁷



Pre-1891 RN button for petty officers (shown by the plain rim), with 'St Edward's' crown⁷⁸.



1901 Royal Navy button for senior sailors, with 'Tudor' crown⁷⁹.



1913 RAN 'lazy anchor' button for senior sailors⁸⁰.



1928 RAN button for senior sailors⁸¹.



1953 RAN button for senior sailors, with updated St Edward's crown⁸²



Sailors, Her Majesty's Victorian Ship (HMVS) *Cerberus*, c1900.⁸³ Apart from their 'HMVS' cap tallies, their uniforms are essentially identical to the RN.



Gun drill, HMAS *Melbourne I*, 1916.⁸⁴ This photograph highlights how the current dress uniform was intended for everyday wear, including in combat.



Gun drill, HMAS *Sydney I*, 1919.⁸⁵ Note the addition of anti-flash hoods and gloves, and anti-gas respirators.



Gun's crew, RAN Tribal class destroyer, 1943.⁸⁶ Note the tin helmets, khaki tropical uniforms and anti-flash.



Action Working Dress, HMAS Perth II, 1969⁸⁷.



Grey Proban® overalls, HMAS Parramatta IV, 2008⁸⁸ Note the reflective tape on the sleeves, and the camouflaged shoulder rank slides.



Two-piece Disruptive Pattern Navy Uniform (DPNU), HMAS Sydney III, 2013⁸⁹ Note the RAN badge on the right side of the chest and the name tag on the left.



Maritime Multi-cam Pattern Uniform (MMPU), 2017.⁹⁰ Note the different camouflage pattern (but same colours) compared to DNPUs, the rank slide on the front of the chest, the loss of the DPNU RAN badge on the left chest, and the name tag moved to the right.

Conclusion

Despite a history extending over more than 500 years, RN sailors had no standard uniform until the 1850s. For much of this period, high levels of preventable deaths were frequently caused by sailors bringing typhus-carrying fleas and lice on board, while other deaths resulted from cold injuries caused by inadequate clothing. Despite the frequently disastrous impact on operational capability, this continued to occur for predominantly financial reasons, which were only resolved by addressing personnel conditions of service.

Notwithstanding the vast enhancements to shipboard and personal hygiene since, the requirement to ensure access to suitable apparel to protect RAN members from shipboard hazards and vector-borne disease remains extant. This is particularly relevant for personnel engaged in littoral and other maritime operations in southeast Asia, the southwest Pacific and the southern Indian Ocean.

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Disclaimer

The views expressed in this article are the author's, and do not necessarily reflect those of the RAN, or any of the other organisations mentioned.

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Tobacco Use in a National Sample of United States Service Member and Veteran Students

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Abstract

This study explored tobacco use in a national sample of service member and veteran students enrolled in postsecondary institutions with the purpose of informing the development of a tobacco cessation initiative by identifying factors associated with the use of cigarettes, water pipes, cigars and smokeless tobacco. Researchers conducted secondary analysis of data from the fall 2011 National College Health Assessment (NCHA) II, which surveyed 44 postsecondary institutions in the United States ($n = 27,774$). Three percent of the sample reported United States Armed Services active military or veteran status ($n = 706$). Of the service member and veteran respondents, 41% reported that they used some form of tobacco within the last 30 days. Tobacco use predicted problematic reactions to stressors and mental health symptoms, and correlated with suicidality in the study sample. Further research is recommended to inform culturally competent programming.

The great majority of veterans of Iraq and Afghanistan are eligible for the Post-9/11 GI Bill, which has increased the number of student veterans on campuses in all disciplines.¹ These funded students undertake studies with higher rates of physical injury, chronic pain, depression and stress injury than their classmates.² Related to these issues are problematic health behaviours such as the overuse of tobacco products.³ Tobacco use contributes to decreased quality of both mental and physical health.⁴

Tobacco use

In general, health behaviours among student veterans are understudied, particularly among those who smoke.⁵ The purpose of this study was to inform the development of a tobacco cessation initiative to reduce tobacco use among service member and veteran students in postsecondary institutions by identifying factors associated with the use of cigarettes, water pipes, cigars and smokeless tobacco.

Among veterans. Tobacco use is higher among veterans than the general population.⁶ In 2005, roughly one-third of military-connected personnel used tobacco (32%), which is not surprising given that many tend to use tobacco products prior to entering the service.⁷ Additionally, deployment has been associated with increased tobacco use, and deployed service members report smoking 50% more than those service members who are not deployed.⁸

Among college students. Among college students, experimentation with the everyday use of tobacco in multiple forms is commonly attributed to the experience of new challenges and potentially stressful situations in college.⁹⁻¹⁰

Effects over the life course. The health-related effects of tobacco use over one's life course in the United States are significant; cigarettes and obesity are the two tied leading causes of preventable death.¹¹ An estimated one-half of individuals who smoke cigarettes will eventually die or become disabled as a direct result of their cigarette use.¹²

Other tobacco products

Tobacco products—defined by the US Food and Drug Administration (FDA) as a product 'made or derived from tobacco that is intended for human consumption, including any component, part, or accessory of a tobacco product'—include various forms of nicotine delivery systems.¹³ Some forms have long been mainstream (e.g. cigarettes, smokeless tobacco that is chewed), while others have more recently either been introduced (e.g. electronic nicotine delivery systems such as e-cigarettes¹⁴) or become more popular (e.g. water pipes or hookahs,¹⁴ and cigars and electronic nicotine delivery systems¹⁴⁻¹⁵).

Information regarding prevalence and potential predictors of both traditional (e.g. cigarettes) and alternative (e.g. smokeless tobacco) forms of tobacco use among service member and veteran students is limited. However, some research suggests that

service member and veteran students more often report traditional tobacco use than non-veteran students.¹⁶

Electronic nicotine delivery systems. Electronic nicotine delivery systems—known also as ENDS—are battery-operated devices resembling cigarettes (with flavours and other chemicals) comprised of a cartridge (containing nicotine, flavours and other chemicals), heating device/vaporiser, and power source.¹⁷ Nicotine is delivered by way of vapour: puffing activates the e-cigarette, which ‘vaporizes the liquid in the cartridge’ whereby ‘the resulting aerosol is then inhaled (called ‘vaping’).¹⁷ The use of alternative products such as e-cigarettes is very common in the young adult population.¹⁸

Water pipes. Water pipes are a nicotine delivery system that originated in the Middle East and contain flavoured nicotine. They are popular with young adults and are often smoked socially in groups.¹⁹ One popular form of water tobacco smoking is the use of hookahs, which many people perceive to be less harmful than cigarettes,²⁰ though hookah smoking is associated with exposure to toxicants and carcinogens including tar, nicotine, carbon monoxide and heavy metals.²¹⁻²²

Cigars. Cigars contain fermented, aged and cured tobacco (primarily from a single source), and can be distinguished from roll-your-own cigarettes because they are wrapped in tobacco leaf. Cigars vary in size, level of nicotine content (e.g. some equivalent to what may be found in an entire pack of cigarettes) and duration needed for consumption.²³ It is commonly misconceived that cigars are safer than other forms of nicotine delivery systems because cigar smokers do not inhale, but cigar smoke contains high levels of tar, toxins and cancer-causing substances.²⁴

Smokeless tobacco. Smokeless tobacco, to include chewing tobacco and snuff, is the second most prevalently used form of tobacco in the United States.²⁵ An estimated 14.5% of service members use smokeless tobacco.⁷ Use has been implicated in a variety of different cancers including oropharyngeal, prostate and pancreatic²⁶ as well as other health problems (e.g. gingival recession, leukoplakia, dental caries, tooth abrasions and nicotine addiction²⁷).

Methods

Source of data. Researchers conducted secondary analysis of data from the fall 2011 National College Health Assessment (NCHA) II. This survey is administered by the American College Health Association (ACHA) twice a year. The fall 2011 survey administration collected a sample of 27,774 students

from 44 postsecondary institutions across the United States. Three percent of the sample reported that they were currently or have been a member of the United States Armed Services ($n = 706$).

Study variables

Demographic. In the present study, the following demographic characteristics were considered: age (in years); gender; sexual orientation; race and ethnicity; marital status; level in school; membership in a fraternity/sorority; grade point average (GPA); participation in organised college athletics; and deployment to an area of hazardous duty.

Mental health. The ACHA survey measured mental health with 11 items asking, ‘Have you ever...’: felt things were hopeless; felt overwhelmed by all you had to do; felt exhausted (not from physical activity); felt very lonely; felt very sad; felt so depressed that it was difficult to function; felt overwhelming anxiety; felt overwhelming anger; intentionally cut, burned, bruised or otherwise injured yourself; seriously considered suicide; and attempted suicide. Each variable was measured at the ordinal level and was—for the purpose of analysis in the present study—recoded into a dummy variable.²⁸

Normative stressors. The ACHA survey measured stress with 11 items asking, ‘Within the last 12 months, have any of the following been traumatic or very difficult for you to handle’: academics; career-related issue; death of a family member/friend; family problems; intimate relationships; other social relationships; finances; health problem of a family member or partner; personal appearance; personal health issue; and sleep difficulties. These variables were measured with a dichotomous response option and were recoded into dummy variables.

Use of tobacco products. The ACHA survey measured the use of tobacco products with four items asking, ‘Within the last 30 days, on how many days did you use...’: cigarettes; tobacco from a water pipe (hookah); cigars, little cigars or clove cigarettes; and smokeless tobacco. Each variable was measured at the ordinal level and was recoded into a dummy variable.

Statistical analysis. We calculated frequencies and percentages for all study variables by use of tobacco products. We checked all assumptions for logistic regression including influential points²⁹ and the extent of multicollinearity.³⁰ We confirmed the linearity in the logit for the age variable with the Box-Tidwell transformation procedure.³¹ We used a clustered sandwich estimator for all logistic regression analyses.³⁰ Total variance explanation

in each model was specified with the Cox-Snell R^2 and the Nagelkerke R^2 .³²⁻³³ Fifty-six variables were individually regressed on the four tobacco products: cigarettes, water pipes, cigars and smokeless tobacco. Significant variables were then tested in multivariate models. Finally, we tested significant variables from these multivariate models in final models. We performed all statistical analyses with Stata 13 for Windows.³⁴ This study was approved by the university Institutional Review Board.

Results

Two hundred and eighty-six service member and veteran students (41% of the total service member and veteran student sample) reported that they used some form of tobacco within the last 30 days. Most tobacco users were white, heterosexual males in undergraduate programs who were not married and had some problematic reactions to stressors and mental health symptoms. Table 1 presents complete information on tobacco use by demographic, mental health and normative stressor variables.

Table 1 Use of tobacco products by demographic, mental health and stress variables

Study variables	Cigarettes ¹ N (%)*		Water pipe ¹ N (%)*		Cigars ¹ N (%)*		Smokeless ¹ N (%)*	
	Yes	No	Yes	No	Yes	No	Yes	No
All participants (row %)	134 (19)	568 (81)	35 (5)	663 (95)	54 (8)	648 (92)	63 (9)	638 (91)
Demographic factors								
Age, in years (M, SD)	31.1 (12.5)	30.5 (10.2)	24.2 (13.4)	31 (10.4)	31.5 (17.5)	30.5 (9.9)	29.2 (12)	30.7 (10.5)
Gender								
Female	45 (34)	185 (33)	5 (15)	224 (34)	7 (14)	223 (35)	5 (8)	224 (35)
Male	87 (65)	373 (66)	27 (82)*	430 (65)	42 (81)*	418 (65)	56 (90)*	404 (64)
Transgender	2 (1)	4 (<1)	1 (3)	5 (<1)	6 (<1)*	3 (<1)	1 (2)	5 (<1)
Sexual orientation								
Heterosexual	119 (90)	530 (94)	28 (88)	616 (39)	46 (88)	602 (93)	57 (92)	590 (93)
Gay/lesbian	4 (3)	14 (3)	1 (3)	18 (3)	2 (4)	17 (3)	1 (2)	18 (3)
Bisexual	6 (5)	15 (3)	2 (6)	19 (3)	3 (6)	18 (3)	3 (4)	18 (3)
Unsure	3 (2)	5 (<1)	1 (3)	7 (1)	1 (2)	7 (1)	1 (2)	7 (1)
Race								
White	113 (84)	443 (78)	28 (80)	525 (79)	41 (76)	515 (80)	57 (91)*	499 (78)
Black	6 (5)	40 (7)	3 (9)	43 (7)	8 (15)*	38 (6)	3 (5)	42 (7)
Hispanic or Latino/a	12 (9)	66 (12)	4 (11)	74 (11)	10 (19)	68 (11)	3 (5)	75 (12)
Asian or Pacific Islander	7 (5)	28 (5)	3 (9)	32 (5)	5 (9)	30 (5)	2 (3)	33 (5)
American Indian, Alaskan Native, or Native Hawaiian	8 (6)*	13 (2)	3 (9)	18 (3)	3 (6)	18 (3)	4 (6)	17 (3)
Biracial or multiracial	8 (6)	15 (3)	2 (6)	20 (3)	3 (6)	20 (3)	2 (3)	21 (3)
Other	2 (2)	14 (3)	3 (9)*	13 (2)	3 (2)	13 (2)	2 (3)	14 (2)
Marital status								
Not married	92 (69)	321 (57)	29 (85)	382 (58)	31 (59)	382 (59)	35 (57)	378 (59)
Married	41 (31)*	246 (43)	5 (15)*	280 (42)	22 (42)	265 (41)	27 (44)	259 (41)
Level in school								
Undergraduate	116 (87)	451 (80)	29 (85)	534 (81)	45 (87)	522 (81)	55 (90)	512 (81)
Graduate/professional	18 (13)	110 (20)	5 (15)	123 (19)	7 (14)	121 (19)	6 (10)*	1212 (19)
Membership in a fraternity/sorority								
Yes	16 (12)*	37 (7)	6 (18)*	47 (7)	10 (19)*	43 (7)	8 (13)	45 (7)
No	114 (88)	523 (93)	28 (82)	605 (93)	43 (81)	594 (93)	52 (87)	584 (93)

Grade point average (GPA)								
A	40 (3)	219 (39)	8 (24)	249 (38)	19 (36)	239 (37)	14 (23)	244 (39)
B	62 (47)	258 (46)	16 (49)	302 (46)	21 (40)	300 (47)	32 (52)*	288 (46)
C	25 (19)*	60 (11)	6 (18)	79 (12)	8 (15)	77 (12)	12 (19)*	73 (12)
D/F	3 (2)	5 (<1)	2 (6)*	6 (<1)	3 (6)*	5 (<1)	2 (3)*	6 (<1)
N/A	3 (2)	21 (4)	1 (3)	23 (4)	2 (4)	22 (3)	2 (3)	22 (4)
Participation in organised college athletics ³								
Varsity	6 (5)	23 (4)	3 (9)	26 (4)	4 (8)	25 (4)	3 (5)	26 (4)
Club sports	10 (8)	34 (6)	6 (18)*	38 (6)	8 (15)*	35 (5)	5 (8)	39 (6)
Intramurals	21 (16)	83 (15)	14 (42)*	90 (14)	18 (34)*	86 (13)	11 (18)	93 (15)
Deployment to a hazardous area								
Yes	61 (46)	283 (50)	13 (37)	330 (50)	27 (50)	317 (49)	35 (56)	309 (48)
No	73 (55)	285 (50)	22 (63)	333 (50)	27 (50)	331 (51)	28 (44)	329 (52)
Mental health factors ²								
Felt hopeless	58 (44)*	176 (31)	14 (40)	220 (33)	18 (34)	216 (34)	26 (41)	208 (33)
Felt overwhelmed	98 (74)	393 (69)	28 (80)	460 (70)	37 (69)	454 (70)	41 (65)	449 (71)
Felt exhausted	106 (80)*	389 (69)	28 (80)	464 (70)	38 (70)	457 (71)	47 (75)	448 (71)
Felt lonely	73 (55)*	226 (40)	20 (59)	279 (42)	25 (46)	275 (43)	26 (41)	274 (43)
Felt sad	76 (57)*	244 (43)	18 (51)	303 (46)	24 (44)	297 (46)	30 (48)	291 (46)
Felt depressed	48 (36)*	140 (25)	13 (37)	175 (26)	17 (32)	171 (26)	22 (35)	166 (26)
Felt anxious	65 (49)*	195 (34)	14 (40)	244 (37)	21 (39)	239 (37)	28 (44)	232 (37)
Felt angry	60 (45)*	175 (31)	10 (29)	222 (34)	18 (33)	217 (34)	26 (41)	209 (33)
Intentionally injured self	9 (7)	24 (4)	4 (11)	29 (4)	6 (11)*	27 (4)	5 (8)	28 (4)
Suicidal ideation	12 (9)	35 (6)	6 (17)*	41 (6)	7 (13)	40 (6)	6 (10)	41 (7)
Attempted suicide	4 (3)	5 (<1)	3 (9)*	6 (<1)	4 (7)*	5 (<1)	3 (5)*	6 (<1)
Normative stressor factors ³								
Academics	57 (43)	199 (35)	15 (43)	239 (36)	22 (42)	234 (36)	23 (37)	233 (37)
Career-related issue	45 (34)*	127 (22)	14 (40)*	159 (24)	19 (36)	154 (24)	22 (36)*	151 (24)
Death of a family member or friend	29 (22)*	65 (11)	5 (14)	89 (13)	12 (22)*	82 (13)	10 (16)*	83 (13)
Family problems	49 (37)*	128 (23)	10 (29)	166 (25)	16 (30)	162 (25)	21 (33)	157 (25)
Intimate relationships	55 (42)*	132 (23)	13 (37)	174 (26)	16 (31)	171 (27)	22 (35)	165 (26)
Other social relationships	33 (25)*	76 (14)	10 (29)*	98 (15)	14 (26)*	95 (15)	13 (21)	96 (15)
Finances	75 (57)*	201 (36)	13 (37)	261 (40)	21 (40)	255 (40)	28 (44)	248 (39)
Health problem of a family member/partner	33 (25)*	80 (14)	9 (26)	103 (16)	14 (26)*	99 (15)	18 (29)*	95 (15)
Personal appearance	30 (23)*	81 (14)	7 (20)	103 (16)	12 (23)	99 (15)	13 (21)	98 (15)
Personal health issue	34 (26)*	75 (13)	6 (17)	102 (16)	13 (25)	96 (15)	13 (21)	96 (15)
Sleep difficulties	52 (39)*	149 (26)	8 (23)	192 (29)	19 (37)	182 (28)	23 (37)	178 (28)
Alcohol use ¹	105 (79)*	335 (59)	32 (91)*	405 (61)	48 (89)*	392 (61)	51 (82)*	388 (61)

Note: M = mean; SD = standard deviation; * ≤ 0.05 in univariate logistic regression; ¹Within the last 30 days; ²Lifetime; ³Within the last 12 months, have any of the following been traumatic or very difficult for you to handle

Factors associated with the use of cigarettes. One hundred and thirty-four service member or veteran students (19% of the sample) indicated that they had used cigarettes within the last 30 days. Twenty-two initial factors were significantly associated with cigarette use (see Table 1). Three factors were significantly associated with cigarette use (when controlling for other factors): alcohol use, financial stress and being married/partnered. These were tested in a final model that generated statistically significant results [$\chi^2(6, N = 693) = 43.35, p \leq 0.001$]. The number of positive cases of cigarette use was appropriate for the model given that there were at least 10 positive cases per variable.³⁵ The model explained between 13% (Cox-Snell R^2) and 21% (Nagelkerke R^2) of the variance in cigarette use and correctly classified 81.2% of cases. Table 2 presents complete information on factors associated with cigarette use.

Factors associated with the use of tobacco from a water pipe. Thirty-five service member or veteran students (5% of the sample) indicated that they used a water pipe within the last 30 days. Twelve initial factors were significantly associated with water pipe use (see Table 1). Five factors were significantly associated with water pipe use (when controlling for other factors): attempted suicide, alcohol use, other (race), being married/partnered and participation in intramural sports. These were tested in a final model that was statistically significant [$\chi^2(6, N = 658) = 39.11, p \leq 0.001$]. The number of positive cases of water pipe use was problematic given that there were not at least 10 positive cases per variable;³⁵ thus, the results should be interpreted with caution. The model explained between 14% (Cox-Snell R^2) and 44% (Nagelkerke R^2) of the variance in water pipe use and correctly classified 95.3% of cases. Table 2 presents complete information on factors associated with water pipe use.

Factors associated with the use of cigars, little cigars and clove cigarettes. Fifty-four service member or veteran students (8% of the sample) indicated that they used cigars within the last 30 days. Thirteen initial factors were significantly associated with cigar use (see Table 1). Four factors were significantly associated with cigar use (when controlling for other factors): alcohol use, male, transgender and participation in intramural sports. The aforementioned statistically significant predictors were tested in a final model [$\chi^2(4, N = 689) = 36.22, p \leq 0.001$]. The number of positive cases of cigar use was appropriate for the model given that there are at least 10 positive cases per variable.³⁵ The model explained between 12% (Cox-Snell R^2) and 28% (Nagelkerke R^2) of the variance in cigar

use and correctly classified 92.7% of cases. Table 2 presents complete information on factors associated with cigar use.

Factors associated with the use of smokeless tobacco. Sixty-three service member or veteran students (9% of the sample) indicated that they used smokeless tobacco within the last 30 days. Eleven initial factors were significantly associated with smokeless tobacco use (see Table 1). Six factors were significantly associated with smokeless tobacco use (when controlling for other factors): attempted suicide, alcohol use, health problem of a family member/friend, male, white and a 'C' grade point average (GPA). The aforementioned statistically significant predictor variables were tested in a final model [$\chi^2(16, N = 671) = 69.21, p \leq 0.001$]. The number of positive cases of smokeless tobacco use was appropriate for the model given that there are at least 10 positive cases per variable.³⁵ The model explained between 20% (Cox-Snell R^2) and 43% (Nagelkerke R^2) of the variance in smokeless tobacco use and correctly classified 91.1% of cases. Table 2 presents complete information on factors associated with cigar use.

Discussion

This study explored tobacco use in a national sample of service member and veteran students enrolled in postsecondary institutions. The prevalence of alternative forms of tobacco use was high. We discuss five findings from our study.

First, and perhaps most surprisingly, deployment and negative mental health or most normative stressor factors were not predictive of tobacco use. This finding is different from that of Bondurant and Wedge⁸ who found that deployment was a significant factor in tobacco use. Researchers have also found statistical and practical significance in the relationship between smoking and depressive conditions in veterans, both diagnosed and undiagnosed.³⁶ We recommend additional investigation to explore this apparent discrepancy.

Second, results suggest that there is an association between alcohol use and increased tobacco use across all four categories (cigarette, water pipe, cigar and smokeless tobacco). This finding is consistent with the current literature in that it suggests that problematic alcohol use likely co-occurs with tobacco use,³⁷ and supports the Gulliver et al. study that argues that smoking cessation may support sobriety.³⁸

A third finding from our study was that attempted suicide was associated with increased water pipe

Table 2 Significant factors associated with the use of tobacco

Cigarettes ¹							
Factors	B	SE	OR	95% CI	p	HL ²	Prob > ²
Alcohol use ¹	0.93	0.24	2.54	1.59 to 4.04	≤0.001	5.35	0.62
Finances ²	0.91	0.21	2.49	1.66 to 3.73	≤0.001		
Married/partnered	-0.50	0.22	0.61	0.39 to 0.93	0.02		
Constant	-3.26	0.37	0.04	0.02 to 0.08	0.00		
Water pipe ¹							
Factors	B	SE	OR	95% CI	p	HL ² (df)	Prob > ²
Attempted suicide ³	2.50	0.79	12.19	2.62 to 56.81	≤0.001	5.25	0.39
Alcohol use ¹	1.91	0.67	6.76	1.80 to 25.37	0.01		
Other (race)	1.84	0.76	6.27	1.42 to 27.64	0.02		
Married/partnered	-1.38	0.53	0.25	0.09 to 0.71	0.01		
Intramurals ²	1.25	0.40	3.48	1.59 to 7.64	≤0.005		
Constant	-4.56	0.75	0.01	0.002 to 0.05	0.00		
Cigars ¹							
Factors	B	SE	OR	95% CI	p	HL ² (df)	Prob > ²
Alcohol use ¹	1.56	0.47	4.76	1.91 to 11.87	≤0.001	0.86	0.97
Male	0.98	0.43	2.66	1.15 to 6.14	0.02		
Transgender	2.66	0.86	14.30	2.63 to 77.67	0.01		
Intramurals ²	0.98	0.35	2.67	1.36 to 5.27	≤0.005		
Constant	-4.71	0.51	0.01	0.003 to 0.02	0.00		
Smokeless ¹							
Factors	B	SE	OR	95% CI	p	HL ² (df)	Prob > ²
Attempted suicide ³	2.30	1.08	9.98	1.19 to 83.35	0.03	3.94	0.79
Alcohol use ¹	0.91	0.36	2.47	1.23 to 4.97	0.01		
Health problem of a family member/friend ²	0.78	0.33	2.19	1.15 to 4.17	0.02		
Male	1.84	0.48	6.30	2.44 to 16.27	≤0.001		
White	1.19	0.50	3.29	1.24 to 8.71	0.02		
C (GPA)	1.00	0.45	2.72	1.13 to 6.52	0.03		
Constant	-7.00	0.85	0.0009	0.0002 to 0.005	0.00		

Note: ¹Within the last 30 days; ²Within the last 12 months; ³Lifetime

and smokeless tobacco use. We did not find a study focusing specifically on the association between attempted suicide and increased water pipe and smokeless tobacco use. However, there are studies on the broader subject of tobacco use and the relationship with suicide attempts. A longitudinal analysis was conducted in 2015 and found a positive relationship between attempted suicide and initial tobacco use, persistent tobacco use and relapse tobacco use.³⁹ These findings suggest an opportunity for further research.

A fourth finding from our study was that marriage/partnership was predictive of decreased cigarette and water pipe use. This finding agrees with the literature that indicates high levels of social support lower tobacco use and improve tobacco cessation rates.⁴⁰ Social relationships play an important role in promoting better health and alleviating diseases.⁴¹ While not all kinds of social interactions produce similar health consequences, intimate partnerships are considered a reliable indicator of social support.⁴² The ways in which individuals seek and cultivate social support vary widely, but this established, track-able metric has proven useful; both the presence of and supportive behaviour within intimate partnerships lead to better physical and mental health outcomes.⁴³ Attention to partner support in tobacco prevention and cessation programming is indicated both by the literature and the results of the present study.

A fifth finding from our study was that men demonstrated increased cigar and smokeless tobacco use, and for men, intramural participation increased water pipe and cigar use. These findings agree with the literature that indicates that men use more tobacco in general.⁴⁴⁻⁴⁵ In groups where it is socially normative to do so, such as college-based Greek organisations or recreational sporting leagues, male smoking rates increase significantly.⁴⁶ Such examples of community-level influences on health behaviour indicate postsecondary administrators and programs should implement an ecological approach to programming for college men.⁴⁷ The results of the present study, specifically, and the research literature in general indicate a need to offer tobacco prevention and cessation programs that work within communities to change social norms, perhaps embracing peer leadership models that typically appeal to veterans.⁴⁸ Prior work also suggests that service member and veteran students use college-based mental health services at very high rates,⁴⁹ which might afford an opportunity to scaffold additional support and motivation for tobacco cessation and related health behaviours.

Limitations

When considering the findings of this report, we acknowledge several limitations, including its overall exploratory nature. The study is limited by the cross-sectional nature of the design, the use of non-standardised measures, and selection bias due to low response rates and self-reporting, and our results are also limited in generalisability to postsecondary settings. Despite these limitations, our study provides a foundation from which administrators and programs at postsecondary institutions can begin to develop or further tailor tobacco cessation programs for service member and veteran students.

Implications for practice and research

Institutions have both ethical and financial incentives to support the well-being of veteran students, many of whom attend school because of funding by GI Bill benefits earned during post-9/11 service.³ Now, health educators have a tremendous opportunity to offer well-informed interventions that may improve academic success and life trajectories potentially relying heavily on student veteran associations to recruit members for participation in interventions and services.⁵⁰ Cultural competence when attempting this work is vital,⁵¹ and peer outreach is important to veterans.⁴³

Analyses of student veteran demographics indicate that of the 2 million veterans returning to civilian life each year, approximately 500,000 immediately use their veteran education benefits.⁵² These numbers make service delivery salient for college campuses and positions postsecondary institutions to deliver important smoking prevention and cessation services tailored to the unique needs of veterans. It is important for educators and providers to understand, assess and support decreased tobacco use among this population, cognisant of factors that contribute to use as compared to students who are not service members or veterans. In addition to having different supportive needs in general than non-service member/veteran students,⁵³ it is helpful for educators and providers to understand how school-related stressors may contribute to the use of tobacco products and examine effective programs in other vulnerable subpopulations for success exemplars.⁵⁴⁻⁵⁵

The findings of this research provide an impetus for cessation and prevention intervention development to work with service member and veteran students who use tobacco and alternative forms of tobacco. Existing social work frameworks such as the Social Ecological Model⁴⁷ that consider factors associated with tobacco

use might be helpful. At the individual level, gender identity and relationship or marital status can be considered in addition to general influences on tobacco use (e.g. genetics, addiction, demographics, other concerns).^{8(p.82)} At the interpersonal level, suicidal ideation can be considered in addition to general influences on tobacco use (e.g. family, peers, stress and boredom).^{8(p.82)} At the community level, intramural participation can be considered in addition to general influences on tobacco use (e.g. lack of tobacco cessation or control programs, culture of smoking, lack of restrictions or restricted use areas, access, lack of provider trainings).^{8(p.82)} At the societal level, membership as a service member/veteran can be considered in addition to general influences (e.g. military-smoking association, policy, taxes/prices).^{8(p.82)}

Additional research is warranted to understand how tobacco use among service member and veteran students might be used to cope with reintegration or avoid thoughts or emotions associated with traumatic experiences.

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The Dark Night of the Veteran's Soul – Understanding the Impact of Spiritual Wounds for Australian Veterans

M Davies

Abstract

Background: Figures from the Department of Veterans' Affairs indicate there may be over 30,000 Australian veterans that have or may yet develop some form of service-related mental illness. There is a growing body of evidence that there is a spiritual dimension to soldiers' wounds.

Purpose: The purpose of this paper is to understand the causes, symptoms and healing pathways for spiritual wounds.

Method and materials: Firstly, exploration of the nature of veteran spirituality. Secondly, how a veteran's spirit can be wounded and what form these wounds take will need to be understood. Finally, approaches to healing these spiritual wounds.

Results: There is a strong and growing body of empirical evidence highlighting linkages between diminished spiritual functioning and mental health issues such as post-traumatic stress disorder (PTSD). Properly trained and accredited medical and psychological practitioners are required to deliver treatment in their space.

Conclusion: There is limited evidence of any spiritual institution or facility of any nature making a significant contribution in the support of veterans whose Defence service has led to mental health issues with a spiritual or faith basis. Determining what role spiritual institutions or facilities should take will need to be a major area for further study.

Conflict of Interest: There are no conflicts of interest.

Wounded Spirits – The Dark Night of the Veteran's Soul

'The spirit of a man will sustain his infirmity; but a wounded spirit who can bear?' Proverbs 18:14

A spiritual grey zone

Soldier: 'Padre? Do you think that God still loves me?'

Chaplain: 'Yes, but why do you ask that?'

Soldier: 'Because I had to kill two men yesterday...'

This exchange between an Australian soldier and an Army chaplain (known as padres) occurred at a

base in Iraq in 2003. The Australian Defence Force (ADF) has recently completed a period of intense engagement in Iraq and Afghanistan, and preliminary evidence indicates that of the 36,000 personnel who deployed to the operational area, somewhere between 8 and 15% will suffer from some form of service-related mental illness. Figures from the Department of Veterans' Affairs (DVA) cite that the net total of veterans from all conflicts is approximately 301,200. As such, this may mean that some 24,000–45,000 veterans living within the community may have or yet develop some form of service-related mental illness such as post-traumatic stress disorder (PTSD). In fact, the former commander of Australian forces in Afghanistan, Major General John Cantwell, has warned of a 'tidal wave' of psychological problems.

The causes and symptoms of mental illness are complex but the World Health Organization

considers religious belief and spirituality to be a factor in patient-centred health care and its incorporation helps to ensure that a 'truly holistic "bio-psycho-social-spiritual" model is utilised'. In this sense, serving the spiritual needs of personnel is well supported by a large and highly developed network of military chaplains and spiritual advisers. But what happens to this *wounded spirit* when they leave the ADF to enter an ever-growing community of Defence veterans where they no longer fall under the pastoral care of military chaplains? Agencies such as DVA are starting to look more deeply at psychological and cultural aspects of veterans' mental health, but what happens to their spiritual care and healing? The short answer is that in many cases they will effectively enter a *spiritual grey zone*. To date, church-based spiritual care of veterans has been largely ceremonial and relegated to commemorative events such as Anzac Day. Government and community organisations are silent on this issue and there seems to be a general lack of understanding of the nature of and approaches to healing the spiritual wounds carried by ADF veterans.

Understanding the healing pathways through the spiritual grey zone will require the exploration of two areas. The first concerns the nature of spirituality itself, albeit in the context of the veteran. From this basis, approaches to healing these spiritual wounds can then be reviewed.

Veterans' spirituality

There is an obvious and inherent contradiction between a spiritual life and war. During the Vietnam War, another young Australian soldier approached an Anglican priest and asked, 'Padre, where was God in all of this?' Can a spirit be wounded? If so, how are spiritual wounds inflicted, what are the symptoms and are there particular environmental issues that need to be understood before healing can commence? The search for understanding the human spirit is one of humankind's least conclusive pursuits. In contemporary society spirituality has, as Dreyer cautiously notes, 'a bewildering array of meanings' that encompass a variety of religions, cultures, philosophies and approaches. What appears to be common among these concepts is that the spirit refers to a non-material animating principle of life. Additionally, it encompasses daily lived aspects of one's faith in terms of values and commitments, and how a person appropriates beliefs about a 'God' or higher being of intelligence in the world in a journey for self-transcendence and meaning. A relevant definition from a veteran's perspective comes from the ADF itself. The ADF's Joint Health Command defines spirituality as 'that aspect of humanity

that refers to the way individuals seek and express meaning and purpose and the way they experience their connectedness to God, to the moment, to self, to others, to nature, and to the significant or sacred'.

All of these ideas point to a key concept about the human spirit. For many people, this 'non-material animating principle of life' encompasses a host of critical aspects of their values and commitments and is based, led or centred on the belief in a God. In this sense, for some people the spirit is a fundamental aspect of their lives. As such, this is a domain of life that can be wounded by act of will (by self or others) and such events may create doubt in the existence, centrality or leadership of God. Such doubt can be about the very existence of God, of God's motives or intent, or whether 'God still loves me'.

Despite the oft quoted aphorism that 'there are no atheists in foxholes' not every member of the ADF has a religious alignment. In fact, in a recent survey less than 50% of ADF personnel claimed to have a religion. How serious, committed and involved members are is unknown. Likewise, it is entirely likely that many personnel may not claim a 'religion' but hold spiritual beliefs. It is reasonable to assume that for those whose religious or spiritual belief offers a compelling way to find meaning and purpose in life, threats to those beliefs can be a significant influence on their overall state of wellness.

Spiritual wounds

One author notes that a spiritual injury or wound tears at spiritual tissue in the same way that a physical injury destroys bodily tissue. A spiritual wound can occur by being a *witness*, *participant* or *victim*. In the 'fog of war' it is also common for the nature of these wounds to overlap or collide. The first circumstance occurs when a person witnesses an event or action that creates a memory that shapes their understanding of the intent of God and unity of the preeminent values. Typically, this is the result of another's will and they will have no control over it. Often this may involve innocent or vulnerable people. An example of this might be where an enemy uses civilians as 'human shields' as the Islamic State group did to cover their withdrawal from the Syrian town of Manbij.

Spiritual wounds can also be self-inflicted where the individual is an active participant. Guilt stemming from their actions can destroy their understanding of faith, hope and charity and fundamentally change their view of their relationship with God. In May 2016, the Australian Broadcasting Commission's (ABC's) *Australian Story* related the events surrounding a

failed raid on a suspected terrorist compound in Afghanistan in 2009. The language used by one of the participants is important to note: 'From the moment I realised there were dead children, I was horrified, numb, just struggling to grasp... When you realise you've killed children, devastating doesn't even begin to describe it, and I feel like I can't fix it and I can't *atone* [emphasis added] for it. I can't do anything to undo the damage that was done'. 'Atonement' is one of Christianity's most fundamental principles.

Finally, a spiritual wound can occur when an enemy seeks to deliberately use spirituality as a tool of war. Virtually every war in history has had at least one side with a religious affiliation or spirituality. For example, in the First World War German soldiers wore 'Gott mit uns' (God is with us) on their belt buckles while Australians fought for 'God, King and country'. The most recent appearance of this can be seen in the Islamic State group's claim that they had executed 1,700 Shia Iraqi soldiers during their advance on Baghdad in 2014. This was a deliberate act of terror to demonstrate the superiority of their Sunni beliefs and its validation by God not just for Shia Muslims but the broader, predominately Christian nations opposing them.

Symptoms

Until recently the diagnosis of a spiritual wound has been a difficult process, as the prevailing diagnostic paradigm was that these issues were either medical or psychological. In recent years there has been a growing recognition that spiritual issues have a significant impact on mental health. Symptoms of a spiritual wound fall into several categories. There is a degree of overlap with typical PTSD symptoms and while there are some specific spiritual needs, these will not necessarily be separate from other clinical needs. The key symptoms can be grouped under three key headings: *moral*, *community* and *God centred*. 'Moral injury' is a term that has gained considerable currency in recent years. Litz and others' work in this area has established clear links between moral and spiritual health. Broadly, research indicates that unhealthy spirituality is often associated with higher levels of symptoms and clinical problems in some trauma populations. For example, anger, rage and a desire for revenge following trauma can be higher when not tempered by forgiveness, spiritual beliefs or spiritual practices. Additionally, there are increased behavioural risks from self-medication through excessive use of alcohol or drugs. Overall, evidence from the United States indicates that 'guilt and reduced comfort from religious faith were shown to be associated with increased use of VA [Veterans Affairs] (mental health) services'.

The work by Litz and others on moral injury is profound and brings the spiritual aspects of the veteran's experience into a broader and complementary treatment context along with a range of important moral, psychological, medical and cultural issues. While there is no suggestion that the treatment of spiritual injury should take any primacy or be conducted in isolation, spirituality is a uniquely different proposition. Questions such as 'Does God still love me?' are purely faith and belief based. As such, one approach might be to consider the syllogism that *moral injury is to reason as spiritual injury is to faith*. As properly trained and accredited medical and psychological practitioners are required to deliver such treatment in their space, so too will there be a requirement for the involvement of properly trained and accredited religious practitioners.

Military organisations are by their very nature strongly community focused. Indeed, a considerable amount of time is focused on establishing, building and maintaining the cohesiveness of units as well as the uniqueness of the military environment. For many young men and women this may well be the first time they encounter such an environment. When personnel leave this environment they often lose this expanded social support network. Veterans will often isolate themselves and this social distance and lack of community is thought to increase dissonance in how they perceive, engage with and experience the external world. According to the US Department of Health and Human Services Office of the Surgeon General and the National Action Alliance for Suicide Prevention, there is evidence that veterans who score higher on a spiritual distress scale were found to have increased suicide risk factors. Sadly, this evidence has been confirmed as more than 1,892 US veterans are thought to have died by suicide since 1 January 2014. Disappointingly, given the relative size of the Australian contribution to the Afghanistan and Iraq wars, in the period 2001–2014 there were 292 certified ADF suicides.

How *God-centered* symptoms present in a person will depend on where they are in their spiritual arc or journey. For those with a strong concept of faith or spiritual comfort these may be a form of protection against the severity of the wound. In the same way body armour does not stop every fragment of a blast but provides protection and reduces the severity of the wound, spiritual fitness or armour prior to battle may perform the same function. For example, a 2007 study of 500 US Marines found that many believed their faith provided them with meaning and purpose and that combat increased their spirituality. Conversely, the severity of the spiritual wound may create the first cracks in the faith. Those on a faith

journey towards God may be influenced by the cracks, or those moving away from God may find some 'confirmation' of their decision in the event.

Healing spiritual wounds

There is a strong and growing body of empirical evidence highlighting linkages between diminished spiritual functioning and mental health issues such as PTSD. Stronger links between psychology and spirituality also mean that healing veterans requires a much closer relationship between medical and spiritual practitioners. While psychologists approach their patient interactions without values or personal agenda, authors such as Johnson note that 'therapists who strip away the language of sin from Christian clients may unwittingly take away a source of peace and hope by foreclosing the possibility of grace and forgiveness'. McMinn has also noted, 'It behooves psychologists to learn the language of faith'. Of course, it could equally be argued that it behooves spiritual practitioners to learn the language of psychology. This would be a strong step in achieving the 'bio-psycho-social-spiritual model' of patient-centred care.

There are some specific Australian issues regarding spiritual wounds. Unlike returning veterans from the First and Second World Wars who took long sea voyages to return to Australia during which there was time for recovery and contemplation, today's veterans leaving a conflict zone can be home the next day. This leaves little time for a period of debrief or decompression. Many ADF personnel also deploy to these conflicts as individuals rather than as a part of a formed unit. This means that the ongoing value of the military community is lost when they return. Simply put, under which banner do these veterans march on Anzac Day? Unlike the predecessors who marched under a specific battalion or ship's banner, today's veterans will often march under a generic 'Afghanistan' banner. Given that the main Australian deployment to Afghanistan lasted 14 years and involved over 36,000 ADF personnel, it will be very hard for many veterans to pin their service to a community.

The Australian veteran community is also intergenerational. Although many veterans are from the Second World War, that figure is falling with a corresponding growth in those who served in more recent conflicts such as East Timor, Iraq and Afghanistan. Veterans of the recent conflicts will also live much longer. For example, 25-year-old male veterans at the end of the First World War had a life expectancy of approximately 60 years whereas a 25-year-old male veteran in 2009 can expect a life

expectancy of 80. This is very important because for some veterans their spiritual concerns become greater as they get older and aspects of their life such as work, spouse and family start to be stripped away.

The intergenerational nature of the community means that there will be different approaches and levels of acceptance of mental health issues. Very broadly, older generations tend to be less aware and accepting of mental health as an issue than the younger generation. Importantly, the spiritual profile of veterans is also different. The veteran of the First World War lived in a society where approximately 96.5% of the population claimed some form of religious affiliation. Today that figure is approximately 68%, although it is unclear how formal or regular this religious affiliation is. This may mean that the younger generation of veterans are less well prepared to encounter spiritual issues that may arise from their Defence service.

Surrender

Certainly, there is no suggestion that the treatment of spiritual injury should take any primacy, although some cases highlight a need for spiritual healing. As properly trained and accredited medical and psychological practitioners are required to deliver treatment, there is an equal requirement for spiritual practitioners. The role of spiritual practitioners (trained and accredited professionals who act as a part of or on behalf of a religious organisation) is pivotal in an integrated treatment team. This is partially because of their specialised academic training and experience in the history and practice of spirituality within a faith. This training allows practitioners to be able to place the expressed or assessed spiritual concerns of veterans into a deeper context.

Most spiritual practitioners also live within the same community as the veteran and, as such, can contextualise the issues of the veteran in a real world setting while still focusing on more esoteric issues of belief. It is worth noting that spiritual (as well as medical and psychological) practitioners will be greatly assisted in the execution of their role if they receive cross-disciplinary training and experience as well as obtain cultural awareness of the specific needs of Defence veterans.

Finally, and perhaps most importantly, spiritual practitioners are often empowered to support the essential act of forgiveness. Many veterans' spiritual wounds often relate to issues of forgiveness: 'Do you think that God still loves me? I had to kill two men yesterday...' In such cases the veteran feels

that they have committed an act that is counter to a faith or belief or what they may consider to be 'right' in the eyes of their concept of a Creator or God. The absolution of this act requires some form of reparation or expiation of their *sin*. Facilitation of this act of atonement lies within the remit of spiritual practitioners who have been authorised or accredited by their faith or religion to offer absolution or forgiveness.

Many spiritual traditions suggest that this process of atonement can only come from complete surrender to the will of God. Surrender is not a comfortable word or an easy concept for many military people. Surrender implies 'giving up' to a more powerful force. Some people may see this as a sign of weakness, cowardice or failure, although realistically and strategically it could just as easily be recognition of an obvious situation and a desire to live. Another approach may be that although a person may no longer be in uniform, they remain 'under orders' from God, their ultimate superior in the chain of command.

The work of the 16th century Spanish mystic poet St John of the Cross is a good pathway towards this regrouping. The essence of St John's approach can be summed up in three steps, although it is important to understand that the process that a veteran takes will be different for everyone and is not automatic but is led. As St John notes in *The Flame*, 'God leads each soul by a different way, so that scarcely one single spirit will be found to conform by half to the pattern of another in the way that it goes'. The first step is summarised in exuberant statements such as from David in Psalm 27: 'The Lord is my light and my salvation; Whom shall I fear? The Lord is the strength of my life; Of whom shall I be afraid?' St John calls those passing through this stage *principiantes* or beginners. The danger of this first step is that it can be a little superficial as many beginners in the journey become too focused on the 'spiritual payoff' of prayer and ritual which in turn can lead to a form of 'spiritual gluttony'. St John cautions in *Dark Night of the Soul* that this will inevitably result in the soul growing 'cold in the love of God'.

The key aspect to this first step relates to the 'unrelenting emptying of memory, which must be purged as must the intellect and will'. This will be difficult for veterans as their memories are their deepest and greatest enemies. St Paul's exhortation at Philippians 3:13 is important here: 'Forgetting what is behind and straining toward what is ahead, I press on toward the goal to win the prize for which God has called me heavenward in Christ Jesus'. This is not a demand that veterans simply try to forget what has happened, as in many cases this is not possible and

will often require the close and integrated care and guidance of spiritual and psychological practitioners. Rather, it is a call to place the focus on moving forward rather than staying in the past. Throughout St John's writing there is a constant movement towards a goal of being closer to God.

The second step is both an illuminative step and a curious contradiction that is at the heart of the *Dark Night*. St John asks, 'Why, if it is a divine light... does the soul call it a dark night?' His answer is, 'The brighter the light the more the owl is blinded... Hence when the divine light of contemplation strikes a soul not yet entirely illuminated, it causes spiritual darkness'. Sometimes the sheer intensity of the light of grace and understanding is almost too much to bear. The conversion of St Paul is a particularly good example of someone whose spiritual wounds came from his *participation* in events: 'I persecuted this Way to the death, binding and delivering into prisons both men and women' (Acts 22:4). Struck by 'a light shone around him from heaven' about him (Acts 22:6) and he is made blind. That blindness remains until he has heard and accepted the voice of God. The key point about the dark night in this context is that it is not a tonal distinction. The 'dark' of the *Dark Night* is a blinding light and it teaches the veteran to trust in the word of God rather than their own perceptions.

The third step is unitive, where the traveller becomes a '*perfecto*'. Perfect is a dangerous word as it can be misinterpreted that the traveller has achieved some 'god-like' state. Rather, St John is suggesting that these *perfectos* enjoy great peace as they are not agitated by desires and passions as their minds are squarely focused on God. The union with God is the actual experience and exercise of that love. This is the 'unitive' way because it is by love that the soul is united to God, and thus the closer and more intimate is the union. Union with God is the principal study and endeavour of this state and it is as close to God as one can be this side of the grave.

It is important to note that Marshall has sounded caution about St John's writings as they are 'associated with an almost inhumanly negative and comfortless view of spiritual life: and it is true that he sets out the human costs of faith with more pitiless candour than almost any comparable writer (even Luther)'. For St John every movement of hand, heart and mind must be directed towards God. Anything that does not lead to that goal 'must be detached'. It is easy to misinterpret St John as being too stark and making no allowance for human weakness, but Marshall does add a qualification to her caution by noting that he writes about a 'movement towards

fulfilment, not emptiness, towards beauty, and life, not annihilation'. St John recognises that suffering arises from everyday life, suggesting that God does not want us to suffer but rather that he suffers with us. Certainly, spiritual growth will require great pain, but this is not a process that is only available to the spiritual elite.

Conclusion

St John's model of the purgative, illuminative and unitive journey has real value for those involved in the care of veterans' spiritual wounds. The initial challenge, however, will be to get the veteran to take the first step. As St John notes, this is a God centred and led journey so we can assume that the groundwork and support is already in place. There are two final considerations here. The first is the veteran themselves. Some may have a Damascene moment when the need, purpose and direction of the journey is made obvious to them. For others, it may be a longer, slower and more painful process. Such is the very personal nature of the ways, means and timings of mental illness resulting from military service. One of the first steps a veteran can take towards starting their healing journey is to accept that they remain under orders to a chain of command that has God at its head. Submission to this chain is not surrender, but rather remaining under orders.

The second factor comes into play when that young soldier leaves Defence and is still asking the question 'Does God still love me?' The silence of DVA, community groups, churches and spiritual

institutions across Australia on this issue is a major concern as many veterans find themselves in a *spiritual grey zone*. To date, the spiritual care of veterans has been largely ceremonial and relegated to commemorative events such as Anzac Day. There is limited evidence of any spiritual institution or facility of any nature making a significant contribution in the support of veterans whose Defence service has led to mental health issues with a spiritual or faith basis. Determining what role spiritual institutions or facilities should take is an important area for further study.

What is clear is that the convergence of psychological, medical and spiritual issues within mental health places spiritual wounds within a treatment framework. There is no suggestion that the treatment of spiritual wounds should take any primacy or be conducted in isolation. Treatment approaches will need to be carefully constructed so that immediate and first-order issues are met. Just as properly trained and accredited medical and psychological practitioners are required to deliver treatment in their space, so too will there be a requirement for the involvement of properly trained and accredited spiritual practitioners to help lead wounded spirits through the *Dark Night*.

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Gulf War Illness in the 1991 Gulf War and Gulf Era Veteran Population: An Application of the Centers for Disease Control and Prevention and Kansas Case Definitions to Historical Data

E Dursa, S Barth, B Porter, A Schneiderman

Introduction

In the initial years following the 1990–1991 Gulf War, reports of a complex array of medically unexplained symptoms began to emerge among US Gulf War veterans.^{1,2} This cluster of symptoms, which included fatigue, pain, gastrointestinal symptoms, respiratory symptoms, dermatological symptoms, neurological symptoms and cognitive symptoms,^{3–9} collectively became known as Gulf War illness (GWI). Twenty-six years later, GWI remains the most pressing health issue of Gulf War veterans. Although several war-related exposures have been associated with GWI,^{10–14} no single exposure has been confirmed as the causative agent and no one single treatment has been identified.¹⁵ There is no objective diagnostic test for GWI and the International Classification of Diseases Manual 10th edition has no diagnostic code for GWI. Although some unexplained illnesses and symptoms consistent with GWI are recognised as compensatable disabilities by the US Department of Veterans Affairs (VA), there is not a single validated and accepted case definition.¹⁶ The lack of a single agreed-upon case definition has been challenging for both researchers and clinicians.

In 2013, VA charged the Institute of Medicine (IOM) with establishing a consensus case definition for GWI. IOM's final report acknowledged that the gaps in the literature made it unfeasible to develop a proper case definition,¹⁶ but recommended that VA use its own data to fill those gaps and in the meantime employ the two most widely used case definitions for GWI: the Kansas¹¹ and the Centers for Disease Control and Prevention (CDC) case definitions.³ In

this paper, we will apply modified Kansas and CDC case definitions for GWI to survey data collected in 1995 on a population-based sample of 20,917 Gulf War and Gulf Era veterans.

The specific aim of this paper is to identify veterans in the largest population-based longitudinal cohort of Gulf War and Gulf Era veterans who met the criteria for GWI by the Kansas and CDC definitions in the first 5 years following the 1990–1991 Gulf War, before the development of age-related chronic medical conditions. This contributes to the scientific literature by providing population-based estimates of GWI following the war, using the two IOM-recommended case definitions; the studies that produced the Kansas and CDC case definitions were not population based and were limited in size. Additionally, it identifies a cohort of representative veterans that the VA has been following since 1995 who were likely cases of GWI (before a name or case definition even existed). This subgroup can serve as a recruitment resource for VA's ongoing genomics research to identify a biomarker and genetic signals for GWI.

Methodology

The data for this study come from the National Health Survey of Persian Gulf War Era Veterans (NHS), a population-based survey of 15,000 Gulf War (deployed) and 15,000 Gulf Era (non-deployed) veterans fielded in 1995. The 15,000 Gulf War veterans were sampled from all 693,826 US troops identified by the Department of Defense's Defense Manpower Data Center (DMDC) as having been

deployed (i.e. arrived) to the Gulf War between 1 August 1990 and 1 March 1991 (the end of the ground war). The 15,000 Gulf War Era veterans were sampled from 800,690 persons (half of all those who were in the military between September 1990 and May 1991) identified by DMDC as having served during that same time but had not deployed to the Gulf War. Both the Gulf War and Gulf Era samples had representation from each of the four branches of service (Air Force, Army, Marine Corps, Navy); women, National Guard and Reservists were over-sampled using a stratified design. Individuals sampled for the study were mailed a 16-page health questionnaire with a return-addressed postage-paid envelope. Veterans who did not return the mail survey were contacted and offered a computer-assisted telephone interview (CATI). Data collection took place between 1995 and 1997. A detailed narrative of the study design and methods has been described elsewhere.⁴

Symptom measurement for case definitions of GWI

The 1995 NHS survey included a lengthy list of symptoms, health questions, and queries about onset and duration used in this analysis to identify veterans who satisfied the criteria for GWI. Symptoms and duration were obtained by the question, 'In the past year, have you had persistent or recurring problems with...?' Onset was assessed by the question, 'Did you first experience this before [2 August 1990], during [2 August 1990 – 30 June 1991] or after [1 July 1991] the Persian Gulf War?' For those respondents with missing symptom data, the majority were missing responses on a very few number of symptoms. If veterans could be identified as cases or non-cases based on the available data, that was done. If case status might change based on missing data, GWI status was set to missing. For example, if a veteran endorsed three of the symptoms required to be considered a case by the Kansas criteria, but had a missing value for other symptoms that are part of the Kansas definition, that veteran was coded as a case. However, if a veteran endorsed two of the symptoms required for the Kansas criteria, and had missing data on the rest of the symptoms that are required under the Kansas criteria, the veteran's GWI status was considered missing, as the veteran's case status could change based on the true value of the missing data.

Kansas definition of GWI

We analysed the survey data using modified Kansas and CDC case definitions, due to the limitations of the

retrospective dataset. In order to be considered a case by the Kansas definition in this analysis, the veteran must have reported symptoms (by endorsing yes) in three of the following six domains: fatigue (excessive fatigue not due to exercise, problems getting to sleep or staying asleep, awoken feeling tired or worn out after a full night of sleep), pain (generalised muscle aching or cramps, joint aching or pain, back pain or spasms), neurological/mood/cognition (headaches, feeling dizzy/lightheaded/faint, blurred vision, numbness or tingling in extremities, tremors or shaking, sensitivity to certain smells or chemicals, difficulty concentrating, difficulty remembering words when speaking, feeling down or depressed, feeling irritable or having angry outbursts, feeling moody, feeling anxious), gastrointestinal (diarrhoea, nausea/upset stomach, stomach or abdominal pain and cramping), respiratory (difficulty breathing or shortness of breath, problems with coughing, wheezing in chest) and skin (skin rashes). Data on symptom severity were not available. The symptoms must have been present in the past 12 months, and the veteran must have first experienced the symptom during or after the Gulf War.

The Kansas case definition excludes individuals with certain physical and psychiatric conditions from screening positive for GWI.¹¹ Veterans who endorsed that they had ever been told by a doctor that they had any of the following conditions were classified as non-cases by the Kansas definition, even if they met the symptom criteria: cancer, diabetes, heart disease (coronary heart disease or tachycardia), liver disease (hepatitis or cirrhosis) and stroke. Additionally, veterans who endorsed an overnight hospital stay in the past year due to a mental illness were also excluded from case consideration. Veterans who indicated that they had had an overnight hospital stay in the past year but did not indicate the reason for hospitalisation were excluded from analyses. If exclusion criteria were missing, then the veteran's status was considered missing for Kansas GWI. Veterans who were excluded from case consideration due to either endorsing an exclusion criteria or missing information on symptoms were not excluded from the denominator of the prevalence calculation. This is consistent with the methods employed by Steele.¹¹

CDC definition of GWI

To be considered a GWI case by the CDC definition in this analysis, the veteran must have two symptoms from three of the following domains: fatigue (excessive fatigue not due to exertion, fatigue lasting more than 24 hours after exertion), mood and cognition (feeling

depressed, difficulty remembering or concentrating, feeling moody, feeling anxious, problems getting to sleep or staying asleep, trouble finding words) and musculoskeletal (joint pain, muscle pain). The symptoms must have been present in the past 12 months, and first been experienced during or after the Gulf War. The same rules for missing data were applied for the CDC definition as applied to the Kansas definition. However, consistent with the original measure, no exclusion criteria for comorbidities were applied.³

Statistical analysis

Bivariable and multivariable analyses were performed using SAS version 9.4.¹⁷ Frequencies and prevalence were calculated and reported. Logistic regression was used to produce unadjusted odds ratios (OR) comparing the odds of meeting the criteria for the two different GWI case definitions in deployed compared to non-deployed. Multivariable logistic regression was used to produce adjusted odds ratios comparing the odds of meeting the criteria for the two different GWI case definitions in deployed compared to non-deployed controlling for sex, race, age, service branch and unit component.

Results

Table 1 provides the demographic characteristics of the study population. Overall, 20,917 veterans responded to the survey (response rate=70%); of those, 11,441 were Gulf War veterans and 9,476 were Gulf Era veterans. Table 2 provides information on the frequency and proportion of veterans who had missing symptom data or exclusion criteria for the Kansas case definition only. For the Kansas case definition analysis, 2,588 veterans had exclusion criteria (1,809 deployed (15.8%) and 779 non-deployed (8.2%)) and 1,396 had ambiguous case status due to missing items (855 deployed (7.5%) and 541 non-deployed (5.7%)). The chi-square test comparing the proportion of missing and excluded data in deployed to non-deployed was significant ($p < 0.001$). For the CDC case definition analysis, 1,053 veterans had ambiguous case status due to missing items 590 (5.2%) in deployed and 463 (4.9%) in non-deployed; these proportions did not significantly differ ($p = 0.37$).

Table 3 provides the frequency, prevalence and unadjusted odds of meeting the criteria for GWI by the Kansas definition by military and demographic characteristics. Overall, about 41% of Gulf War veterans and 17% of Gulf Era veterans met the Kansas criteria for GWI. Certain subgroups of Gulf War veterans were more likely to meet the Kansas criteria

Table 1: Demographic and military characteristics of Gulf War and Gulf Era veterans participating in the 1995 National Health Survey of Persian Gulf War Veterans and Their Families

Characteristic	Gulf War (N=11,441)		Gulf Era (N=9,476)	
	N	%	N	%
Sex				
Male	9,310	81.4	7,399	78.1
Female	2,131	18.6	2,077	21.9
Race				
White	8,434	73.7	7,114	75.1
Black	2,177	19.0	1,654	17.5
Hispanic	492	4.3	372	3.9
Other	315	2.8	319	3.4
Unknown	23	0.2	17	0.2
Age in 1995*				
21–24	635	5.6	640	6.8
25–34	6,163	53.9	4,324	45.7
35–44	2,822	24.7	2,686	28.4
45–54	1,525	13.3	1,484	15.7
55+	284	2.5	332	3.5
Branch				
Air Force	1,425	12.5	1,266	13.4
Army	7,237	63.3	6,010	63.4
Marine Corps	1,279	11.2	1,020	10.8
Navy	1,500	13.1	1,180	12.5
Unit component				
Active duty	4,262	37.3	3,812	40.2
National Guard	3,241	28.3	2,515	26.5
Reserves	3,938	34.4	3,149	33.2

*Age data missing for 22 respondents

for GWI, including females (43.9%), those aged 21–24 years at the time of data collection (49.6%), those in the Army (43.8%) and those in the Reserves (41.8%). Similar findings were also observed among Gulf Era veterans. The following subgroups were significantly more likely to meet the Kansas criteria for GWI among Gulf Era veterans: females (21.8%), those aged 21–24 years at the time of data collection (20.9%) and those in the Army (18.0%). However, in non-deployed participants, membership in the National Guard and Reserves was found to be a protective factor

Table 2: Frequency of missing symptom data and exclusion criteria among respondents

	Kansas				CDC			
	Deployed (N=11,441)		Non-deployed (N=9,476)		Deployed (N=11,441)		Non-deployed (N=9,476)	
	N	%	N	%	N	%	N	%
Cases	8,777	76.7	8,156	86.1	10,851	94.8	9,013	95.1
Missing symptom data	855	7.5	541	5.7	590	5.2	463	4.9
Exclusions	1,809	15.8	779	8.2	N/A		N/A	

Table 3: Frequency, prevalence, unadjusted odds ratios and 95% confidence interval of meeting the Kansas criteria for Gulf War illness in 1995 among Gulf War and Gulf Era veterans participating in the National Health Survey of Persian Gulf War Veterans and Their Families

Characteristic	Gulf War (N=11,441) n (%)	OR (95%CI)	Gulf Era (N=9,476) n (%)	OR (95%CI)
Overall	4,646 (40.7)		1,629 (17.2)	
Sex				
Male	3,710 (39.8)	**	1,176 (15.9)	**
Female	936 (43.9)	1.18 (1.01, 1.30)	453 (21.8)	1.48 (1.31, 1.67)
Race				
White	3,430 (40.7)	**	1,180 (16.6)	**
Black	888 (40.8)	1.01 (0.91, 1.10)	312 (16.6)	1.17 (1.02, 1.34)
Hispanic	195 (39.6)	0.96 (0.80, 1.15)	72 (19.4)	1.21 (0.93, 1.57)
Other	127 (40.3)	0.99 (0.78, 1.24)	63 (19.8)	1.24 (0.93, 1.64)
Unknown	6 (26.1)	0.52 (0.20, 1.31)	2 (11.8)	0.67 (0.15, 2.94)
Age in 1995				
21–24	315 (49.6)	3.12 (2.86, 4.28)	134 (20.9)	3.73 (2.36, 5.98)
25–34	578 (41.8)	2.28 (1.73, 3.01)	791 (18.3)	3.15 (2.03, 4.89)
35–44	1,113 (39.4)	2.07 (1.56, 2.75)	489 (18.2)	3.13 (2.01, 4.88)
45–54	567 (37.2)	1.88 (1.40, 2.52)	192 (12.9)	2.09 (1.32, 3.31)
55+	68 (23.9)	**	22 (6.6)	**
Branch				
Air Force	463 (32.5)	**	193 (15.2)	**
Army	3,171 (43.8)	1.62 (1.44, 1.83)	1,081 (18.0)	1.22 (1.03, 1.44)
Marine	538 (42.1)	1.51 (1.29, 1.77)	180 (17.7)	1.19 (0.95, 1.49)
Navy	474 (31.6)	0.96 (0.82, 1.12)	175 (14.8)	0.97 (0.78, 1.21)
Unit component				
Active duty	1,667 (39.1)	**	734 (19.3)	**
National Guard	1,331 (41.1)	1.09 (0.99, 1.91)	379 (15.1)	0.74 (0.65, 0.85)
Reserve	1,648 (41.8)	1.12 (1.03, 1.22)	516 (16.4)	0.82 (0.73, 0.93)

**Reference category

Table 4: Frequency, prevalence, unadjusted odds ratios and 95% confidence interval of meeting the US Centers for Disease Control and Prevention (CDC) definition for Gulf War illness in 1995 among Gulf War and Gulf Era veterans participating in the National Health Survey of Persian Gulf War Veterans and Their Families

Characteristic	Gulf War (N=11,441) n (%)	OR (95%CI)	Gulf Era (N=9,476) n (%)	OR (95%CI)
Overall	5,792 (50.6)		1,628 (17.2)	
Sex				
Male	4,552 (48.9)	**	1,165 (15.8)	**
Female	1,240 (58.2)	1.46 (1.32, 1.60)	463 (22.3)	1.54 (1.36, 1.73)
Race				
White	4,116 (48.8)	**	1,192 (16.8)	**
Black	1,219 (56.0)	1.34 (1.21, 1.47)	312 (18.9)	1.16 (1.00, 1.33)
Hispanic	296 (60.2)	1.58 (1.32, 1.90)	69 (18.6)	1.13 (0.87, 1.48)
Other	151 (47.9)	0.97 (0.77, 1.21)	53 (16.6)	0.99 (0.73, 1.34)
Unknown	10 (43.5)	0.81 (0.35, 1.84)	2 (11.8)	0.66 (0.15, 2.90)
Age in 1995				
21–24	336 (52.9)	1.32 (1.00, 1.74)	125 (19.5)	1.77 (1.21, 2.60)
25–34	2,945 (47.8)	1.07 (0.84, 1.36)	715 (16.5)	1.45 (1.02, 2.03)
35–44	1,520 (53.9)	1.36 (1.07, 1.74)	505 (18.8)	1.69 (1.19, 2.38)
45–54	855 (56.1)	1.49 (1.16, 1.92)	241 (16.2)	1.41 (0.98, 2.02)
55+	131 (46.1)	**	40 (12.1)	**
Branch				
Air Force	523 (36.7)	**	190 (15.0)	**
Army	4,172 (57.7)	2.35 (2.09, 2.64)	1,091 (18.2)	1.26 (1.06, 1.49)
Marine	575 (45.0)	1.41 (1.21, 1.64)	163 (16.0)	1.08 (0.86, 1.35)
Navy	522 (34.8)	0.92 (0.79, 1.07)	184 (16.0)	1.05 (0.84, 1.30)
Unit component				
Active duty	1,890 (44.4)	**	701 (18.4)	**
National Guard	1,840 (56.8)	1.65 (1.50, 1.80)	414 (16.5)	0.87 (0.77, 1.00)
Reserve	2,062 (52.4)	1.38 (1.27, 1.51)	513 (16.3)	0.86 (0.76, 0.98)

**Reference category

compared to active duty for meeting the Kansas case definition of GWI. The adjusted odds ratio of meeting the Kansas criteria for GWI comparing deployed to non-deployed participants, controlling for military and demographic characteristics, was 3.34 (95% CI: 3.12, 3.57).

Table 4 provides the frequency, prevalence and unadjusted odds of Gulf War and Gulf Era veterans meeting the criteria for the CDC definition for GWI.

Overall, about 51% of Gulf War veterans and 17% of Gulf Era veterans met the criteria for GWI. Certain subgroups of Gulf War veterans were more likely to meet the CDC case definition including females (58.2%), those who identified as Hispanic (60.2%), those who identified as black (56.0%), those in the Army (57.7%), and those in the National Guard (56.8%) and Reserves (52.4%). Certain subgroups of Gulf Era veterans were significantly more likely to meet the CDC case definition including females

(22.3%), those in the Army (18.2%) and those on active duty (18.4%). The same protective effect was observed among those in the National Guard and Reserves in the Gulf Era. The adjusted odds ratio of meeting the criteria for the CDC case definition of GWI was 5.27 (95% CI: 4.93, 5.63).

Discussion

This paper describes the methods used to apply modified Kansas and CDC case definitions of GWI to data collected in 1995 as part of the largest population-based longitudinal cohort study of Gulf War and Gulf Era veterans in the United States. Overall, 40.6% of Gulf War veterans met the criteria for GWI by the Kansas definition, and 50.6% met the criteria by the CDC definition. In the Gulf Era population, the prevalence of GWI by the Kansas definition and the CDC definition were the same: 17.2%. Regardless of deployment status or case definition, females were significantly more likely to meet the criteria for GWI. The adjusted odds ratios comparing the odds of meeting the Kansas criteria for GWI in Gulf War veterans compared to Gulf Era veterans was 3.34 (95% CI: 3.12, 3.57). The adjusted odds ratios comparing the odds of meeting the CDC criteria for GWI in Gulf War veterans compared to Gulf Era veterans was 5.27 (95% CI: 4.93, 5.63).

About 41% of the Gulf War veterans in our study met the case criteria by the Kansas case definition, which is higher than what was found by Steele (34%) in a study of Gulf War veterans in Kansas conducted in 1998.¹¹ Additionally, the prevalence was higher among Gulf Era veterans in the current study (17.2%) than in Steele's original study (8.3%). The discrepancies in GWI prevalence between Steele's and our findings may be explained by differences in study population, study administration and the use of a modified case definition. Steele and colleagues randomly selected a sample of veterans who were residents of Kansas at the time of the study, who had served in the military during the time of the Gulf War, and who were no longer on active duty (n=2,030). While a random sample from the entire population of veterans living in Kansas who served during the Gulf War would generate a representative sample of these veterans living in Kansas, it is possible that this does not represent the entire United States veteran population that served during the Gulf War. The proportion of female veterans in the current study is higher than reported in the Steele study (20% vs 13%), and females were significantly more likely to meet the criteria for GWI by the Kansas criteria in this study. This may partially explain why the current study found an overall higher prevalence of GWI. Additionally, the mode of data collection

may have influenced responses. The Steele study collected data via phone interview¹¹ while the data presented here were mostly collected by mail survey (70%). Participants may have felt more comfortable disclosing symptoms and conditions on a paper survey than over the phone.

In our study, 50.6% of Gulf War veterans met the criteria for GWI using the CDC case definition. This is higher than Fukuda et al. reported in the seminal paper that defined GWI by the CDC criteria (45%).³ We suspect that differences in the study population account for these differences. The seminal paper by Fukuda et al. determined the case definition of a 'mystery illness' that CDC was asked to investigate by factor analysis.³ The study consisted of the Air National Guard unit with the 'mystery illness' located in Pennsylvania, as well as three comparison groups (another Air National Guard unit in Pennsylvania that completed a different mission, and an Air National Guard unit and an active duty Air Force unit located in Florida); no other service branches were included. The total number of veterans studied was 3,723 and 86% were male. The current study relies on a population-based cohort sampled to include geographic representation as well as representation from all four branches of service. The current study also had a larger proportion of females (20%), and females were significantly more likely to meet the CDC criteria for GWI, which also may contribute to the increased prevalence estimates for the population overall as females had a higher prevalence of GWI than males.

While the prevalence estimates of GWI by the Kansas and CDC case definitions are higher in this study than what was found in the Fukuda and Steele studies, the excess prevalence of GWI in the Gulf War veteran group is consistent with what other studies have reported. Previous cohort studies have reported an excess prevalence of 25–32% of GWI in deployed Gulf War veterans compared to Gulf Era veterans.^{8,9,18} In the current study the excess prevalence observed in the Gulf War veterans by the Kansas definition is 23.5%, and 33.4% by the CDC case definition. It is interesting that in the non-deployed group (Gulf Era veterans) the prevalence of GWI was 17.2% for both case definitions. This may suggest that there is an underlying prevalence of symptom-based conditions (often referred to as chronic multisymptom illness) in the veteran population.

A paper by Blanchard et al. reported on an in-depth clinical exam protocol in a subset of this cohort (1,061 Gulf War veterans and 1,128 Gulf Era veterans).¹⁹ Participants in the Blanchard et al. study were involved in 2 days of data collection by

survey procedures, medical history and physical examination. Blanchard applied the CDC criteria for classification of using duration, category and clustering of symptoms to define cases. The Blanchard study provided important findings regarding associations between GWI and other syndromes (chronic fatigue syndrome, fibromyalgia, metabolic syndrome and arthralgia), supporting that the deployed veterans with GWI had statistically significant higher prevalence of chronic fatigue syndrome.¹⁹ The study also provided evidence of an association between GWI and pre-deployment psychiatric conditions, specifically anxiety disorders and depression not related to post-traumatic stress disorder.¹⁹ The present study has relied on self-reported survey data from the same cohort that formed the sampling frame for Blanchard's 2001 study, but the data used for the present study were collected in 1995 and 1996. The current study has extended these important findings by using symptom self-report on the entire cohort of respondents and has further expanded the inquiry through application of the Kansas definition of GWI.

One of the major strengths of this study is that the data come from the largest population-based study of Gulf War and Gulf Era veterans in the United States to date. While there are numerous studies that have reported the prevalence of GWI among Gulf War veterans, none have been this large or nationally representative. The response rate for this study was 70%, and while nonresponse analysis indicated that non-respondents (in both Gulf War and Gulf Era groups) were more likely to be unmarried, younger, non-white and enlisted rank at the time of the Gulf War, we don't believe response bias is responsible for our findings.⁴

The current study analysed data from almost 21,000 Gulf War and Gulf Era veterans, sampled from all over the United States and stratified to ensure representation of women, service branch (proportional to the deployed population), and National Guard and Reserves. Additionally, the time between the end of the Gulf War and when the data collection for this study took place was less

than 5 years, so the chance of recall bias regarding symptom onset is diminished. Currently, one of the challenges with identifying Gulf War veterans with GWI is that as this group of veterans ages, the development of other medical conditions can mask, exacerbate or mimic the symptoms of GWI, making it difficult to distinguish. However, because these data were collected within 5 years of the end of the war, before the typical onset of comorbid chronic medical conditions, the identified cases are likely to be true cases of GWI that developed during or immediately following the war.

The analyses presented here have taken a unique approach to examining historical symptom data to understand the applicability of case definitions that evolved over time through study of the Gulf War veteran population. This new view has presented a previously unrealised opportunity to assess what may represent the best estimation of the affected population: those who experienced the early onset of symptoms following the precipitating event. The data collection that occurred in 1995 was the baseline assessment of a longitudinal study that is still in follow-up, with the most recent data collection in 2012.²⁰ The veterans identified with GWI in this longitudinal study provide an invaluable resource, as they represent those with likely true GWI and are the most ideal veterans to enrol in the types of studies that are of most importance at this stage, including treatment studies and epigenetic studies. As such, the current study results will be a valuable resource for future studies examining GWI.

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The Effects of the Incompatible “Soldier” Identity Upon Depression in Former Australian Army Personnel

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In recent years, there has been a concerted effort by social psychologists to link the social identity approach with general health and well-being. The research, however, has overlooked that a strong and enduring identity that is *incompatible* with an individual's current environment may have a negative effect upon that individual's mental health. A key example of this is the identity among ex-Army members as ‘Soldier’. To investigate this process, an online survey examined the structure of identity amongst ex-Army members, their perceived connectedness to their former Soldier in-group and their levels of depression. The results indicate that the more ex-Army members identify as a Soldier, the *greater* the presence of expressed levels of depressive symptoms. In contrast, having the perception of being more connected to their former Soldier in-group was associated with lower depressive symptoms, regardless of Soldier identity strength. Based on these data, recommendations are made for clinical practice among ex-Army personnel, particularly with regard to social identity transition and redevelopment, and interpersonal connectedness.

Currently, 46,400 former Australian Defence Force (ADF) personnel have sustained psychological injuries due to their service that are severe enough for them to have obtained support from the Department of Veterans' Affairs, and this number is expected to rise.¹ Although government research has been focused on deployed members,^{2,3} recent findings suggest this may be misdirected, with the United States ex-service population, regardless of whether or not they deployed on operational service, showing significantly more mental health disorders (e.g. depression), than both currently serving personnel and the general civilian population.^{4,5}

Deployment on operational service clearly contributes to an increased risk of poor mental health among ex-ADF members, but it may not be the only military-related factor involved. Social psychology,

in particular the social identity approach (SIA) theory,⁶ offers a unique perspective on what may be contributing to former military members' mental health. In this paper, we applied this approach to the analyses of ex-Australian Army members' experiences of subclinical depression, with the aim of providing greater insight into this at-risk population.

Depression

According to the biopsychosocial model of pathology, mental illness such as major depressive disorder (depression) is caused by the complex and varying interaction of biological, psychological and social factors within the patient.^{7,8} From a social perspective, the model suggests that external social factors, such as socio-economic status and culture, as well as more personal social influences, such as the individual's quality of interpersonal relationships, contribute to that individual's mental health.⁹ Indeed, the effect that an individual's interpersonal relationships have upon depression is well documented,^{10,11} with some authors conceptualising depression as a fundamentally social disorder.¹²

Social identity approach and depression

The SIA provides a framework within which psychologists have recently been assessing the social component of psychological health and well-being. The approach first presupposes that a person's concept of self is comprised not simply of personal identity (i.e. who one is as a unique individual), but also a myriad of social identities (i.e. who one is as a member of a group). In any given context, if the individual's group membership is cognitively salient, then that individual is predicted to engage in psychological processes mediated by a sense of self that is defined at that group level, facilitating that individual with a sense of purpose and meaning within the social world.⁶

When related to health behaviours, SIA argues that the social connections and support within an individual's environment influences the likelihood of that individual choosing to engage in behaviours that impact upon his or her physical and mental health.¹³ This effect is strongly linked to how people perceive the support around them, with the perception of an in-group member's support being more positive and leading to better mental health than support offered by an out-group member.¹⁶ When related specifically to depression, the effect of salient social identities has been linked to the processes of bringing meaning to the individual's life, encouraging the individual to both provide and receive social support, and to give the individual a sense of belongingness, thereby lowering that individual's depressive symptoms.¹¹

This negative relationship between depression and social identity may well be true in the case of the social identity as a soldier (here referred to as Soldier identity). If so, then it would be expected that increased levels of social identification with the Soldier identity may well lead to a *decrease* in depression among ex-Army members. However, a great deal of research demonstrates that the development of the Soldier identity comes at the expense of other (potentially valued) social identities. We next consider both the development of the Soldier identity, and the implications of maintaining that identity upon exit from the military.

Identity formation

The formation of the Soldier identity within military training institutions has long been recognised by social researchers as being different from most other groups, such as a local sports team.¹⁵ Military training institutions employ initial entry procedures, including such practices as: administrating a standard buzz haircut;¹⁶ prototype displaying, with the training staff providing the prototype of Soldier;¹⁷ social isolation, both physical¹⁶ and by encouragement of the recruits to self-isolate from their former civilian peers;¹⁸ and motivating the recruit to self-conform, such as giving positive affirmation when the recruit meets the standards of, and shows conformity to, the values of the institution.^{16,18}

These procedures are expected to (and mostly do) result in a strong and enduring identification of Soldier.¹⁹ They accomplish this social identification creation through the enhancement of normative fit to the in-group of Soldier (i.e. how the individual perceives himself or herself as fitting along the normative lines of the new in-group), comparative fit relative to the out-group of civilians (i.e. how the individual perceives his or her new in-group as being distinct from the wider society), and the willingness of

the individual to align himself or herself emotionally and cognitively with the new in-group. In this way, the Soldier identity can become prepotent, and may dominate self-definition to the exclusion of other social identities. This can result in military members feeling as though they are at home *only* when in uniform and when surrounded by their Soldier in-group.²⁰

Identity change during and after the transition event

For some, discharge from the military has been described as a reverse culture shock, and how the individual copes with the stress of the transition to civilian life is highly subjective.²¹ SIA understands this reverse culture shock in terms of the transitioning individuals experiencing the *loss* of their old social identity, while successful transition is dependent on these individuals' abilities to draw upon the resources associated with their *new* social identities.²² This represents a process of identity *change* that is, of course, complex and affected by a number of variables. Nevertheless, research has demonstrated that when individuals strongly identify with their old in-group they will be more *resistant* to change of this nature.²³ If the ex-Army member does, indeed, hold onto his or her Soldier identity, it may well lead to difficulties for that individual in re-establishing old social identities, or forming new ones upon discharge from the military.

Effect of the Soldier identity on levels of depression in ex-Army members

Individuals who fail to complete their identity transition run the risk of living in the past and holding onto their old in-group identity, subsequently placing them at risk of poor adjustment and subsequent mental health concerns following transition.²² Previous studies have demonstrated that large numbers of ex-Army members still hold onto their Soldier identities even decades after their discharge, often to the detriment of forming new identities.²⁴ Furthermore, there are currently no official programs to assist Australian ex-Army members to reintegrate back into wider society¹ and thereby reduce the strength of their Soldier identity. This is problematic, as the Soldier identity, with its martial values and insular culture, has been shown across the social^{25,26} and psychological texts,^{27,28} as well as from direct accounts of ex-Army members themselves,^{29,30} to have very little overlap with the wider, more democratic, civilian identity.

Thus, in contrast to much of the SIA literature, a high level of Soldier identity, *specifically among ex-Army*

members, may lead to worse mental health outcomes for these individuals. Explicitly, it may lead to an increased risk of depression, because they would be less able to identify with non-Soldier individuals who may be offering support, thereby reducing the chances of them perceiving that support positively and benefiting from it.^{13,14,31}

Exacerbating this situation is that, after transition from the military, many ex-Army members will become disconnected from their former Soldier in-group and will rarely associate with their former peers outside of formal military occasions, such as memorial days or reunions.³² Few modern ex-ADF members, due to concern about relevance, engage with established veterans' organisations such as the Returned and Services League (RSL), further decreasing the opportunity for these individuals to socialise with members of their former Soldier in-group.³³ Previous studies have established that disconnectedness of ex-service personnel from their former military peers is associated with increased risk-taking behaviours, increased homelessness and poor mental health.^{28,34}

There is a direct relationship between loneliness and social connection, with the level of loneliness considered inversely proportional to the level of social connectedness.^{35,36} Social connectedness is not to be confused with the objective amount of social contact the individuals have, however, but rather the degree the individuals *perceive* themselves to be connected.³⁷ Loneliness from one's in-group and the sense of identity loss have been shown to lead to a lower quality of life³⁸ and, more specifically, to a higher level of depression.³⁹ However, high levels of connection of ex-service personnel with their former military peers has been shown to help with both transition to⁴⁰ and support within⁴¹ the new civilian environment, such as a college campus.

To test the processes considered above, we sampled ex-Army members and measured their subclinical levels of depression. We then examined the relationship between the absolute level of Soldier social identification, on one hand, and levels of depression, on the other. In doing so, we recognised that the main effect of this variable could be moderated by the ex-Army members' levels of perceived social connection with their former Soldier in-group. For example, the potential positive relationship between Soldier identity strength and depression may only occur among those who no longer have any sense of connection with their former Soldier in-group. For this reason, self-reported connection with the Soldier in-group was also measured, and was examined as a potential moderator of the absolute level of social identification of Soldier.

Aims and hypotheses

This study aimed to contribute to the understanding of social identity transition by examining the relationship between the social identity strength of a former exclusive identity and mental health. The study used an ex-Army population, as this population was expected to have a strong and enduring social identity as Soldiers.

Two hypotheses were proposed. It was first hypothesised that stronger levels of Soldier identification within ex-Army members would be associated with *higher* levels of depressive symptoms. Furthermore, it was predicted that this relationship between the strength of the Soldier identification and depression would be moderated by those individuals' levels of *perceived connectedness* to their former Soldier in-group. Specifically, it was hypothesised that participants with a high strength of Soldier identification possessing high levels of perceived social connection to their former Soldier in-group would have *lower* levels of depressive symptoms than high Soldier identifiers with low levels of perceived social connection to their former Soldier in-group; this relationship was not expected for low Soldier identifiers.

Method

Study design and sample

The Australian National University Ethics Committee provided ethics approval for this study (Protocol 2016/232). A snowballing sampling strategy was used to maximise participation rates, with veteran networks contacted and requested to post the web-link to the survey on their respective social media sites. Participants were former Australian Army members ($n = 178$); the demographic information of the sample retained for analyses is displayed in Tables 1, 2 and 3.

Participants were provided with a web-link and invited to participate in an online Qualtrics-based survey at their own convenience. The survey was introduced as research on the effects of military identity on ex-Australian Army members' psychological functioning. Participants were informed that their participation was voluntary and that they could withdraw at any time, with no reimbursement offered, financial or otherwise. Due to the nature of this study's target research group, the measures used, though proven as valid and reliable to the construct they purported to measure, were selected to be as short as possible to minimise participant dropout rates.

Table 1 Sample military demographics

Corps	n	Enlisted or commissioned			Seniority (Rank)			Length of service					Time since discharge				
		Enlisted	Commiss- ioned	Unknown	JNCO	SNCO	Officer	<5	6-10	11-15	16-20	21+	<5	6-10	11-15	16-20	21+
	116	108	5	3	73	31	12	31	39	14	22	10	30	17	24	18	27

JNCO = junior non-commissioned officer, includes all ranks from Private through to Corporal

SNCO = senior non-commissioned officer, includes all ranks from Sergeant through to Warrant Officer Class I

Officer = commissioned officer, includes all ranks from Lieutenant to General

Table 2 Sample military demographics 2

Corps	n	Satisfied with discharge			Previous operations				Veteran group membership		
		Yes	No	Unknown	0	1	2	3+	Yes	No	Unknown
Total	116	55	60	1	39	39	17	21	37	54	25

Table 3 Sample general demographics

Corps	n	Gender			Age								Marital status			
		M	F	Unknown	18-20	20-30	30-40	40-50	50-60	60-70	70+	Unknown	Single	Married	Divorced	Unknown
Total	1166	106	10	1	1	9	28	34	34	9	1	0	18	80	17	0

Soldier identity strength. Soldier identity strength was measured using a variant of the Centrality of Identity Scale,⁴² which has been employed previously to measure identity change among prospective fathers.⁴³ Participants were required to enter all their known social identities and then assign them a relative value from 0-100% by dragging a bar to reflect their relative importance.

Perceived connectedness. Perceived connectedness was measured by using a re-worded variant of the Three Item Loneliness Scale.⁴⁴ Three questions were asked regarding how often participants felt they lacked companionship, felt left out, and felt isolated from their Australian Soldier in-group. Responses to these items were made on a 1-7 scale, with anchors at 1 = Not at all, 4 = Some of the time, and 7 = All of the time. Reliability was high, with Cronbach's alpha = 0.95, comparing favourably to the original study at Cronbach's alpha = 0.72.⁵¹ As loneliness and connectedness are conceived as different sides of the same construct,^{35,36} this measure was reverse-scored to obtain the participant's perceived connectedness with his or her Soldier in-group.

Depression. Participant depression levels were measured by using the Center for Epidemiologic Studies Depression scale (CES-D), which was created to assess respondent-perceived depressive symptoms.⁴⁵ A non-diagnostic scale was chosen to satisfy ethical requirements as the researchers were unable to either contact or treat any participant who could potentially be diagnosed as clinically depressed (if another scale were used). Participants were asked how often they felt or behaved a certain way during the past week, with questions including, 'I felt depressed'. Participants responded on a four-point scale, from 'Rarely or none of the time (less than 1 day)' to 'All of the time (5-7 days)'. In this case, Cronbach's alpha = 0.80, which compares favourably with the original paper (Cronbach's alpha = 0.85) and previous studies of at-risk populations.⁴⁶

Data analyses

All assumptions for sequential multiple regression were checked and data analyses were performed using Statistical Package for the Social Sciences (SPSS) version 23. Despite the shortened design, a large number of the eligible participants ($n = 62$)

Table 4 Effects of Soldier identity strength on depression^a

	B	SE B	t	p	95% CI for B		
					Lower	Upper	
Constant	9.344	0.862	10.837	<0.001	1.689	11.034	
Strength of Soldier identity	0.060	0.023	0.241	2.648	0.009	0.015	0.105

a Listwise deletion, n = 116

were observed to have either dropped out of the survey before completion or failed to fully complete the survey's questions nevertheless; Little's Missing Completely at Random test showed these data were missing completely at random, and they were subsequently deleted from further analyses. The dependent variable of depression was found to be slightly positively skewed at the overall level and was corrected by raising it to 0.8 (as the square root transformation was found to over-correct). The variable of perceived connectedness was shown to be bimodal. Although reducing this variable's variance, but as to meet the assumptions of multiple regression, perceived connectedness was, therefore, split into higher (coded as 1) and lower (coded as 0) perceived connectedness.

Effects of Soldier identity strength alone

A simple linear regression was performed to determine the relationship between Soldier identity strength and depression. A significant regression equation was found ($F_{(1,114)} = 7.01, p < 0.01$), with an R^2 of 0.058. Depression increased 0.06 points for each 1 per cent increase in strength of the participants' Soldier identity (Table 4). These results provided support to the first hypothesis that stronger levels of Soldier identification within ex-Army members would be associated with higher depressive symptoms ($\beta = 0.24, p < 0.01$).

Insert Table 4 About Here

Effects of Soldier identity strength and perceived connectedness

To determine whether addition of the variable of perceived connectedness contributes substantially to the model, sequential multiple regression analyses was performed. Levene's test of equality of error variances for the two levels of perceived connectedness was non-significant. After Step 1, with Soldier identity strength in the equation, $R^2 = 0.058$ ($F_{inc(1,114)} = 7.01, p < 0.01$). After Step 2, with perceived connectedness added into the equation, $R^2 = 0.17$ ($F_{inc(2,113)} = 11.59, p < 0.001$). Addition of perceived connectedness to the equation resulted in a significant increment in

R^2, R^2 change = 0.11 ($F_{change(1,113)} = 15.29, p < 0.001$). After Step 3, with the interaction term of Soldier identity strength*perceived connectedness added into the equation, $R^2 = 0.19$ ($F_{inc(3,112)} = 8.73, p < 0.001$). However, addition of Soldier identity strength*perceived connectedness did not result in a significant increment in R^2, R^2 change = 0.02 ($F_{change(1,112)} = 2.67, p = 0.11$), and therefore this interaction term was not included in the final model. This result did not support the interaction effect between Soldier identity strength and perceived connectedness as predicted by the second hypothesis.

Again, a simple linear regression was performed to determine the effects of Soldier identity strength and perceived connectedness upon depression. Table 5 shows that participants' predicted depression is equal to $11.445 + 0.052$ (Soldier identity strength) -4.044 (perceived connectedness) points when Soldier identity strength is measured as a percentage of total identity and perceived connectedness is measured as whether or not the participant feels connected to his or her former Soldier in-group.

Depression increased 0.052 points for each 1 per cent increase in strength of the participants' Soldier identity and decreased 4.044 points when participants felt connected to their former Soldier in-group.

Discussion

Influence of Soldier identity strength on depression

The results provided support for the first hypothesis, showing that strong Soldier identity among ex-Army members is associated with relatively high levels of non-clinical depression. This provided support for the argument that when group members strongly identify with an old identity with little overlap with their current environment, then they will be less able to identify with others outside of that identity who may offer support, thereby reducing the chances of these group members perceiving that support positively and benefiting from it.^{13,14,31} This would increase the risk of depression for these group

Table 5 Effects of Soldier identity strength and perceived connectedness on depression^a

	B	SE B		t	p	95% CI for B	
						Lower	Upper
Constant	11.445	0.974		11.747	<0.001	9.536	13.354
Strength of Soldier identity	0.052	0.022	0.206	2.395	0.018	0.009	0.095
Perceived connectedness ^b	-4.044	1.034	-0.337	-3.911	<0.001	-6.599	-3.841

a Listwise deletion, n = 116

b Transformed variable by binomial split

members. Of course, the current study did not examine directly all of these steps in this process (e.g. perceptions of social support), but the data do point to these as worthy foci of future work.

Influence of Soldier identity strength and connectedness on depression

The second hypothesis proposed that the effect of Soldier identity would be moderated by participants' sense of connectedness to their former Soldier in-group. Specifically, it was predicted that participants possessing a high strength of Soldier identification and high levels of perceived social connection to their former Soldier in-group would have lower levels of depressive symptoms than high Soldier identifiers with low levels of perceived social connection to their former Soldier in-group, and that this negative relationship would not occur for low Soldier identifiers. This pattern did not emerge. Instead, it was shown that high levels of perceived connection to the former Soldier in-group was associated with lower depression levels regardless of participants' Soldier identity strength. This result is inconsistent with previous research, which led us to expect that the positive mental health effects of group membership would be higher when members more highly identify with those around them as being part of their in-group.^{14,31}

A possible explanation for our results can be found in the unique mechanisms used during initial entry training into the Army. During initial military training, the new recruit becomes highly reliant upon his or her fellow recruit members both professionally and for support, a process encouraged by command staff.¹⁸ The resultant sense of interpersonal bonding appears universal by military recruits,¹⁸ and may well be independent to how much the individual identifies with the broader social category of Soldier. The mental health effect of this bonding, and the wish to re-engage in this sense of togetherness, may

in turn be interfering with the normal processes between strength of identity and connectedness.

Limitations

To ensure sufficient numbers, this study utilised existing veteran groups through social media to recruit participants. By utilising existing veteran groups, however, this study guaranteed that the participants had at least some level of connection to their former Soldier in-group. A reasonable objection could, therefore, be raised that these findings are applicable only to this survey's particular population and not to ex-Australian Army members in general. This argument cannot be confirmed or disconfirmed; nevertheless, broadening the participant pool by accessing agencies such as the Department of Veterans' Affairs or the Australian Army itself may be warranted in future research.

Conclusion

This present study investigated a new predictive factor upon depression, which up to now had been neglected within the mental health literature for ex-military personnel. The current findings indicate that when individuals strongly identify with a group that is otherwise incompatible with their current environment, this high level of identification will be associated with relatively higher depressive symptoms. In contrast, should individuals perceive themselves as *connected* to their former exclusive in-group, this will be associated with *lower* depressive symptoms, regardless of the extent to which they identify with that in-group's identity.

For clinicians treating depressed ex-military personnel, this study suggests two possible management strategies. The first is to query the extent to which one's client has successfully transitioned back to civilian life post service. If the client states that a significant component of his or

her identity is still as a Soldier, and especially should the client state that this has made it difficult for him or her to form new social relationships, then this should be seen as a potential clinical focus. A recent SIA-based group intervention, the 'Groups 4 Health' program, through its five modules of schooling, scoping, sourcing, scaffolding and sustaining, offers a potential treatment strategy for clinicians.⁴⁷ In this treatment program the authors demonstrated that they were able to change the structure of their participants' social identity by increasing participants' social identification with both the treatment group and with other social groups in general. When this change in social identification occurred, it led to improved mental health outcomes for the participants. Although not tested specifically on ex-military personnel, this program, by increasing social identification with other social groups, may also help to reduce the dominance of the client's Soldier identity, and therefore allow him or her to better relate to others in their daily life outside of the military context.

Recent SIA-based research by Scarf et al. supports the current paper's assertion that identity and

perceived sense of connectedness are two separate concepts, but also that they have differing impacts on an individual's mental health. In particular, they demonstrated that increased perceived connectedness with the group has a larger impact upon positive mental health outcomes for the individual (increased resilience) than level of group identification does.⁴⁸ Therefore, the second recommended management strategy, regardless of the degree to which a client continues to identify as a Soldier, is to encourage him or her to *reconnect* with former military peers. As shown in prior papers^{40,41} and within the current study, when ex-military personnel perceive themselves as connected to their former peers, they will experience improved mental health.

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The Psychological Adjustment Experience of Reintegration Following Discharge from Military Service: A Systemic Review

M Romaniuk, C Kidd

Abstract

Background: Previous literature has noted a substantial proportion of veterans experience difficulty reintegrating into civilian society following discharge from military service, which may have a significant impact on their psychosocial functioning.

Purpose: This review aimed to identify, describe and thematically synthesise literature on veteran reintegration following discharge from military service, focusing on psychological adjustment experiences.

Material and methods: A systematic multi-database text word search incorporating search results from the databases PsycINFO, Medline, Cumulative Index to Nursing and Allied Health Literature (CINAHL), Military and Government Collection, Scopus and Web of Science. Consolidated criteria for reporting qualitative research (COREQ) was used to assess the quality of included studies, and thematic synthesis was used to review the studies and identify common themes.

Results: The review identified 18 qualitative and mixed methods studies that met inclusion and exclusion criteria. Synthesis of studies revealed that veterans experience significant and multiple losses following discharge from military service. Overall, veterans' transition experiences were impacted by the loss of military culture and community, a loss of identity, and the loss of purpose. These findings were consistent across countries and contexts. This review also identified a number of limitations and gaps in the current literature and outlined strategies to address such limitations in future research.

Conclusion: These findings establish the importance of addressing the experience of loss for transitioning military veterans.

Keywords: veterans, reintegration, transition, psychological adjustment, loss

Conflicts of interest: The authors declare no conflicts of interest.

In a military context, the term 'reintegration' refers to the dynamic process and outcome of resuming a civilian 'role' following completion of military service.¹ Extant empirical literature notes a considerable proportion of veterans report some form of reintegration difficulty when transitioning to civilian society following military service.²⁻⁴ This difficulty has been associated with poor social and family relationships,^{2,4,5} unemployment,^{3,4} financial strain,³ homelessness,⁶ and poor physical and mental health.⁷ Due to such negative outcomes associated with reintegration difficulty, it is imperative to understand the factors that influence the transition period.

A number of reviews have summarised literature pertaining to post-deployment reintegration.^{1,8,9} This reviewed literature has focused on adapting back to life following the immersive experience of operational deployment, rather than the reintegration experience of transitioning to civilian life following permanent discharge from military service. To the authors' knowledge, a systematic review on the reintegration experience following discharge (unrelated to deployment) has not been conducted. Given not all service personnel will operationally deploy, but all will experience transitioning out of the military, this is an important gap to address.

Further, previous research has primarily investigated the impact of psychiatric disorders, traumatic brain injury and other physical conditions on veteran reintegration.^{4,7,10-13} However, recent research has noted that even in the absence of clinical conditions, a considerable proportion of veterans may still experience adjustment difficulty,¹⁴ suggesting other factors may be impacting their transition from military to civilian life. The differences between military and civilian culture,^{15,16} the experience of 'identity crises',¹⁷⁻¹⁹ as well as disconnection and separation from the military community^{20,21} have been identified in past studies as possibly contributing to problematic reintegration. While this research highlights a variety of factors (distinct from psychiatric and physical conditions) that may influence adjustment from military service to civilian life, a systematic review of the psychological adjustment experience of reintegration has not been conducted.

The aim of this study was to conduct a systematic review and thematically synthesise published research describing the psychological adjustment experiences of veterans reintegrating into civilian life following permanent discharge from military service. In this study, the term 'veteran' refers to all service personnel who have previously served in the military, regardless of deployment experience, and have discharged from military service.

Methods

The systematic review aimed to include all published and peer-reviewed research investigating the psychological adjustment experience following discharge from military service. To ensure quality and transparency, this review adhered to the preferred reporting items for systematic reviews and meta-analyses (PRISMA) guidelines.²²

Search strategy

EBSCO host was used to access the PsycINFO, Medline, Cumulative Index to Nursing and Allied Health Literature (CINAHL), and Military and Government Collection databases. Scopus and Web of Science databases were also accessed. Initially, searches were conducted using a combination of the following key search terms: '(veteran OR retired soldier OR ex-service*) AND (reintegrat* OR transition* OR *adjust* OR community integrat* OR adapt*)'. However, these search terms returned excessive results (5131, 1029, 4956, 20093, 3895 and 5867, respectively). To narrow the search results, additional search terms *cultur**, *loss*, *belong** and *identity* were added to the original search terms. These terms were

chosen based upon an initial scan of the literature which indicated these were common concepts in the literature that related to psychological adjustment. Upon review of the new search results, the authors concluded the search terms *cultur** and *loss* were sufficient to capture the broad range of psychological adjustment experiences associated with discharge from the military and reintegration. The inclusion of *belong** and *identity* did not return any additional results not captured by *cultur** and *loss* searches. Consequently, where possible, All Text searches of the databases were completed with a combination of the following search terms: '(veteran OR retired soldier OR ex-service*) AND (reintegrat* OR transition* OR *adjust* OR community integrat* OR adapt*) AND (culture) OR (loss NOT weight NOT hear*)'. Database searches were finalised on 23 November 2017. To extend the search further, reference lists of eligible full texts were also screened for potentially relevant articles.

Inclusion and exclusion criteria

Articles included in this review met the following inclusion criteria: (1) published in a peer-reviewed journal; (2) military veteran participants; and (3) reported quantitative or qualitative analysis of psychological adjustment related to reintegrating into civilian life after discharge from the military. Exclusion criteria included: (1) study unavailable in English; (2) focused on post-deployment reintegration rather than reintegration following permanent discharge from the military; (3) adjustment experiences described were exclusively related to a psychiatric or medical condition (e.g. a diagnosis of post-traumatic stress disorder or traumatic brain injury); or (4) grey literature. There were no restrictions placed on publication dates and no preference was given to studies that emphasised qualitative or quantitative methodology.

Thematic synthesis

For the purposes of this review, data were considered to be all text in the Results and Discussion sections of included studies. As all included articles were qualitative or mixed methods, thematic synthesis methods²³ were chosen to analyse these data. Thematic synthesis methods are similar to thematic analysis of primary qualitative data; however, thematic synthesis is used to summarise qualitative data from multiple studies to produce overarching themes present across the literature.²³ In accordance with these methods, coding was conducted in three stages: (1) line-by-line coding of primary (participants' quotes) and secondary (authors' interpretations) data; (2) codes organised

into descriptive themes; and (3) descriptive themes used to generate analytical themes to produce an interpretation beyond the original data. Coding and themes were discussed in depth and agreed upon by both authors. The qualitative data analysis program NVivo 11 was used during the coding stage.²⁴

Results

Article selection

Database searches returned 7,133 articles in total. After removing duplicates, 5,150 articles

remained. One author screened titles and abstracts for relevance and further excluded 5,113 articles. An additional nine articles were identified from reference lists. Forty-six full texts were assessed for eligibility separately by both authors in accordance with inclusion and exclusion criteria and aims of this review. Articles were included if both authors agreed on eligibility; however, there was no disagreement on eligibility between the authors. A total of 18 articles were included for review. Figure 1 presents the search and selection process according to PRISMA guidelines.

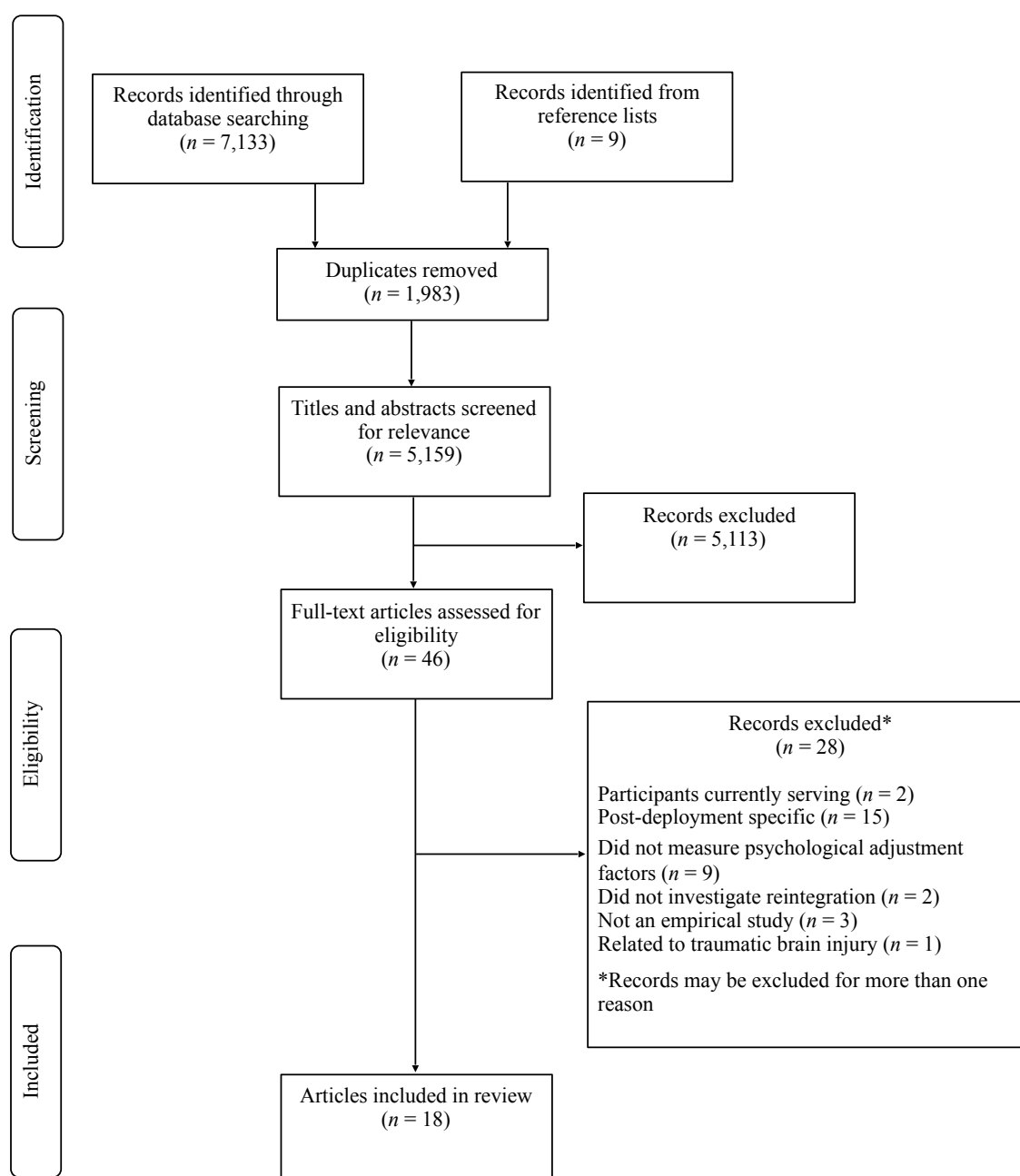


Figure 1. Flow diagram of article search and selection outcomes according to PRISMA guidelines

Characteristics of included studies

Data were systematically extracted by one author. Table 1 details the sample, design and methodological characteristics of the included studies. All studies were published within the past 4 years and predominately originated from the United States.^{20,25-35} Three articles originated from the United Kingdom,^{17,36,39} two from Sweden^{37,38} and one from Africa.⁴⁰ Sixteen studies were qualitative^{17,20,25-30,32,33,35-40} and two studies reported a mixed methods design.^{31,34} The primary focus of all included studies was the reintegration of veterans into civilian life.

The number of participants recruited varied from one to 29 ($N = 285$), with 14 studies recruiting 10 or more participants. Samples were mostly homogeneous, consisting predominantly or entirely of male veteran participants from a range of conflict eras. Three studies exclusively recruited female participants.²⁵⁻²⁷ Nine studies did not report the length of time since participants were discharged.^{17,25,26,28,30-33,40} Across the remaining studies, participants were discharged between 3 months and 38 years prior to study participation.

Semi-structured interviews were the most common method of data collection, used exclusively in 14 studies.^{17,20,25,27-31,33-35,37-39} Two studies used a combination of semi-structured interviews and focus groups^{26,40} while one study used only focus groups.³² Finally, one study reported using interviews but did not describe the technique used.³⁶ Along with qualitative methodology, two studies collected quantitative data with self-report Likert scale questionnaires. Questionnaires related to perceived work barriers³¹ and accessing support in an education context;³⁴ however, the findings from these measures were not directly related to psychological adjustment and, as such, were not included in the results of this review.

Comprehensiveness of reporting

As all of the included studies were qualitative or mixed method designs, the studies were systematically assessed using the consolidated criteria for reporting qualitative research (COREQ) framework.⁴¹ This 32-item checklist provides readers with information on the comprehensiveness, trustworthiness and quality of findings in included studies.⁴¹ This checklist also identifies limitations of included studies. Inclusion of studies was not weighted according to this assessment. Table 2 outlines each COREQ item and the overall comprehensiveness of reporting in this literature. In addition, Table 1 lists the items each study reported. The studies captured between

six and 26 items, with 14 studies reporting over half of the items ($M = 18.83$, $SD = 4.94$). Most studies identified the interviewer but many failed to provide the interviewer's characteristics or consider their relationship with participants. Theoretical frameworks, sampling methods and approach were reported in the majority of studies. Few studies reported reasons for non-participation, the setting of data collection, or presence of non-participants at data collection. Most studies gave details about the interview procedures including an interview guide, duration details, and audio/video recording. Data analysis was well described in most studies; however, participant checking and details of software used for the analysis were infrequently reported. All studies provided a description of their sample including sample size, reported participants' quotations, presented data that were consistent with their findings, and demonstrated clarity of major themes.

Themes

Analysis revealed the psychological adjustment experiences of veterans discharging from military service were characterised by extensive and multiple losses. This unifying theme of loss emerged in three central interrelated domains: culture and community, identity, and purpose. Table 3 provides quotations that illustrate these themes from participants (italicised) as well as authors of the included studies.

Loss of culture and community. The first descriptive theme demonstrated that difficulties experienced by veterans during their transition into civilian society could be attributed to feelings of loss of their military culture and community. Despite participants originating from varying military organisations during different conflict eras, descriptions of military culture were consistent. Overall, military culture was described as a collectivist social institution that emphasises hierarchy, structure, conformity and comradery. Once enlisted, participants described the acculturation process 'wherein their appearance, behaviours, and thoughts are remodelled'^{33(p40)} and conformity was enforced.⁴⁰ The structured military culture provided participants with 'clarity' and direction,^{20(p5)} as one participant described: '*I'm told exactly what to do, when to do it, how to do it, and I just completely surrender.*'^{26(p498)} In addition, the military was described as an organisation that cares for its members^{20,27} providing them with '*safety*' and '*comfort*'.^{20(p5)}

In comparison, civilian culture was described as considerably less structured and less supportive.^{20,25,27,29,30,35} Burkhart et al.²⁵ described the transition from military to civilian culture as

Table 1 Detailed summary of the sample, design and methodological characteristics of the 18 studies included in this systematic review

Author/s (year)	Country	Sample characteristics	Conflict era (as described by the studies' authors)	Years served	Years since discharge	Design, recruitment, methods	Primary focus of study	COREQ items reported
Ahern et al. (2015)	United States	24 veterans (17 male) 33.3% Army, 16.7% Navy, 8.3% Air Force, 20.8% Marines, 20.8% National Guard/Reserves	Afghanistan and Iraq	Not reported	Range: < 1–7 years 29.2% discharged in previous year	Qualitative; thematic analysis Purposive sampling Semi-structured interviews	Transition into civilian life	1, 5, 9–12, 16, 17, 19, 21, 24–26, 29–32
Binks & Cambridge (2017)	United Kingdom	7 veterans (6 male) Age: M = 45.71 years, SD = 8.90 years 85.71% Army, 14.29% Navy	Not reported	M = 14.71, SD = 8.24 Range: 3–24 years	M = 12.29, SD = 12.22 Range: 1–38 years	Qualitative; interpretative phenomenological analysis Purposive and snowball sampling Semi-structured interviews	Transition into civilian life	9, 10, 12, 16, 17, 21, 25, 29–32
Brunger et al. (2013)	United Kingdom	11 male homeless and/or unemployed veterans Age: M = 31.82 years, SD = 14.15 years	Not reported	Range: 1–28 years	Not reported	Qualitative; interpretative phenomenological analysis Semi-structured interviews	Transition into civilian workplace	1–5, 8, 9, 11, 12, 14, 16, 19, 21, 24–26, 29–32
Burkhart & Hogan (2015)	United States	20 female veterans Age: M = 45 years; Range: 23–65 years 20% Army, 35% Navy, 30% Air Force, 10% Marines	Post Gulf War	M = 16.7 Range: 2–30 years	Not reported	Qualitative; grounded theory Snowball sampling Semi-structured interviews	Transition into, during, and out of military	2, 9, 10–12, 16, 17, 19–22, 24–26, 29–32
Demers (2013)	United States	17 female veterans Age: Mdn = 29 years; Range: 22–43 years 58.82% Army, 23.53% Navy, 17.65% Marines	Iraq	Not reported	Not reported	Qualitative; hermeneutic phenomenology Purposive sampling Semi-structured interviews and focus groups	Transition into civilian life	1–5, 8–12, 14, 16, 17, 19, 24–26, 28, 29–32
Elliot et al. (2016)	United States	10 nurse veterans (3 male) Age: M = 47.60 years; Range: 31–60 years 50% Army, 40% Air Force, 10% Navy	Not reported	M = 11.25 Range: 4–25 years	50% within past 10 years; 30% within past 20 years; 20% more than 20 years	Qualitative Convenience and snowball sampling Semi-structured interviews	Transition into civilian nursing workplace	2, 3, 9–12, 16, 17, 19–22, 24–26, 28–32
Gregg et al. (2016)	United States	13 veterans (9 male) Age: M = 27.31 years, SD = 2.90 years 69.23% Army, 7.39% Air Force, 23.08% Marines	Post-9/11	Not reported	Not reported	Qualitative; descriptive phenomenological approach Purposive and snowball sampling Semi-structured interviews	Transition into tertiary education	1–5, 8–12, 14, 16, 18–22, 24–32

Author/s (year)	Country	Sample characteristics	Conflict era (as described by the studies' authors)	Years served	Years since discharge	Design, recruitment, methods	Primary focus of study	COREQ items reported
Grimell (2016)	Sweden	19 veterans (16 male) Age range: Largest part of the sample includes service members aged 23–35 years. Four service members are aged around 60 years	Not reported	Not reported	Minimum 3 years	Longitudinal qualitative; narrative analysis Snowball sampling Semi-structured interviews	Transition into civilian life	1, 3, 6–12, 16–21, 24–27, 29–31
Grimell (2017)	Sweden	1 male veteran Age: About 28 years Served in Navy	Afghanistan	5 years	Interviewed at 3 months, 15 months and 27 months post-discharge	Longitudinal qualitative; narrative analysis Snowball sampling Semi-structured interviews	Transition into civilian life	1, 3, 6–9, 10–12, 16–18, 21, 24–31
Herman & Yarwood (2014)	United Kingdom	27 veterans (22 male) 29.63% Army, 11.11% Air Force, 59.26% Navy	Various	Range: 3–38 years	Range: 6 months – 30 years	Qualitative interviews	Geographies of post-military living	11, 12, 16, 29–31
Jones (2013)	United States	3 veterans (2 male) Age range (years): early 30s – early 40s 1 Army, 1 Navy, 1 National Guard	Cold War, Afghanistan, and Iraq	M = 9.00, SD = 3.46 Range: 5–11 years	Range: 1–7 years	Qualitative; phenomenology Criterion sampling Semi-structured interviews	Transition into tertiary education	1–12, 14, 16, 17, 19–21, 24, 26, 29–31
Jones (2017)	United States	5 veterans (4 male) Age range (years): 26 – mid 40s 3 Army, 2 Marines	Post 9/11	Not reported	Not reported	Qualitative; transcendental phenomenological approach Criterion sampling Semi-structured interviews	Transition into tertiary education	9–12, 16, 17, 19, 21, 25, 26, 29–31
Kramm & Heineken (2015)	Africa	14 ex-members of Military Skills Development System in South African National Defence Force (11 male) and 7 employment agencies Age range of ex-members: 21–28 years	Not reported	Not reported	Not reported	Qualitative Convenience and snowball sampling Semi-structured interviews and focus groups	Transition into civilian life and workplace	3, 4, 10–12, 16, 19–21, 26, 29–31

Author/s (year)	Country	Sample characteristics	Conflict era (as described by the studies' authors)	Years served	Years since discharge	Design, recruitment, methods	Primary focus of study	COREQ items reported
Kukla et al. (2015)	United States	21 combat and 19 non-combat veterans (33 male) 65% Army, 12.5% Navy, 5% Air Force, 27.5% Marines	Operation Enduring Freedom (OEF), Operation Iraqi Freedom (OIF), Desert Storm, Vietnam, Post-Vietnam, 'Other' conflict era	Not reported	Not reported	Mixed methods; narrative analysis Convenience sampling Group comparisons and semi-structured interviews	Transition into civilian workplace	1, 2, 5, 9-13, 16, 17, 24-27, 29-32
Leslie & Koblinsky (2017)	United States	29 female veterans 65% Army, 17% Navy, 3% Air Force, 2% Marines	OEF, OIF	Not reported	Not reported	Qualitative Convenience sampling Focus groups	Transition into family	1-3, 5, 9-12, 14-17, 19-22, 24-26, 28, 29-31
Naphan & Elliot (2015)	United States	11 veterans	Post 9/11	Not reported	Not reported	Qualitative; framework analysis Semi-structured interviews	Transition into civilian life and tertiary education	1-5, 8, 9, 11, 12, 14, 16, 17, 19, 21, 22, 24-26, 29-31
Olsen et al. (2014)	United States	10 veterans (7 male) Age: M = 30 years, SD = 7.23 40% Army/Army Reserves, 20% Marine Corps/Marine Corps Reserve, 20% Navy, 20% Air Force	Not reported	M = 5.1, SD = 3.26	M = 43.5 months, SD = 37.81 prior to starting tertiary education	Mixed methods Purposive sampling Questionnaires and semi-structured interviews	Transition into tertiary education	1-3, 8, 10-14, 16, 17, 20-22, 24-26, 28-32
Worthen & Ahern (2014)	United States	24 veterans (10 male) Age: Mdn = 29; Range: 22-55 years Each branch of armed services included	Afghanistan and Iraq	Not reported	Range: 2 months - 5 years	Qualitative Purposive sampling Semi-structured interviews	Transition into civilian life	1-5, 9-12, 14, 16, 17, 19, 21, 24-27, 29-31

Table 2 Frequency of reporting items from consolidated criteria for reporting qualitative research (COREQ)

Reporting criteria	n (%)
Domain 1: Research team and reflexivity	
<i>Characteristics of research team</i>	
1. Interviewer or facilitator identified	12 (66.67%)
2. Credentials	11 (61.11%)
3. Occupation	12 (66.67%)
4. Gender	7 (38.89%)
5. Experience and training	10 (55.56%)
<i>Relationship with participants</i>	
6. Relationship established	3 (16.67%)
7. Participant knowledge of interviewer	3 (16.67%)
8. Interviewer characteristics	8 (44.44%)
Domain 2: Study design	
<i>Theoretical framework</i>	
9. Methodological orientation and theory	15 (83.33%)
<i>Participant selection</i>	
10. Sampling method	15 (83.33%)
11. Method of approach	17 (94.44%)
12. Sample size	18 (100%)
13. Non-participation	2 (11.11%)
<i>Setting</i>	
14. Setting of data collection	7 (38.89%)
15. Presence of non-participants	1 (5.56%)
16. Description of sample	18 (100%)
<i>Data collection</i>	
17. Interview guide	14 (77.78%)
18. Repeat interviews	3 (16.67%)
19. Audio/visual recording	13 (72.22%)
20. Field notes	8 (44.44%)
21. Duration	15 (83.33%)
22. Data saturation	6 (33.33%)
23. Transcripts returned	0 (0%)
Domain 3: Analysis and findings	
<i>Data analysis</i>	
24. Number of data coders	14 (77.78%)
25. Description of coding tree	15 (83.33%)
26. Derivation of themes	17 (94.44%)
27. Software	5 (27.78%)
28. Participant checking	6 (33.33%)
<i>Reporting</i>	
29. Quotations presented	18 (100%)
30. Data and findings consistent	18 (100%)
31. Clarity of major themes	18 (100%)
32. Clarity of minor themes	9 (50%)

'bridging these two worlds' where veterans must learn to navigate 'different psychological and social rules'.^(p121) Authors described this reintegration experience as 'cultural shock',^{25(p119),27(p113)} where participants were 'unprepared' to handle requirements of civilian life.^{25(p119)} Participants reported difficulty reorganising their lives,²⁰ managing their health care,²⁵ obtaining employment,^{27,31,40} and establishing new routines.²⁸ Furthermore, the loss of military structure triggered emotional distress as participants described feeling overwhelmed,³⁰ in addition to feeling angry³⁵ and frustrated.²⁰ Alternatively, authors noted that when participants transitioned into a similarly structured culture such as university^{29,33} or similar workplace,³¹ they appeared to experience an easier reintegration process.

Additionally, military members were described as 'family' in terms of support, closeness and shared experiences.^{20(p4),33(p44)} According to participants' descriptions and authors' interpretations, the team-oriented culture of the military breeds strong comradery and interdependence among its members.^{20,33,37,39,40} Members are encouraged to 'de-individuate' and work towards a collective goal.^{33(p40)} The strength and importance of the interpersonal relationships between military personnel was described frequently throughout the studies^{17,20,33,36,39,40} and appears to be one of the most important and influential components of military culture. As summarised by one participant: 'They say there is no stronger and better friendship than the one made in the army.'^{40(p129)} For many participants, discharging from the military resulted in significant loss of community.^{33,36,37,40}

This loss of community was further perpetuated by difficulties forming and maintaining relationships with civilians following discharge.^{25,28,29,32-34,40} Some participants expressed that their relationships with civilians could never be as close as the ones they had during their military service.^{33,37,40} Participants frequently commented that civilians cannot truly understand their military experience or the consequences of their service.^{20,26,28,31-34} In turn, participants regularly reported difficulty relating to civilians.^{25,28,29,32,34,40} Overall, findings revealed participants of included studies experienced significant loss of culture and community upon discharge from the military and reintegration into civilian society. Veterans appeared particularly vulnerable to the perceived lack of structure, support and comradery in civilian culture.

Loss of identity. The second theme encompasses participants' descriptions and authors' interpretations of the military identity and a loss of

this identity upon discharge. Initially, participants provided detailed descriptions of their military identity which was followed by reports of identity crises upon discharge. Their military selves were described as ‘*competent, motivated, efficient*’,^{38(p257)} ‘*creative, dedicated, passionate*’,^{37(p214)} ‘*mission driven*’,^{27(p1379)} ‘*focused ... task-orientated*’,^{30(p115)} and ‘*assertive*’,^{25(p119)} These military identities were formed through military training and service experience and reinforced by the structured, collectivist-oriented military culture.^{17,31,36,38-40} This identity construction was summarised by one participant as: ‘[The military] *organisation changes you completely, the person that you were as a civilian, you are no longer that person, it changes you completely*.’^{40(p128)} In addition to the above descriptions, one study described their participants’ military ranks as ‘deeply embedded within their self-perception’.^{27(p1379)} In line with this statement, participants across studies inferred their role and rank in the military was so intrinsic that it became their identity.^{31,33,36,39} For example, one participant noted their identity was their military occupation: ‘*Cause it’s like it’s not just part of your life; it’s who you are. It’s not just an occupation*.’^{33(p42)}

As a consequence of forming an identity shaped by military culture and dependent on their military role, the process of discharge subsequently triggered an experience of identity loss which evoked significant distress among participants.^{17,26-28,36-38} Brunger et al.¹⁷ described participants as having a ‘fractured sense of self’ where during the reintegration process, they had ‘lost everything that epitomised and reinforced this identity’.^(p93) One participant recounted the grief they had felt over their lost identity: ‘*the big wrench of course ... is I was no longer somebody*.’^{36(p47)} In addition to losing their military identity, participants appeared to face the dynamic process of reconstructing their civilian identity following discharge: ‘*In the civilian world, it’s like, who am I? What do I dress like? How do I talk? Where do I go? What do I do?*’^{26(p503)} During this reconstruction process, participants’ military identities were challenged by civilian expectations, values and rules,^{25,28} which created conflict between identities, described by one participant as a ‘*tug of war*’.^{38(p263)} Alongside the grief of losing their military identity, participants recounted the process of determining their civilian self-concept as challenging: ‘*It’s challenging to have to figure out who exactly I am*.’^{26(p503)}

Others reported difficulty letting go of their military identity: ‘*No longer being able to say that ... that’s who I was, was probably the hardest part*.’^{28(p4)} Overall, analysis of the included studies indicated that military culture and military work roles were central components of participants’ identity prior to

discharge. Upon discharge, participants appeared to grieve the loss of this identity and experience difficulties forming a new civilian identity.

Loss of purpose. Finally, analysis of the included studies revealed the common experience of loss of purpose upon discharge.^{20,28,31,33,36-38,40} Derived from participants’ accounts of their military work experiences, serving in the military provided them with a powerful sense of purpose. During their service, participants felt they were part of something bigger than themselves.^{38,40} They held ‘*responsibility*’,^{33(p42)} and felt ‘*accomplished*’,^{32,33} ‘*successful*’^{31(p484)} and ‘*empowered*’,⁴⁰ and by serving, participants had ‘*made a meaningful contribution to a worthy and noble cause*’.^{31(p484)} Additionally, Kramm and Heineken⁴⁰ reported some participants became ‘*reliant*’ on military structure to provide them with ‘*purpose and direction*’.^(p130)

In line with these accounts, upon reintegration into civilian society, participants frequently reported losing purpose and meaning.^{20,28,31,33,36-38} It became apparent that after discharge, many felt that they were no longer contributing to something as important as the collective effort of military service.^{20,27,31,33} One participant summarised this as follows:

It’s really hard to put in words but I just miss the environment. I miss the common goals ... the way people put aside their own personal [agendas] ... I used to run a lot and [the] feeling is just like that ... ‘yeah man, let’s go do it!’ I’ve never really gotten the same thing on the civilian side, even though I try and pour my heart into things.^{20(pp6-7)}

Additionally, lost purpose resulted in some participants having difficulty finding motivation to complete their civilian duties such as work or study.^{20,37,38}

Discussion

This was the first known systematic review to investigate the psychological adjustment experiences of veterans reintegrating into civilian life following discharge. A total of 18 qualitative and mixed methods studies, representing four countries, were identified. Overall, analysis revealed military veterans’ psychological adjustment experiences during reintegration were characterised by significant losses. Veterans appeared particularly vulnerable to the loss of important facets prominent in military culture including structure, support and community. Additionally, many experienced identity loss which was further compounded by difficulty

Table 3 Illustrative quotations across studies summarising the main analytical theme and descriptive themes

Themes	Participant quotations (Primary source)	Authors' interpretations (Secondary source)
Loss	<i>'... leaving the navy is a bit like, you know, losing your parents ... sort of a traumatic moment in your life. It's a bit like bereavement ...'</i> ^{36(p45)}	'Participants believed that their transition back from military to civilian life could be characterised extensively in terms of loss.' ^{17(p92)}
Culture and community	<i>'Everything [in the military] is structured ... And then you get out and all of a sudden you've got to take care of yourself.'</i> ^{20(p6)} <i>'I just felt like we could just not exist and nobody would know, there was just no community ... I just felt invisible.'</i> ^{27(p1379)} <i>'The day you stop being invited to wear that uniform, you lose that support network.'</i> ^{36(p45)} <i>'You do have that sense of loss when you leave because you think 'Oh, you're not belonging to anything'.'</i> ^{36(p46)} <i>'I felt as if I have left my family behind ... I miss the army and I feel lost without it.'</i> ^{40(p130)} <i>'There's a sense of clarity to life over there that you don't get in this world, and when you come back, and try to negotiate this terrain, and uh ... It doesn't make sense ...'</i> ^{33(p41)} <i>'You're used to a tight knit community, but here it's like you're an island ... I miss that camaraderie.'</i> ^{34(p104)} <i>'Sometimes I get mad at the most slightest of things. Because in the military we had a plan [and] it was all structured ... I come here and everything's all messed up.'</i> ^{35(p358)}	'Upon return to civilian life the vast majority of veterans felt disconnection from people at home, including family and friends, who had not shared the experience of military service. Veterans felt that those who had not served in the war could not truly understand them or their experiences during service.' ^{20(p5)} 'All interviewees recognised the support and camaraderie of being in the armed forces and, while not all still kept in contact with those with whom they had served or went to reunions, there was a certain wistfulness that permeated the interviews for the loss of the chance to make such strong and open relationships and to have that feeling of belonging.' ^{36(p46)} 'The loss of an externally implemented, fixed schedule was a particular item of stress for participants.' ^{30(p116)} 'When military veterans return home, they leave the people who best understand what they have been through and are surrounded by individuals who are unfamiliar with their previous experiences.' ^{33(p44)} 'The most common cause that veterans identified for their anger was loss of structure.' ^{35(p357)}
Identity	<i>'I went from being special in my field ... to being frighteningly devoid of identity.'</i> ^{26(p503)} <i>'It was like an identity crisis. I had known myself as, you know, Captain XX, the officer. The Army nurse. So I struggled with that, losing that title. You had identified yourself with that name for so long and then all of a sudden it's not there anymore. I remember feeling that I was kind of losing a sense of my identity.'</i> ^{27(p1379)} <i>'I think it's very hard for some people coming off of military into civilian practice to lose because you put on a uniform ... You had a name badge on and you had rank. You had an identity.'</i> ^{27(p1379)} <i>'I took a lot of pride in what I did, I was a crew chief, mechanic on Black Hawks, and on hydraulics, aircraft hydraulics ... and [losing] that identity was really difficult. No longer being able to say that ... that's who I was, was probably the hardest part.'</i> ^{28(p4)} <i>'... and the big wrench of course ... is I was no longer somebody.'</i> ^{36(p47)}	'It is clear from some of the responses of the participants that the military became the driving force in the development of the self-concept.' ^{39(p5)} 'Participants lost everything that epitomised and reinforced this identity.' ^{17(p93)} 'Participants experienced grief and loss of their military identity.' ^{27(p1379)}
Purpose	<i>'It's really hard to put in words but I just miss the environment. I miss the common goals ... the way people put aside their own personal [agendas] ... I used to run a lot and [the] feeling is just like that ... 'yeah man, let's go do it!' I've never really gotten the same thing on the civilian side, even though I try and pour my heart into things.'</i> ^{20(p6-7)} <i>'... you are part of some larger context which is supposed to lead somewhere.'</i> ^{37(p214)} <i>'[To serve is to] be part of something bigger than one's self.'</i> ^{38(p264)} <i>'... you've been in a while, you have subordinates, you have responsibilities, you've stayed out of trouble. You know, you've accomplished a lot ... When you move back into civilian life, it's like all that's gone.'</i> ^{33(p42)}	'A substantial proportion of respondents noted that civilian life lacked meaning and purpose, and that they no longer felt they were contributing to an important communal effort.' ^{20(p6)} 'The experience of a lack of meaning was intensified when veterans could not find jobs they felt were important or drew upon their skills.' ^{20(p7)} 'What is evident is that MSDS [Military Skills Development System] members became reliant on the military social command structures to provide them with purpose and direction.' ^{40(p130)} 'Relatedly, a notable portion of veterans reflected on their military experience as the most successful phase in their career, as they felt that they made a meaningful contribution to a worthy and noble cause.' ^{31(p484)}

reconstructing their self-concept as a civilian. Finally, many veterans experienced a significant loss of purpose and meaning upon return to civilian life. This perceived 'void' of not contributing to an important, collective cause appeared to subsequently impact motivation to engage fully in civilian settings.

In addition to these findings, this review identified a number of limitations in the current literature. Firstly, the overall quality and comprehensiveness of the qualitative research methods of the studies was moderate with some studies using methods that may introduce bias. Tong et al.⁴¹ recommended good qualitative research should report the characteristics, experience and training of the researchers and interviewers and advise participants of this. This is termed 'reflexivity'. Reflexivity reduces personal bias from influencing the study and improves credibility and transparency of the findings.⁴¹ Despite the importance of reflexivity in qualitative research, few studies reported these criteria. To improve the quality and comprehensiveness of future qualitative research, COREQ⁴¹ or similar criteria should be considered when designing and implementing qualitative studies and publishing research findings.

Secondly, it was noted over half of the included studies failed to report participants' length of military service. Length of service may be an important consideration in understanding transition and reintegration experiences through the influence it may have on veterans' construction of military identity and acculturation into the military system. Furthermore, half of the included studies failed to report the length of time since participants had discharged. This makes it difficult to ascertain how veteran reintegration difficulties may change over time. Increased rigour when reporting demographic characteristics of participants would benefit future research and may help determine if length of service has an influence on experiences of loss following discharge from military service. In addition, longitudinal research may be beneficial to ascertain how, and if, reintegration difficulties change over time. Two studies included in this review were longitudinal;^{37,38} however, more longitudinal research needs to be conducted to support and extend the findings of these studies.

Thirdly, during the search and selection process it became evident that the current reintegration literature predominantly focuses on adapting back to civilian life following an operational deployment, rather than the reintegration experience following permanent discharge. Further, while participants of these studies may have discharged from military service upon returning from the deployment, this

distinction was rarely provided. Future research should overcome this limitation by explicitly differentiating between post-deployment and post-discharge populations. Additionally, extensive literature has highlighted the impact of psychiatric disorders and physical conditions following deployment.^{4,7,11-13} As these factors were outside the scope of this review, future research should consider extending the findings of this review to investigate how these difficulties may relate to, and further perpetuate, the experience of loss following discharge.

Finally, the majority of research studies investigating reintegration following discharge from military service are qualitative. As this is a relatively new area of research, with particular complexities, it is not unexpected that studies would use qualitative methodology to investigate this topic. However, future research should consider developing quantitative measures to enable assessment of factors that contribute to a difficult reintegration experience post-discharge, to extend the current research literature and allow for quantitative investigations.

Strengths and limitations of the review

A key strength of this review was the rigorous scientific methods used to identify, critique and synthesise the literature. PRISMA search and selection criteria ensured quality and transparent reporting of findings²² and thematic synthesis provided an in-depth analysis of these findings beyond a standard review of the literature.²³ Quality and comprehensiveness of included studies were also evaluated using standardised criteria used in previous systematic reviews of qualitative literature.^{42,43} Despite these strengths, the quality and comprehensiveness of reporting varied across the included studies which may affect the reliability of the findings. In addition, combining and summarising qualitative data has been criticised by some researchers who argue that these data are specific to the context, time and group of participants they were gathered from and therefore should not be generalised beyond this.²³ In particular, participants originated from different military organisations (e.g. United States, United Kingdom, Sweden) and served in a variety of service branches and conflict eras and, as such, generalising their reintegration experience could be inaccurate. However, regardless of these limitations, the findings from this review indicated the experience of loss was consistent across countries and contexts, signifying this finding is stable and unlikely to be affected by these limitations.

Conclusions

This systematic review of 18 qualitative and mixed methods studies revealed the psychological adjustment experiences of veterans reintegrating into civilian life following discharge from military service are characterised by extensive and multiple losses. Veterans in the included studies reported they were impacted by the loss of military culture and community, identity and purpose which contributed to a difficult reintegration experience. These findings were consistent across countries and contexts, and establish the importance of addressing the experience of loss for transitioning military veterans.

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