Developing the skills of future allied health professionals to work effectively with veterans and first responders

G. Greenham, D. Post, H. Cockram, G. Parfitt & M. J. Nelson

Abstract

Introduction: Military personnel and first responders experience high rates of physical and psychological injury, reporting numerous barriers to accessing healthcare. These barriers are often related to the lack of population-specific knowledge and skills of health professionals, which may be alleviated by improved education and training. This study investigated education and training outcomes of students completing placement within a program—Invictus Pathways Program (IPP)—designed to promote the wellbeing of these populations.

Methods: Survey data were collected pre and post placement using the Health Professionals Attitudes Towards Veterans (HPATV) and Mental Illness Clinicians' Attitudes (MICA-4) questionnaires for both IPP placement students (n = 41) and a control group (n = 29). Data were analysed using a mixed model analysis of variance. Focus groups were conducted following placement and data analysed using thematic analysis.

Results: Significant group by time interactions ($p < 0.05$) were identified for all HPATV subscales and the MICA-4 subscales of knowledge of mental illness and distinguishing physical and mental health. Three themes were identified, namely "value of the placement as a professional and personal experience", "knowledge gaps and misconceptions" and "student support" from the focus group data.

Discussion: Results suggest students had an increased understanding of occupational culture, population specific concerns and mental ill health following completion of the IPP placement. Improved knowledge in these areas may address healthcare barriers experienced by veterans and first responders, which may subsequently facilitate greater access to services and improve clinical outcomes.

Conclusion: Findings demonstrate students have enhanced knowledge of occupational culture, attitudes towards working with veteran and first responder populations and capacity to work with individuals with mental ill health following completion of the IPP placement.

Alliance for Research in Exercise, Nutrition and Activity (ARENA), Allied Health and Human Performance, University of South Australia, SA, Australia

Correspondence: Max Nelson Max.Nelson@unisa.edu.au

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Introduction

The role of current serving military personnel and first responders is to protect and provide emergency services to the community, however this comes with the inherent risk of exposure to dangerous and potentially traumatising situations (Australian Government Productivity Commission, 2019; Jones et al., 2024; Kleim & Westphal, 2011; Waller et al., 2012). Within Australia, it is estimated that over 581,000 veterans have served or are currently serving in the Australian Defence Force (ABS, 2022). There are approximately 80,000 full-time first responders in Australia (Parliament of Australia, 2018), in addition to approximately 420,000 part-time and volunteer first responders (Varker et al., 2018).

While the number of casualties in combat has decreased over the years, the number of military personnel returning with physical and/or psychological injury has increased (Tsai et al., 2016). Similarly, recent figures show high rates of serious mental health concerns in response to occupational trauma experiences reported in first responder populations (Rikkers & Lawrence, 2021). Due to the high incidence rates of psychological injury in military and first responder populations and improved awareness of mental health issues, research pertaining to the wellbeing of these populations has gained increasing attention over the last 2 decades. This work has highlighted the complex health challenges faced by military and first responder populations and the significantly higher rate of health problems they face relative to the general population (Beyond Blue, 2018; McGuire et al., 2015; O'Toole et al., 1996; Rikkers & Lawrence, 2021). Previous work has identified that Australian veterans are 50% more likely to be diagnosed with post-traumatic stress disorder (PTSD), depression, substance use disorders and psychological distress compared to the general population (Kerr et al., 2018; McGuire et al., 2015). Similarly, first responders are three times more likely to experience high psychological distress, six times more likely to experience PTSD and twice as likely to have suicidal thoughts, along with increased incidence of anxiety, depression and substance abuse, compared to the general population (Berger et al., 2012; Naturale & Pulido, 2012; Petrie et al., 2018; Syed et al., 2020). Both military and first responder populations have also reported high rates of moral injury contributing to mental health concerns through negative emotions and thoughts, such as shame, guilt, betrayal and distrust (Mensink et al., 2022). These conditions also have implications for the development of comorbidities such as dementia, cardiovascular disease and musculoskeletal problems (Gupta, 2013; McFarlane, 2010), along with other symptoms that can impact the transition back to civilian life, such as sleep disorders, fatigue, anger, hyperarousal and impaired concentration (Gross et al., 2024; Phelps et al., 2017; Pietrzak et al., 2009; Shi et al., 2023; Tsai et al., 2016).

It is important that military and first responder populations have access to the healthcare required to manage the aforementioned conditions. To be effective, healthcare services

need to be accessible and useful to military personnel and first responders and be responsive to their needs. It has been found that despite the increased incidence of mental health disorders in this population, military personnel are no more likely to access mental health services and receive care than their civilian counterparts (Gibbs et al., 2020). Numerous studies have been conducted investigating the barriers to military personnel and first responders receiving mental health treatment. Identified barriers include factors such as health professionals' lack of knowledge of their personal experiences and needs, not trusting health professionals, previous experience with uncaring health professionals or those not knowledgeable about military-related PTSD, perceived stigma of seeking treatment and being weak, lack of individualised treatment options, believing treatment will impact future employment or make their condition worse through adverse reactions, not wanting to share information in groups and not knowing how to discuss certain traumatic experiences (e.g., sexual assault, combat exposure) (Cheney et al., 2018; Garcia et al., 2014; Godier-McBard et al., 2023; McFarlane, 2010; Possemato et al., 2018; Ross et al., 2023).

The findings of previous research suggest that health professionals who are suitably trained to work with this population may contribute to a reduction in the perceived barriers that military personnel and first responders face when accessing mental health services (Arjmand et al., 2024; Lane & Wallace, 2020). The need for increased training is further supported by the results of a study by the Association of American Medical colleges (Lee et al., 2014). This study identified that while all medical schools educated students about issues such as PTSD, only about half of these schools included education specific to these conditions within veteran populations, and only 20% provided military cultural competency training, which enhances understanding of military populations to assist medical professionals working with these individuals. Also of note is that less than 30% of community healthcare providers felt adequately informed about the referral of military personnel for physical and mental health services (Lee et al., 2014), while other healthcare providers have cited "limited knowledge of resources and support services" as healthcare barriers for military populations (Vest et al., 2019, p. 345). While not in the Australian context, such findings emphasise the need for the delivery of, and access to, education and training resources for health professionals regarding the specific needs of this population to facilitate better healthcare outcomes. This extends to embedding education regarding military and first responder populations within the training and education of developing health professionals.

The study reported in this paper investigated the education and training outcomes of students who completed placement within a program designed to promote the recovery and wellbeing of veterans and first responders. The Invictus Pathways Program (IPP) was developed in 2017 through a collaboration between the University of South Australia (UniSA) and The Road Home—now Military and Emergency Services Health Australia (MESHA). While originally designed to assist veterans preparing for participation in the

Invictus games, a competitive sporting event for physically and psychologically injured and recovering veterans, the scope has been extended to include first responders and to promote physical and mental wellbeing of veterans and first responders through physical activity. A fundamental aspect of the IPP is the provision of interdisciplinary allied health services delivered collaboratively by university students completing their placements in degrees related to allied health and human performance—e.g., physiotherapy, podiatry, clinical exercise physiology (CEP), exercise and sport science (ESS) and human movement (HM)—to provide one-on-one support and individually tailored exercise and physical activity programs through the "Exercise and Performance Program" delivered as part of the IPP. Each IPP student was assigned to one or more IPP participants for the entire 12-month duration of their placement, with regularity of session delivery dependent on the needs of each participant. These students developed an individualised training program for the participant under the supervision of an accredited exercise scientist/exercise physiologist member of the IPP staff. Further explanation of the student-delivered component of the IPP has previously been detailed elsewhere (Post et al., 2023a, 2023b).

Throughout the placement, students completed six educational workshops regarding the specific physical, psychological and social needs of veterans and first responders. The topics of these workshops were: (1) induction and background on working with IPP population, (2) working with clients with mental health conditions + working with veterans and first responders (statistics, issues, evidence-based approaches), (3) advanced clinical exercise testing, (4) advanced strength and power prescription, (5) clinical reasoning in veteran/emergency services and adaptive sports populations and (6) wheelchair and adaptive sports masterclass.

When students do not have education and training regarding these population-specific topics prior to working as health professionals, the outcomes for veterans and first responders may be significantly impacted. As a result, it is important to understand the effectiveness of such training programs for developing health professionals working with this population. This mixed methods study evaluated the effect of the IPP placement on the attitudes of students towards veterans, first responders and mental ill health compared to students who completed other placements. The student experience within the IPP placement was also explored.

Methods

Participants

Data were obtained from students who completed placement within the IPP (n = 41). Students were excluded from the study if they reported previous military experience (n = 1). The control group comprised third- and fourth-year tertiary students (n = 29) enrolled in CEP, HM and ESS degrees who completed placements other than the IPP placement but were otherwise enrolled in the same undergraduate coursework as their peers who completed the IPP placement.

The IPP placement has evolved significantly from its initiation until the present time, however the format has been relatively consistent from mid-2021 onwards. Therefore, this evaluation includes data from the 2022 and 2023 cohorts of students to reflect the current format of the IPP placement. Characteristics of students within the IPP and control groups are detailed in Table 1.

Table 1

Student Demographics (n = 70)

	Control	IPP Placement
n	29	41
	n (%)	n (%)
Degree		
Clinical exercise physiology	3 (10%)	18 (44%)
Human movement	6 (21%)	
Exercise & sports science	20 (69%)	23 (56%)
Gender		
Male	20 (69%)	24 (59%)
Female	9 (31%)	17 (41%)
Age		
18–25	26 (90%)	36 (88%)
26–35	3 (10%)	3 (7%)
> 35		2 (5%)
Grade point average	5.5 ± 0.7	5.7 ± 0.6
	n (%)	n (%)
Cohort		
2022		13 (32%)
2023	29 (100%)	28 (68%)

Data collection

Surveys and focus groups were used to collect data in this study. Student GPA and age were recorded for baseline comparison of the control and intervention groups. The learning and education associated with placement in the IPP was evaluated pre and post completion of the 12-month placement using the Health Professional Attitudes Towards Veterans scale (HPATV) (Knopf-Amelung et al., 2018) and the Mental Illness Clinicians' Attitudes (MICA-4) (Gabbidon et al., 2013) survey instruments.

The HPATV is a 14-item survey with questions falling into three subscales assessing military cultural sensitivity and awareness (culture subscale), provision of care to

veteran patients (care subscale) and prominent veteran health issues (health subscale). All responses are provided on a 5-point Likert scale, ranging from strongly disagree to strongly agree.

The MICA-4 is a 16-item survey assessing the attitudes of students and professionals towards people with mental ill health and the field of mental healthcare, with responses given on a 6-point Likert scale, ranging from strongly agree to strongly disagree. Previous work has split this questionnaire into five key themes: views of health/social care field and mental illness, knowledge of mental illness, disclosure, distinguishing mental and physical health and patient care for people with mental illness (Gabbidon et al., 2013). Both questionnaires have established reliability and validity (Gabbidon et al., 2013; Knopf-Amelung et al., 2018).

In addition to the survey instruments, IPP students were invited to participate in focus groups at the completion of their placement to further expand on their experiences and learning throughout the placement. In December 2022, two focus groups were conducted by the same researchers, a senior male member of the IPP team, who is a qualified exercise scientist with a PhD, and a female clinical supervisor in the IPP team, who is a qualified exercise scientist and physiotherapist. Both supervised the students for the duration of their placements. The potential impact this may have had with respect to students' comfort in sharing their true experiences or concerns was countered by holding the focus groups after the students' placements were completed and grades finalised and by assuring the students that data would be de-identified and reported anonymously. Structured questions used to guide focus group discussions sought students' perspectives of their placement experience related to IPP induction processes, training design/prescription resources, client relationships, knowledge and readiness to work with veterans and first responders, readiness to work with clients with mental health issues, additional education regarding specific population issues required and if the program enhanced professional capabilities. Students provided informed consent to participate in the focus groups and for use of their focus group and survey data. This study was approved by the University of South Australia's Human Research Ethics Committee (Number 205091).

Analysis

Survey data

Data were analysed using IBM SPSS Statistic (version 29.0.2.0). Descriptive statistics were generated, including mean (± standard deviation) and percentage change. An independent t-test was performed to identify any differences in GPA between the control and intervention groups, while a chi square test of independence was performed to identify any differences in age distribution. A mixed model (group by time) analysis of variance (ANOVA) with repeated measures on time was used to examine the impact of IPP placement. Significant interactions were followed up with pairwise comparisons.

Analysis of survey data was conducted in accordance with questionnaire subscales developed previously for both the HPATV (Knopf-Amelung et al., 2018) and MICA-4 (Gabbidon et al., 2013). Subscales for the MICA-4 were calculated with the individual questionnaire items being allocated to the subscale in which they presented the highest factor loadings as presented by Gabbidon et al. (2013).

Qualitative

Focus group data were transcribed verbatim and then analysed using thematic analysis following Braun and Clarke's (2006) six-phase reflexive process. Peer debriefing was conducted throughout to explore ideas and ensure consideration of the research team's preconceptions to enhance the rigour and trustworthiness of the analysis. The aim was to identify concepts related to students' experiences during their IPP placement, with coding and themes developed inductively. HC immersed herself in the data, taking notes and systematically coding relevant data on students' attitudes towards veterans and their IPP experiences. Her peripheral role in the IPP was intended to support rigour and reduce bias in the qualitative analysis. Codes were refined and collated, and relevant data were extracted and grouped under respective codes. Initial themes were identified by analysing shared patterns across codes. These themes were reviewed, refined and discussed among the research team, leading to the establishment of final themes. The final phase involved developing a coherent analytical narrative.

Results

Survey data

T-test results show no difference in GPA between the IPP and control groups ($p < 0.05$). Chi square test of independence showed no difference in age between the IPP and control groups ($X2$ (2, N = 70) = 1.60, $p = 0.45$). Descriptive data (Mean (SD)) for the individual HPATV and MICA-4 questionnaire items are shown in Tables 2 and 3, respectively. Tables 4 and 5 show the descriptive data (Mean (SD)) for the HPATV and MICA-4 questionnaire subscales. Repeated measures ANOVA demonstrated significant group main effects for all HPATV and MICA-4 subscales ($p < 0.05$) except for the MICA-4 disclosure subscale ($p = 0.124$), with higher scores in the IPP group (see Tables 4 and 5). The only time main effect was for the disclosure subscale for the MICA-4 questionnaire ($p = 0.041$), with higher scores pre placement. Significant group by time interactions were identified for all HPATV subscales (care ($F(1,68) = 7.19$, $p < 0.01$)); culture ($F(1,68) = 20.35$, $p < 0.01$)); health ($F(1,68) = 5.47$, $p = 0.02$) and the MICA-4 subscales of knowledge of mental illness ($F(1,68) = 8.19$, $p < 0.01$) and distinguishing physical and mental health ($F(1,68) = 7.45$, $p < 0.01$). Post-hoc pairwise comparison results are shown in Tables 4 and 5, but with the exception of culture (where post-placement IPP group scores significantly increased and the control group scores significantly decreased), the interactions were due to significant reductions in the control group's scores post placement.

Table 2

HPATV Response Values (Mean ± SD) Pre and Post Placement for Control and IPP Student Groups

	Pre		Post		% Change	
	Control	IPP	Control	IPP	Control	IPP
HPATV 1	2.6 (1.1)	2.6 (1.0)	2.2 (1.2)	2.9 (1.0)	-13%	11%
HPATV 2	1.9 (0.8)	2.2 (0.8)	1.6 (0.7)	2.7 (0.8)	-18%	22%
HPATV 3 (R)	2.5 (0.9)	2.7 (1.0)	1.9 (1.3)	2.9 (0.9)	-26%	5%
HPATV 4	3.1 (1.2)	3.7 (0.9)	2.6 (1.1)	3.5 (0.9)	-17%	-4%
HPATV 5	2.2 (1.0)	2.6 (0.9)	1.7 (0.8)	2.5 (0.9)	-22%	-3%
HPATV 6	3.3 (0.9)	4.0 (0.8)	3.0 (0.9)	3.9 (0.8)	-11%	-2%
HPATV 7	2.8 (1.0)	3.3 (0.9)	2.3 (1.1)	2.9 (0.9)	-16%	-11%
HPATV 8 (R)	1.0 (0.9)	1.5 (0.9)	0.4 (0.5)	1.8 (1.1)	-60%	23%
HPATV 9	2.6 (1.0)	3.0 (0.8)	2.3 (1.1)	3.6 (0.9)	-11%	19%
HPATV 10	3.2 (0.9)	4.1 (0.6)	3.0 (0.8)	3.6 (0.8)	-9%	-11%
HPATV 11 (R)	1.1 (0.7)	1.7 (0.7)	1.0 (0.8)	2.3 (0.9)	-9%	39%
HPATV 12 (R)	1.6 (1.1)	2.6 (0.8)	1.3 (1.1)	2.6 (0.9)	-21%	0%
HPATV 13 (R)	1.4 (1.0)	2.0 (1.0)	1.0 (0.9)	2.3 (1.1)	-32%	14%
HPATV 14	4.2 (0.6)	4.3 (0.8)	4.1 (0.7)	4.3 (0.7)	-3%	0%

R = reversed score items

Higher values indicate more positive attitudes towards working with people living with mental illness

Table 3

MICA-4 Response Values (Mean ± SD) Pre and Post Placement for Control and IPP Student Groups

	Pre		Post		% Change	
	Control	IPP	Control	IPP	Control	IPP
MICA-4 1	4.0 (1.0)	4.9 (0.8)	4.4 (1.0)	5.1 (0.9)	11%	3%
MICA-4 2	4.7 (0.6)	5.5 (1.3)	5.2 (1.1)	5.3 (0.6)	11%	-4%
MICA-4 3 (R)	4.4 (0.6)	4.6 (0.6)	4.3 (1.0)	4.7 (0.6)	-2%	1%
MICA-4 4	4.3 (1.2)	4.6 (0.9)	4.6 (1.2)	4.9 (1.2)	6%	5%
MICA-4 5	4.1 (1.0)	5.0 (0.9)	4.1 (1.1)	5.1 (0.8)	2%	1%
MICA-4 6	3.1 (1.0)	3.9 (1.1)	3.6 (1.0)	3.5 (1.2)	14%	-9%
MICA-4 7	3.8 (1.0)	4.3 (1.0)	4.3 (1.2)	4.5 (1.1)	14%	5%

	Pre		Post		% Change	
MICA-4 8	4.9 (0.7)	5.5 (0.7)	5.1 (0.8)	5.4 (0.7)	4%	-1%
MICA-4 9 (R)	4.2 (0.7)	4.5 (0.6)	4.3 (1.3)	4.7 (1.2)	2%	4%
MICA-4 10 (R)	3.1 (1.0)	4.2 (1.0)	3.6 (1.3)	4.1 (0.9)	18%	-1%
MICA-4 11 (R)	4.0 (0.7)	4.5 (0.7)	4.0 (0.8)	4.4 (0.6)	-1%	-3%
MICA-4 12 (R)	2.6 (0.9)	3.2 (1.2)	2.6 (1.4)	3.0 (1.0)	0%	-5%
MICA-4 13	4.1 (0.9)	4.8 (1.1)	4.8 (1.1)	4.6 (0.9)	16%	-3%
MICA-4 14	4.0 (1.0)	4.5 (1.4)	4.3 (1.2)	4.1 (1.2)	7%	-9%
MICA-4 15	5.4 (0.8)	5.7 (0.3)	5.6 (0.7)	5.9 (0.5)	3%	2%
MICA-4 16 (R)	4.2 (0.6)	4.7 (0.4)	4.4 (0.6)	4.8 (0.6)	6%	2%

Table 4

HPATV Subscale Values (Mean ± SD) Pre and Post Placement for Control and IPP Student Groups

	Pre		Post		% Change	
	Control	IPP	Control	IPP	Control	IPP
Care*†	2.2 (0.5)	2.9 (0.6)‡	1.9 (0.6)#	3.0 (0.5)‡	-14%	3%
Culture*†	1.7 (0.7)	2.0 (0.6)‡	1.2 (0.7)#	2.3 (0.7)#‡	-28%	15%
Health*†	3.0 (0.6)	3.4 (0.5)‡	2.6 (0.8)#	3.4 (0.5)‡	-13%	1%

Higher values indicate more positive attitudes towards working with veterans.

* Significant group by time interaction ($p < 0.05$)

† Significant group main effect between control and IPP ($p < 0.05$)

Significantly different to pre timepoint ($p < 0.05$)

#‡ Significantly different to control group ($p < 0.05$)

Table 5

MICA-4 Subscale Values (Mean ± SD) Pre and Post Placement for Control and IPP Student Groups

	Pre		Post		% Change	
	Control	IPP	Control	IPP	Control	IPP
Views of health/social care field and mental illness†	3.7 (0.5)	4.1 (0.6)‡	3.6 (0.8)	4.2 (0.5)‡	-5%	1%
Knowledge of mental illness*†	4.3 (0.6)	4.7 (0.6)‡	4.0 (0.6)#	4.8 (0.6)‡	-9%	2%
Disclosure^	4.4 (1.0)	4.7 (0.9)	4.1 (1.2)#	4.5 (1.0)	-9%	-5%

	Pre		Post		% Change	
Distinguishing mental and physical health*†	4.9 (0.5)	5.0 (0.5)	4.6 (0.6)#	5.1 (0.6)	-7%	2%
Patient care for people with mental illness†	4.2 (0.6)	4.5 (0.5)‡	4.1 (0.8)	4.5 (0.7)‡	-1%	0%

Higher values indicate more positive attitudes towards mental illness and psychiatry.

* Significant group by time interaction ($p < 0.05$)

^ Significant time main effect from pre to post ($p < 0.05$)

† Significant group main effect between control and IPP ($p < 0.05$)

Significantly different to pre timepoint ($p < 0.05$)

‡ Significantly different to control group ($p < 0.05$)

Qualitative findings

Analysis of the focus group data identified three key themes: value of the placement as a professional and personal experience, knowledge gaps and misconceptions and student support.

Value of the placement as a professional and personal experience

Students referred often to the value of the IPP placement experience, both professionally and personally, compared to other placement experiences. For example, while some placements focus on developing exercise programs for family members or friends over a 10-week period, the IPP placement extends over 12 months and allows students to work with clients for a sustained period, providing a unique opportunity for real-world engagement. There was a perception that the placement had purpose and that it provided exposure to a clinically diverse population. Students also perceived that the placement allowed the development of skills that would better prepare them, compared to standard gym-based placements, for what they anticipated to be real-world experiences in their future careers:

> *Yeah. I think I [will] just say it's worthwhile and so important. If I just did gym block, I [would] feel like I was just doing it because to do it for my degree [*sic*], whereas this, I feel like I did it for a purpose, and I did it for a reason.* (S151)

> *Overall, I think it was just like knowing how much value you had on someone else. If you were doing like gym block, you spend 10 weeks with them, and if they're helping you out at the end of the day, family and friends aren't craving for your help. So, knowing that you were making a difference in someone's life who was really benefiting from it was really rewarding.* (S150)

Knowledge gaps and misconceptions

Students described feeling better equipped to work with veterans and first responders following their IPP placement despite being "overwhelmed" by the prospect during their induction. Opportunities to learn more about mental health and wellbeing and military and first responder cultures were viewed as beneficial and seen as missing in the rest of their learning within their degree. There was a "humanising" of participants living with mental ill health and reckoning with the stereotype of veterans and first responders as "scary" instead of being "just general people" (S150):

> *But, yeah, I think I'm definitely more equipped now than what I was when I started. But still, like, I would still be so anxious if I met someone else who had some mental health issues that I'd be like, "Oh [expletive]", but I guess sometimes you just overthink it too much. But, yeah, I think definitely [I am] educated a lot more, that master class that we had helped a lot in terms of knowing the different sort of illnesses you can have and how to best deal with it.* (S109)

> *Maybe if there was an option to do … like a mental health first aid course for this kind of placement. … So whether that's something that the uni could put on for the placement and be like kind of like another induction session, if that's something just to prepare, because I don't feel like with just the sports science or the clinical ex phys [exercise physiology] degree that you would get enough exposure to feel comfortable if someone did rock up in some kind of state.* (S150)

> *Like, if you chucked me in front of the army and told me to do a session with them before [IPP placement], I probably would have cried. Whereas now … we actually went to the army base and did a session there, and I just felt very comfortable around them because I'm like, I've seen people like you before and I've trained with you. … I definitely went from knowing nothing about military to feeling very comfortable in terms of I've sort of had that experience post now where I'm like, yeah, definitely set me up for this.* (S146)

Student support

The concept of support was reflected in multiple ways across the data. Appreciation of the support provided to students by program staff, recognition by students of their underutilisation of supports provided in the program, students's lack of certainty regarding when to access the supports available and the supports flagged as important by students during their placement experience relate to this theme. Students cited staff support as a major reason for choosing to do their placement with the IPP. They also acknowledged staff support as a key enabler to help them successfully manage participants' mental health challenges. Students appreciated the accommodating attitudes of IPP participants and staff regarding their other studies and personal wellbeing, which was perceived to be beneficial for managing the demands of a year-long placement.

> *You build a relationship with someone that's a longer period of time, and you actually have the support of staff to go back and forth with when you weren't sure about certain things. Because I feel like at the start, I was like, I am not equipped to be able to be doing this with actual clients. And so just to know, I guess, that you had the staff support as well, that were going to kind of be guiding you through the program*. (S111)

> *Yeah, they [participants] did, they did acknowledge that you were students. When they knew there was exams coming up, they'd be like, do you need a week off or stuff? ... And I guess for me, when they found out that I'm not from here, they were so understanding when I said I'm going to take a week off cause I'm going home. They understood that*. (S150)

Discussion

The aim of this study was to evaluate the attitudes of students towards veterans and first responders and mental ill health compared to students who completed other placements. The student experience within the IPP placement was also explored. Results from the HPATV questionnaire indicated that IPP placement students demonstrated maintained knowledge and skills for care and health and an increase for culture relative to the control students. The significant group-by-time interaction identified for the culture subscale suggests that the IPP placement experience increased specific knowledge about military history and veteran experiences. Once they had completed their training, IPP students indicated that they felt more comfortable working with veterans compared to non-IPP placement students. These findings are in line with a study by Butler et al. (2023) that found significant improvement in military-specific knowledge and anticipated comfort and self-efficacy to work with military populations in students following a course addressing military culture and the issues facing this population. While this course was of shorter duration (8 weeks) than the IPP and did not incorporate practical experience working with this population, these results support the current findings that military-specific training could potentially be effective in increasing the cultural understanding of health professionals relating to military populations.

The qualitative component of the present study supports these findings, with students describing how their knowledge of veteran and first responder culture had improved, as had their confidence to work with people living with mental health issues. There was, however, a request for more mental health training, which students perceived to be lacking as core learning within their degrees. In addition, it has been identified that health professionals with a lack of understanding and ability to relate to the population-specific issues of military personnel can be a deterrent for veterans seeking healthcare and negatively impact the outcomes of treatment (Ross et al., 2023). As a result, an understanding of culture specific considerations has been identified as an essential requirement of effective clinical practice within military populations (Lane & Wallace, 2020). While the HPATV questionnaire is tailored towards the specific cultural

understanding of military personnel, understanding of cultural context is an issue common among high trauma exposure occupations more broadly, with first responders reporting frustration and exhaustion when seeking effective healthcare due to the lack of understanding of cultural context (Arjmand et al., 2024; Jones et al., 2020).

With regard to the health and care subscales of the HPATV questionnaire, relative to the control students, the IPP students reported feeling more comfortable discussing PTSD symptoms with veterans and felt they had sufficient knowledge of PTSD triggers. Similar to the understanding of occupational culture discussed previously, sufficient knowledge of PTSD triggers is essential for effective clinical outcomes and to facilitate military personnel receiving healthcare. Health professionals' lack of understanding of population-specific issues, such as PTSD triggers, has also been reported as a source of frustration for military personnel and a barrier to care (Ein et al., 2024).

Within the care subscale, IPP students reported an understanding of the resources available to veterans and the increased likelihood of discussing these with veterans. Again, these elements are well reported in the literature as barriers to receiving healthcare for military populations, as these populations report receiving a lack of information regarding access to healthcare, having difficulty navigating the healthcare system and being unaware of what treatments are available (Cheney et al., 2018; Ein et al., 2024; Hitch et al., 2023; Ross et al., 2023). This finding highlights the importance of health professionals being able to inform military personnel about available services and how to access them.

The nature of the significant interactions found in this study suggests that at pre placement, the control students perceived that they had more knowledge and skill than they subsequently perceived post placement. Across the authors' combined experience of more than 40 years supervising students, it is not unusual to find that individuals who initially feel knowledgeable in an area then reflect post training and realise that there are gaps in their knowledge. Whilst the experience of IPP placement training confirmed knowledge and skills to support veteran care and health, the alternative placement options did not.

The group-by-time interactions observed for the MICA-4 are similar in nature, with a small improvement for IPP students compared to a significant decline in the control group post placement for the knowledge of mental illness and distinguishing mental and physical health subscales (Gabbidon et al., 2013). While health professionals working in the fields of CEP, ESS and HM are not responsible for providing specific psychological treatment to individuals with mental ill health, the importance of understanding mental health conditions and being able to adapt services to accommodate these issues is essential. This is particularly apparent with the increasing evidence supporting the use of exercise interventions in the recovery of individuals with mental ill health and, therefore, the role these health professionals play in this process (Fibbins et al., 2019; Lederman et

al., 2016). These findings indicate that the IPP students perceive a greater understanding of mental health issues and the role students can play as health professionals when working with this population compared to the perceptions of their peers who did not participate in the IPP placement.

The knowledge of mental illness and understanding of treatment, symptoms and available services indicated by the MICA-4 questionnaire items is of great importance in military and first responder populations due to the negative beliefs commonly held regarding treatment for mental health (Cheney et al., 2018; Possemato et al., 2018). It is often reported that these populations feel shame about seeking treatment, believing it will impact upon how they are perceived by family and friends and on future employment (Tsai et al., 2016), along with doubt over the efficacy of available treatment options. Previous work has identified that patients experiencing mental ill health have reported feeling stigmatised in their relationship with health professionals, which contributes to the negative connotations reported surrounding treatment and the desire to seek necessary healthcare (Gabbidon et al., 2013). Such beliefs provide further barriers to seeking treatment and highlight the importance that health professionals with education in this space can have in facilitating individuals to access necessary care/services. Furthermore, an understanding of mental health issues also allows health professionals within the fields of CEP, ESS and HM to individualise exercise prescription and delivery to the needs of these individuals to promote adherence and better outcomes (Fibbins et al., 2019). This emphasises the importance of the attitudes of health professionals towards military personnel and first responders and those living with mental ill health for optimising the health professional–patient relationship to achieve positive treatment outcomes (APA, 2017).

The quantitative results and interpretation of the significant interactions were reinforced by the qualitative data, with students commenting on the increased knowledge and confidence they have working with veteran and first responder populations, and those with mental health conditions, after completing their IPP placement. The qualitative data also showed that students felt more prepared to engage with veterans and first responders and other people living with mental health issues after their IPP placement. The placement provided students with valuable opportunities to engage positively with these populations and learn about mental health conditions and the unique cultures of military and first responder communities. Working closely with participants also humanised veterans and first responders, allowing students to move beyond stereotypes and see veterans and first responders as regular people. Similar findings related to the need for training in military culture and military-specific mental health issues were described by master's-level social work and nursing students following clinical placements within services for veterans and their families (Linn et al., 2015). Students in the current study suggested that integrating additional mental health first aid courses into the placement preparation could further enhance their confidence and competence in working with

these populations. Overall, the placement experience made students feel better equipped to work with and effectively support the mental health and wellbeing of veterans and first responders.

Another theme identified from the focus group data was the staff support provided to students throughout the placement. This is a key factor that likely differs from other placement and training programs researched to date, with ongoing support available throughout the 12-month placement duration. Students highlighted the importance of support from program staff, both in terms of their availability and the quality of assistance provided. The staff's role was instrumental in boosting students' confidence and acted as an enabler, whereby students could obtain constructive feedback and ask practical questions throughout their placement. However, students also recognised that they underutilised available supports and were sometimes uncertain about when and how to access them, indicating a need for clearer guidance and encouragement for students to seek help proactively. These are important considerations for building health professional training curriculum and processes incorporating support that allows specific student concerns to be addressed, as required, on an individualised basis.

While the findings suggest that this type of placement better equips future allied health professionals to work with veteran and first responder populations, there are some limitations to the study. Students chose to do the IPP placement rather than being allocated to the placement, which may introduce selection bias. The focus groups being facilitated by IPP staff who also supervised students during their placements may have been a cause for concern, however ensuring that they were undertaken after the students had finished their placements was intended to reduce any perceived pressure or power imbalances. Including non-IPP placement students in the qualitative analysis may have provided greater insight into the role of the IPP in developing future allied health professionals to work effectively with veterans and first responders and help to confirm the interpretation of the quantitative findings.

Conclusion

The IPP provides a unique placement experience for developing allied health professionals. In a first-of-its-kind analysis of the HPATV and MICA-4 in an Australian undergraduate student population, this study demonstrates that students' knowledge of military and first responder culture, students' attitudes towards working with veterans and first responders and students' capacity to work with people living with mental health issues was enhanced compared to students who did not undergo this placement experience and its associated training. Education and training for future allied health professionals should include knowledge and skill development relevant to military and first responder culture and working with members of this population with mental health concerns. Such approaches will not only better equip graduating allied health professionals to work effectively in this space but will also ensure health services are

staffed with appropriately skilled health professionals, contributing to a reduction in known barriers to healthcare access in military and first responder populations.

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References

American Psychological Association (APA). (2017). *Clinical practice guideline for the treatment of posttraumatic stress disorder (PTSD) in adults*. https://www.apa.org/ptsd-guideline/ptsd.pdf

Arjmand, H.-A., O'Donnell, M. L., Putica, A., Sadler, N., Peck, T., Nursey, J., & Varker, T. (2024). Mental health treatment for first responders: An assessment of mental health provider needs. *Psychological Services*, *21*(3), 489–499. https://doi.org/10.1037/ser0000832

Australian Bureau of Statistics (ABS). (2022). *Service with the Australian Defence Force: 2021 census*. https://www.abs.gov.au/statistics/people/people-and-communities/service-australian-defence-force-census/latest-release#data-downloads

Australian Government Productivity Commission. (2019). *Inquiry report: A better way to support veterans*. https://www.pc.gov.au/inquiries/completed/veterans/report/veterans-overview.pdf

Berger, W., Coutinho, E. S. F., Figueira, I., Marques-Portella, C., Luz, M. P., Neylan, T. C., Marmar, C. R., & Mendlowicz, M. V. (2012). Rescuers at risk: A systematic review and meta-regression analysis of the worldwide current prevalence and correlates of PTSD in rescue workers. *Social Psychiatry and Psychiatric Epidemiology*, *47*(6), 1001–1011. https://doi.org/10.1007/s00127-011-0408-2

Beyond Blue. (2018). *Answering the call: National survey*. https://apo.org.au/node/206886

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, *3*(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

Butler, L. D., Linn, B. K., Ingraham, L. M., & McClain-Meeder, K. (2023). Teaching military/veteran cultural competence for working with veterans and military families: Effects on student knowledge, self-efficacy, comfort, and behavioral intentions. *Journal of Military Social Work and Behavioral Health Services*, *12*(1), 86–95. https://doi.org/10.1080/21635781.2023.2293903

Cheney, A. M., Koenig, C. J., Miller, C. J., Zamora, K., Wright, P., Stanley, R., Fortney, J., Burgess, J. F., & Pyne, J. M. (2018). Veteran-centered barriers to VA mental healthcare services use. *BMC Health Services Research*, *18*, Article 591. https://doi.org/10.1186/s12913-018-3346-9

Ein, N., Gervasio, J., St. Cyr, K., Liu, J., Baker, C., Nazarov, A., & Richardson, J. D. (2024). A rapid review of the barriers and facilitators of mental health service access among veterans and their families. *Frontiers in Health Services*, *4*, Article 1426202. https://doi.org/10.3389/frhs.2024.1426202

Fibbins, H., Lederman, O., Morell, R., Furzer, B., Wright, K., & Stanton, R. (2019). Incorporating exercise professionals in mental health settings: An Australian perspective. *Journal of Clinical Exercise Physiology*, *8*(1), 21–25. https://doi.org/10.31189/2165-6193-8.1.21

Gabbidon, J., Clement, S., van Nieuwenhuizen, A., Kassam, A., Brohan, E., Norman, I., & Thornicroft, G. (2013). Mental illness: Clinicians' Attitudes (MICA) Scale: Psychometric properties of a version for healthcare students and professionals. *Psychiatry Research*, *206*(1), 81–87. https://doi.org/10.1016/j.psychres.2012.09.028

Garcia, H. A., Finley, E. P., Ketchum, N., Jakupcak, M., Dassori, A., & Reyes, S. C. (2014). A survey of perceived barriers and attitudes toward mental health care among OEF/OIF veterans at VA outpatient mental health clinics. *Military Medicine*, *179*(3), 273–278. https://doi.org/10.7205/MILMED-D-13-00076

Gibbs, C., Murphy, B., Hoppe, K., Clarke, P., Ratnaike, D., & Lovelock, H. (2020). Enhancing the capacity of the Australian health care workforce to support veterans' mental health: A collaborative interdisciplinary approach. *Military Medicine*, *185*(3–4), 499–505. https://doi.org/10.1093/milmed/usz188

Godier-McBard, L. R., Wood, A., Kohomange, M., Cable, G., & Fossey, M. (2023). Barriers and facilitators to mental healthcare for women veterans: A scoping review. *Journal of Mental Health*, *32*(5), 951–961. https://doi.org/10.1080/09638237.2022.2118686

Gross, G. M., Spiller, T. R., Ben-Zion, Z., Rubenstein, A., Pietrzak, R. H., Duek, O., Hoff, R., & Harpaz-Rotem, I. (2024). Unraveling PTSD: Symptom cluster change during and 1 year after veterans' residential PTSD treatment. *Psychological Trauma: Theory, Research, Practice, and Policy*. Advance online publication. https://doi.org/10.1037/tra0001734

Gupta, M. A. (2013). Review of somatic symptoms in post-traumatic stress disorder. *International Review of Psychiatry*, *25*(1), 86–99. https://doi.org/10.3109/09540261.2012.736367

Hitch, C., Toner, P., & Armour, C. (2023). Enablers and barriers to military veterans seeking help for mental health and alcohol difficulties: A systematic review of the quantitative evidence. *Journal of Health Services Research & Policy*, *28*(3), 197–211. https://doi.org/10.1177/13558196221149930

Jones, R., Jackson, D., Ranse, J., Arena, A., Clegg, L., Sutton, C., Gayed, A., Rice, K., & Usher, K. (2024). A scoping review of trauma, mental health and first responders in Australia. *International Journal of Mental Health Nursing*, *33*(6), 1817–1839. https://doi.org/10.1111/inm.13397

Jones, S., Agud, K., & McSweeney, J. (2020). Barriers and facilitators to seeking mental health care among first responders: "Removing the darkness". *Journal of the American Psychiatric Nurses Association*, *26*(1), 43–54. https://doi.org/10.1177/1078390319871997

Kerr, K., Romaniuk, M., McLeay, S., Khoo, A., Dent, M. T., & Boshen, M. (2018). Increased risk of attempted suicide in Australian veterans is associated with total and permanent incapacitation, unemployment and posttraumatic stress disorder severity. *Australian & New Zealand Journal of Psychiatry*, *52*(6), 552–560. https://doi.org/10.1177/0004867417718945

Kleim, B., & Westphal, M. (2011). Mental health in first responders: A review and recommendation for prevention and intervention strategies. *Traumatology*, *17*(4), 17–24. https://doi.org/10.1177/1534765611429079

Knopf-Amelung, S., Brommelsiek, M., Peterson, J. A., Roman, Z., & Graybill, T. L. (2018). Developing a measure for health professionals' attitudes toward veterans. *The Journal of Nursing Education and Practice*, *8*(7), 60–67. https://doi.org/10.5430/jnep.v8n7p60

Lane, J., & Wallace, D. (2020). Australian military and veteran's mental health care Part 1: An introduction to cultural essentials for clinicians. *Australasian Psychiatry*, *28*(3), 267–269. https://doi.org/10.1177/1039856220901470

Lederman, O., Grainger, K., Stanton, R., Douglas, A., Gould, K., Perram, A., Baldeo, R., Fokas, T., Nauman, F., & Semaan, A. (2016). Consensus statement on the role of accredited exercise physiologists within the treatment of mental disorders: A guide for mental health professionals. *Australasian Psychiatry*, *24*(4), 347–351. https://doi.org/10.1177/1039856216632400

Lee, J., Sanders, K. M., & Cox, M. (2014). Honoring those who have served: How can health professionals provide optimal care for members of the military, veterans, and their families? *Academic Medicine*, *89*(9), 1198–1200. https://doi.org/10.1097/ACM.0000000000000367

Linn, B., Butler, L., Bruce, S., McClain-Meeder, K., & Meeker, M. (2015). On working with veterans: What social work and nursing students need to know. *Journal of Military and Veterans Health*, *23*(3), 5–11. https://pure.psu.edu/en/publications/on-working-with-veterans-what-social-work-and-nursing-students-ne

McFarlane, A. C. (2010). The long-term costs of traumatic stress: Intertwined physical and psychological consequences. *World Psychiatry*, *9*(1), 3–10. https://doi.org/10.1002/j.2051-5545.2010.tb00254.x

McGuire, A., Dobson, A., Mewton, L., Varker, T., Forbes, D., & Wade, D. (2015). Mental health service use: Comparing people who served in the military or received Veterans' Affairs benefits and the general population. *Australian and New Zealand Journal of Public Health*, *39*(6), 524–529. https://doi.org/10.1111/1753-6405.12431

Mensink, B., van Schagen, A., van der Aa, N., & Ter Heide, F. J. J. (2022). Moral injury in trauma-exposed, treatment-seeking police officers and military veterans: Latent class analysis. *Frontiers in Psychiatry*, *13*, Article 904659. https://doi.org/10.3389/fpsyt.2022.904659

Naturale, A., & Pulido, M. (2012). Helping the helpers: Ameliorating secondary traumatic stress in disaster workers. In J. Framingham & M. Teasley (Eds.), *Behavioral health response to disasters* (pp. 51–69). CRC Press. https://cectresourcelibrary.info/wp-content/uploads/2021/07/Helping-the-Helpers-Final-2-3-10.pdf

O'Toole, B. I., Marshall, R. P., Grayson, D. A., Schureck, R. J., Dobson, M., Ffrench, M., Pulvertaft, B., Meldrum, L., Bolton, J., & Vennard, J. (1996). The Australian Vietnam veterans health study: II. Self-reported health of veterans compared with the Australian population. *International Journal of Epidemiology*, *25*(2), 319–330. https://doi.org/10.1093/ije/25.2.319

Parliament of Australia. (2018). *The role of Commonwealth, state and territory governments in addressing the high rates of mental health conditions experienced by first responders, emergency service workers and volunteers*. Retrieved June 20, 2024, from https://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Education_and_Employment/Mentalhealth

Petrie, K., Milligan-Saville, J., Gayed, A., Deady, M., Phelps, A., Dell, L., Forbes, D., Bryant, R. A., Calvo, R. A., & Glozier, N. (2018). Prevalence of PTSD and common mental disorders amongst ambulance personnel: A systematic review and meta-analysis. *Social Psychiatry and Psychiatric Epidemiology*, *53*(9), 897–909. https://doi.org/10.1007/s00127-018-1539-5

Phelps, A. J., Varker, T., Metcalf, O., & Dell, L. (2017). What are effective psychological interventions for veterans with sleep disturbances? A rapid evidence assessment. *Military Medicine*, *182*(1–2), e1541–e1550. https://doi.org/10.7205/MILMED-D-16-00010

Pietrzak, R. H., Goldstein, M. B., Malley, J. C., Johnson, D. C., & Southwick, S. M. (2009). Subsyndromal posttraumatic stress disorder is associated with health and psychosocial difficulties in veterans of Operations Enduring Freedom and Iraqi Freedom. *Depression and Anxiety*, *26*(8), 739–744. https://doi.org/10.1002/da.20574

Possemato, K., Wray, L. O., Johnson, E., Webster, B., & Beehler, G. P. (2018). Facilitators and barriers to seeking mental health care among primary care veterans with posttraumatic stress disorder. *Journal of Traumatic Stress*, *31*(5), 742–752. https://doi.org/10.1002/jts.22327

Post, D., Baker, A., Milanese, S., Freegard, S., & Parfitt, G. (2023a). The physical, psychological, and social impacts of participation in the Invictus Pathways Program: A qualitative analysis of veterans' perceptions and experiences. *PloS One*, *18*(10), Article e0287228. https://doi.org/10.1371/journal.pone.0287228

Post, D., Baker, A., Milanese, S., Freegard, S., & Parfitt, G. (2023b). Process evaluation of the Invictus Pathways Program. *PloS One*, *18*(11), Article e0293756. https://doi.org/10.1371/journal.pone.0293756

Rikkers, W., & Lawrence, D. (2021). Mental health help-seeking experiences and service use among Australian first responders. *Australian Journal of Psychology*, *73*(2), 125–133. https://doi.org/10.1080/00049530.2021.1882271

Ross, M. H., Prguda, E., & Setchell, J. (2023). Exploring the experiences of Australian veterans with accessing healthcare: A qualitative study. *Journal of Veterans Studies*, *9*(1), 61–72. https://doi.org/10.21061/jvs.v9i1.399

Shi, S., Almklov, E., Afari, N., & Pittman, J. O. (2023). Symptoms of major depressive disorder and post-traumatic stress disorder in veterans with mild traumatic brain injury: A network analysis. *PloS One*, *18*(5), Article e0283101. https://doi.org/10.1371/journal.pone.0283101

Syed, S., Ashwick, R., Schlosser, M., Jones, R., Rowe, S., & Billings, J. (2020). Global prevalence and risk factors for mental health problems in police personnel: A systematic review and meta-analysis. *Occupational and Environmental Medicine*, *77*(11), 737–747. https://doi.org/10.1136/oemed-2020-106498

Tsai, J., Sippel, L. M., Mota, N., Southwick, S. M., & Pietrzak, R. H. (2016). Longitudinal course of posttraumatic growth among US military veterans: Results from the National Health and Resilience in Veterans Study. *Depression and Anxiety*, *33*(1), 9–18. https://doi.org/10.1002/da.22371

Varker, T., Metcalf, O., Forbes, D., Chisolm, K., Harvey, S., Van Hooff, M., McFarlane, A., Bryant, R., & Phelps, A. (2018). Research into Australian emergency services personnel mental health and wellbeing: An evidence map. *Australian & New Zealand Journal of Psychiatry*, *52*(2), 129–148. https://doi.org/10.1177/0004867417738054

Vest, B. M., Kulak, J. A., & Homish, G. G. (2019). Caring for veterans in US civilian primary care: Qualitative interviews with primary care providers. *Family Practice*, *36*(3), 343–350. https://doi.org/10.1093/fampra/cmy078

Waller, M., Treloar, S. A., Sim, M. R., McFarlane, A. C., McGuire, A. C., Bleier, J., & Dobson, A. J. (2012). Traumatic events, other operational stressors and physical and mental health reported by Australian Defence Force personnel following peacekeeping and war-like deployments. *BMC Psychiatry*, *12*, Article 88. https://doi.org/10.1186/1471-244X-12-88