New Zealand Veterans' Vulnerability to Alcohol Misuse

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Executive Summary

The following report summarises a four-study research project that aimed to 1) Segment New Zealand (NZ) veterans based on alcohol harm and risk factors; 2) Identify intervention points inside and outside of service to mitigate this vulnerability; and 3) Recommend future interventions. The research project took a participatory approach with an aim to hear veteran voices with the expectation that veterans are experts on themselves and their own behaviour. Thus, we used co-design with veterans and prioritised veteran ideas for effective interventions.

Background: Both in New Zealand and overseas, alcohol use among military personnel and veterans is well-established as an ongoing public health concern. Despite the prevalence of harm related to alcohol consumption among veterans, there is a notable lack of targeted interventions and complete support programs that address this in the overall context of returning to civilian life. Existing programs primarily target specific demographics such as middle-aged male veterans while neglecting the diverse needs of other groups including women, ethnic minorities, and others. No interventions specifically tailored to the NZ context were identified in the extant literature. This underscores the urgent need to fully grasp the range of factors that contribute to alcohol harm within the NZ veteran context and take a holistic approach to identify avenues for interventions.

Study 1: A comprehensive literature search was undertaken to identify studies reporting on programs that support veterans to moderate alcohol consumption. Eighteen studies (reported in 36 papers) were retained and analysed to examine the characteristics and effectiveness of these programs. The analysis examined each study individually, and then compared them to an existing holistic framework designed to support successful military-to-civilian transition. The findings indicate physical, mental, social and employment/financial health were considered by many programs, although rarely concurrently. Alcohol use was not always measured, hindering the ability to determine the effectiveness of programs. Despite this, the review supports the need for programs that are holistic and provide care across a long timeframe. Cultural and spiritual considerations are areas that may require further attention in future veteran programs.

Study 2: Undertook 25 interviews with post-Vietnam NZDF veterans and their whānau. After thematic analysis, 7 key themes were found and grouped according to the different layers of the socio-ecological model outlined by Trego and Wilson (2021). The themes identified showed that on-base bars were 1) social hubs; and alcohol was a 2) social lubrication; but that a 3) duty of care was shown from superiors to subordinates to provide “safe” drinking environments for emotional release. However, 4) consequences of reporting drinking levels honestly, or asking for help with alcohol consumption increased barriers to seeking help. Excessive alcohol consumption contexts reinforced drinking as a major 5) emotion regulation strategy, the use of alcohol for emotion regulation later impacted interactions with 6) Civvy street, and 7) family. Duty of care in military drinking environments is presented as a new theme to the literature.

Study 3: Was an online survey of 328 former NZDF military personnel which asked about their alcohol use and other pertinent personal, structural and cultural factors. The aim of this study was to better understand what impact, if any, experience in the military (including drinking culture), attitudes towards support services offered, and emotional regulation strategies have on harmful alcohol consumption. From the data, a three-cluster solution found significant differences in harmful alcohol use across each group. "Problematic Drinkers" exhibit the most severe drinking issues, strongly influenced by negative perceptions of military drinking culture and mental health services, coupled with adverse childhood experiences. The

"Harmful but Coping" group engages in harmful drinking but demonstrates healthier emotional regulation strategies and more positive attitudes towards support services. The largest group, "Not Harmful," manages to maintain low-risk drinking behaviours and holds the most favourable views on support accessibility and mental health services.

Study 4: Involved three co-design workshops with veterans and one with Defence health professionals in NZ. Veterans designed intervention programs to decrease alcohol harm. Analysis compared perspectives obtained from veterans and health professionals with existing well-being and transition frameworks. Findings supported recommendations within those frameworks for strategies to support mental, physical, social/family and spiritual well-being; as well as finding meaningful work or employment. Themes emerged beyond those frameworks including a need for programs to manage loss of identity, lack of trust, scepticism and stigma, and a desire for connected records and networked services.

Recommendations: Overall, this project provides an understanding of the contributing factors and effects of alcohol use for NZ veterans and their whānau. Incorporating the findings of this research into intervention programs serves to mitigate the negative effects of alcohol misuse on mental, physical, and social health outcomes. This can then inform solutions that address alcohol harm reduction alongside the personal, familial, and social aspects of veteran health. Solutions include:

Providing alcohol awareness and emotional regulation training during basic training, periodically throughout the military career, post-deployment, in transition to civilian life, and for veterans, as well as their whānau. Emotion regulation training should be developed based on the segments identified here and taught in a way that veterans can apply it to their everyday lives and civilian interactions, not just applied to the defence forces' working environment.

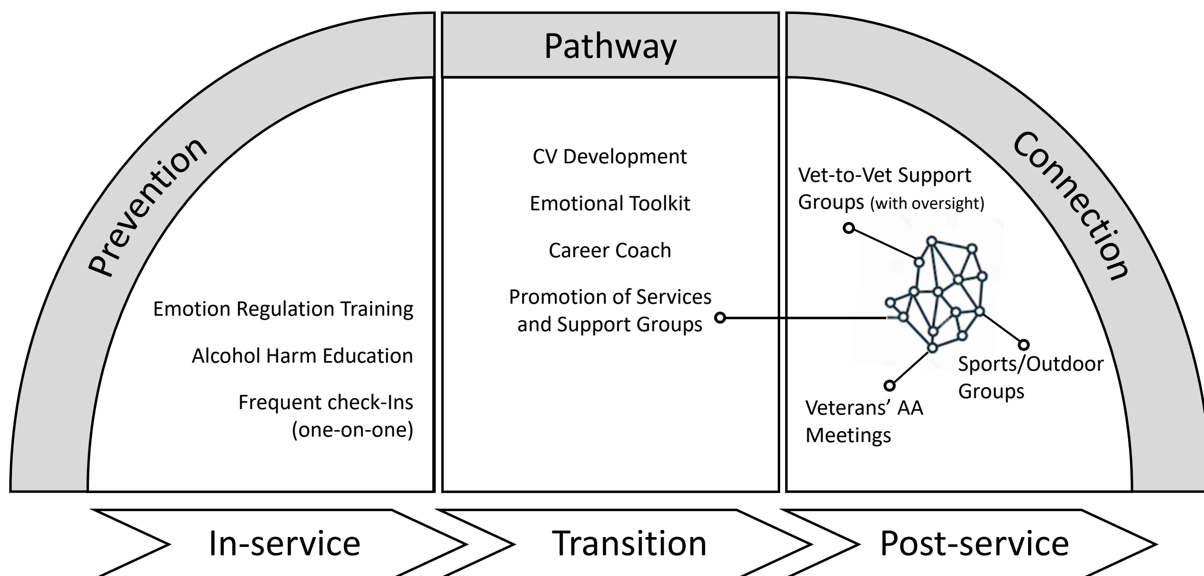
Creating a veteran network that supports transition - connecting veterans to a network of new and existing services to make it easier to obtain support. We suggest this could be achieved through a "one-stop-shop" webpage of links to services, and support groups, referral to clinical services, and connection with employers or volunteer groups. This could be hosted on the Veterans' Affairs website or RSA website.

Future Research: The next stage of research needed for this area is to develop these recommendations into real-life interventions. Study 1 would aim to 1) Co-Develop a program prototype (Phase 1) and 2) Pretest and evaluate the prototype (Phase 2). We suggest that the Design thinking method be used to co-develop a pilot intervention program (Phase 1). The program then would be piloted with a small group of veterans for 8 weeks, with pre-, during and post-intervention evaluations to measure any significant change in participants' health literacy/knowledge of alcohol harm, actual behavioural measures, attitudes, behavioural intentions, and engagement with the intervention materials. Study 2 would aim to develop and test a one-stop-shop webpage and 1) Conduct, search for and collate veteran support groups and services (Phase 1) and 2) Develop and conduct user testing of the webpage along with search engine optimisation to assist awareness of the page (Phase 2). Phase 1 requires web scraping and manual searches of the internet for available veteran support groups and services. This would be combined with direct contact with key veteran services to collate and finalise details for veteran support groups and services. Phase 2 would develop the website with descriptions, contacts and links to support groups and services. It would also conduct user testing during development to ensure all age groups, abilities and skill sets can easily navigate the page, along with ensuring search engine optimisation and marketing communications to raise awareness of the webpage.

Recommendations

This research highlights the impact of transition from military service on post-service well-being for a veteran and their family/whānau. Taking a career-spanning view of the transition period and a holistic approach to services is recommended as a means to prevent issues arising with alcohol use prior to separation. This approach will ensure ongoing support for those post-service. A holistic approach encourages the involvement of others (family, peers) in key phases of transition, which provides social support that veterans are accustomed to as a result of team-based military structures, but also fosters the establishment of new purposeful connections within civilian society.

The diagram below shows specific interventions developed by veterans in this research. These include interventions throughout the military career, including transition and post-service.



Overall, based on evidence from this research we have two major recommendations:

1. Instilling positive behaviours early in the military career: This can be achieved through alcohol awareness and emotion regulation training activities. Also, ensuring regular touch points to maintain awareness and the ongoing benefits of training. Providing such training during basic training, post-deployment, and periodically throughout the person's service life would ensure a thorough understanding and use of such strategies.
    - Such training could be developed based on the three major segments identified in this research.
    - Health promotion material, such as ongoing communications, brochures, and online refresher modules, can support the continued use of these strategies.
    - While in transition to civilian life, veterans should be offered refresher courses to aid them through the stresses associated with this phase in their career and link these skills to civilian life.

2. Promote the use of service networks after leaving the military: Whilst in service, personnel have access to the military health system, which provides care, and referral through the system. On separation, personnel are required to re-learn and use the civilian health and support system and are often reluctant to seek help. It is recommended that a well promoted network of services is developed, making it easier for veterans to identity services and subsequently increase their feeling of competence as they. navigate transition.
    - There are further practical implications of this work related to the creation of a veteran network that supports transition. The focus should be on developing and connecting veterans to a network of new and existing services to make it easier to obtain support.
    - We suggest this could be achieved through a "one-stop-shop" webpage of links to services, and support groups, referral to clinical services, and connection with employers or volunteer groups. This could be hosted on the Veterans' Affairs website or RSA website. It is essential that this webpage is easy to find and navigate, as well as marketed so there is high awareness that it exists.

Further to the specific major recommendations above, a list of potential interventions based on the broader findings are provided below.

	Health Promotion Interventions to decrease alcohol harm
Policy	Decrease opening hours of bars and increase opening hours of other forms of entertainment on base. Address the drinking culture on base that is perceived by some military personnel and set social norms that are less harmful in the long run.
Training	Include general emotion regulation training in basic training, post-deployment, and transition phases of an enlisted person's career, and also periodically throughout. Offer emotion regulation training modules directly to veterans and their families for preparation and dealing with civilian life. Increase training in social and communications skills for new recruits.
Service Innovation	Provide a greater variety of avenues to ask for help. This can include anonymous help both whilst in service and outside. Have greater transparency and promotion of available services for veterans, when struggling with alcohol harm. Increase entertainment, bonding, and camaraderie building opportunities for veterans through co-design, that do not include alcohol.
Social Marketing/ Health Promotion	Use champions and health promotion/marketing techniques to help destigmatise the use of support services to personnel. Provide ongoing marketing communications relating to the use (application) of emotion regulation strategies for enlisted service-people and veterans.

Background

> ***"But at the end of the day, why are people going for it? Why are people drinking to excess? Why are they doing these things?...Fix the problems that are causing the excessive drinking. " – Participant 4, Study 2.***

Both in New Zealand and overseas, alcohol use among military personnel and veterans is well-established as an ongoing public health concern (Bohnert et al., 2012; Doherty et al., 2017). Despite the longstanding prevalence of alcohol misuse among veterans (Collins, 1998; Jelinek, 1984; Meadows et al., 2023), there is a notable lack of targeted interventions and complete support programs that address alcohol misuse in the overall context of returning to civilian life. Existing programs often focus on education and information provision while overlooking the importance of systemic and theory-informed interventions (see Study 1). Furthermore, these programs primarily target specific demographics such as middle-aged, male veterans while neglecting the diverse needs of other groups, such as women (Carlson et al., 2013). This underscores the urgent need to fully grasp the factors contributing to alcohol misuse within military culture and its effects on veterans' transition into civilian life.

Previous research has focused on US, UK, and Australian personnel who face vastly different experiences of military service than NZ personnel (Fear et al., 2007; Goodell et al., 2018; Hamilton, 2015; Langhinrichsen-Rohling et al., 2011). Equally, while alcohol use and treatment of harmful drinking has been studied for current personnel in other countries finding links to Post-Traumatic Stress Disorder (PTSD), mental health, and physical health (Fear et al., 2007; Langhinrichsen-Rohling et al., 2011), the vulnerability created by the move from a highly structured service environment to less structured civilian life has not been sufficiently addressed in NZ. Effects for both veterans and their whānau are missing, as well as areas for alcohol-related intervention, such as during transition programs. This goes beyond currently offered mental resilience resources for personnel, veterans, and their whanau (www.health.nzdf.mil.nz). Such targeted resources in transition and/or training programs are vital as veterans are unlikely to ask for help (such as from veterans' health administration services) due to stigma and concerns about confidentiality and negative repercussions associated with seeking care for alcohol abuse (Bohnert et al., 2012; Osilla et al., 2018).

In many cases, heavy alcohol consumption within military settings has become normalised (Meadows et al., 2023) as a way to cope with the emotional stresses and challenges of military service (see Study 1, Study 2). Various demographic factors such as gender, family issues like divorce or separation, lower income, and lower levels of education have been previously linked to increased alcohol consumption among veterans (Goodell et

al., 2018). Notably, PTSD is strongly associated with hazardous drinking, with many veterans reporting using alcohol to self-manage PTSD symptoms (Carter et al., 2011). Female veterans may also turn to alcohol as a coping mechanism following military sexual trauma and other forms of abuse.

When veterans return to civilian life, they often experience tension between who they knew themselves to be as a military person and who they are now in society, which can lead to feelings of being misunderstood and disrespected (Ahern et al., 2015). This frequently contributes to a sense of disconnection and alienation upon transitioning into civilian society, in many cases leading to increased alcohol use. This is also true of older veterans, who have built their identity around different values and learned different skills that are not necessarily needed in civilian life, as such, some may be less competent in social situations and may be unable to find jobs.

Alcohol misuse can further contribute to emotional or physical abuse within relationships and, in severe cases, lead to divorce (Ossila et al., 2018). Despite the critical role of partners and families in supporting veterans during the transition process, their needs are often overlooked, placing additional strain on familial relationships. While prior research has established that alcohol misuse among veterans can have profound implications for marital satisfaction and family well-being (Osilla et al., 2018), there remains a gap for intervention co-design that includes family members in intervention development.

According to Hoge et al., (2004; 2006), participation in transition services and help-seeking rates among veterans is often less than 50%. Although there are multiple studies assessing the effectiveness of specific transition programs (for example Yellow Ribbon Reintegration, Battlemind, and Thinking Forward), lack of participation due to stigma is still a prevalent issue among military veterans.

Given the context above, understanding and addressing alcohol use among military personnel and veterans during reintegration requires a comprehensive and nuanced approach, which relies on the voice of veterans themselves. The following research summary reports on the complex interplay of factors which contribute to alcohol misuse and its impact on veterans' well-being and transition outcomes. These findings then inform recommendations for the development of more effective interventions and support programs that equally consider veterans' individual, familial, and social well-being.

We aim to address the need to transition veterans effectively and safely from service to civilian life by understanding their potential vulnerability to alcohol misuse. The report includes a summary of findings from four studies - literature review, interviews, survey, and co-design workshops before providing recommendations for future research.

Research Summary

Research design and ethical approval

Following a systematic literature review of previous (international) interventions, New Zealand veterans and their whānau were interviewed to identify effects of alcohol on transitioning to civilian life and to identify

characteristics of New Zealand veterans who may be particularly vulnerable to alcohol misuse. The outcome of these first two stages shaped the survey which aimed to segment veterans based on their level of risk for harmful effects of alcohol. This enabled the identification of intervention points inside and outside of service to mitigate this potential vulnerability. Co-design workshops with veterans and experts then provided recommendations for future solutions.

All studies involving data collection gained ethical approval. Study 2 and 3 gained ethical approval from the University of Canterbury Human Ethics Committee under References: HREC 2021/43 and HREC 2023/102 respectively. Study 4 gained ethical approval from the University of Canterbury Human Ethics Committee, Griffith University Ethics Committee and NZDF Organisational Research approval to conduct research under Reference numbers *HREC 2023/89; GU 2023/873; and Org RESEARCH 2023/22.*

Study 1: The case for care - A systematic review of alcohol interventions for veteran populations

Introduction

Alcohol consumption by veterans has been observed to be higher than civilians in many nations (Na et al., 2023; Rhead et al., 2022; Selman et al., 2020), which has negative outcomes for veterans across many areas of their lives. Reasons for use are numerous and varied, and many are the results of experiences throughout the life span. Adverse childhood experiences before entering the forces can play a part (Young et al., 2006), as can difficult or traumatic experiences within service (Creech & Borsari, 2014; Evans et al., 2018; Kiernan et al., 2016; Rodriguez et al., 2023). A culture of alcohol consumption exists within the military internationally, where consumption is normalised as a coping mechanism, as well as an integral part of socialising, and part of military tradition (Ames & Cunradi, 2004; Hamilton, 2011; Watterson et al., 2021; Young et al., 2018). The military environment has also been observed to provide easy access to alcohol (Ames & Cunradi, 2004; Hamilton, 2011). Upon leaving the services, personnel must adjust to a new life (Wigham et al., 2017). Veterans' military identities, values and skills are not as applicable in civilian life, which can leave them feeling less competent in social and employment situations (Romaniuk et al., 2023; Smith-Osborne, 2009). Some use alcohol to resolve these feelings (Demers, 2011; Creech & Borsari, 2014; Demers, 2011; Reddy et al., 2014). The prevalence of alcohol misuse by veterans indicates a need for effective programs to reduce the potential for alcohol harm.

Examining previous veteran programs may identify critical success factors. Previous reviews have examined brief alcohol interventions (recommended by WHO for the general population) finding they were not as effective with the veteran population (Wigham et al., 2017). Other researchers have examined the effectiveness of alcohol interventions among serving personnel (Kazemi et al., 2013; Watterson et al., 2021), but these reviews did not include veterans. By undertaking a systematic review of veteran programs that aim to reduce alcohol consumption, information can be gathered to assist in the design of future programs. Therefore, the aims of this review were i) to examine alcohol reduction programs conducted with veterans, (ii) to assess the effect of these programs on alcohol consumption and whether certain program features are indicative of program effectiveness, and (iii) to summarise the learnings for application to the development of future veteran programs.

Method

This systematic review followed established review processes (Liberati et al., 2009), and search terms selected to ensure coverage of the PICO categories (population, intervention, comparison, and outcome). Several search terms were selected and tested to determine if search results using those terms were relevant. These terms were then refined to arrive at the final search terms, which were ("veterans" AND ("navy" OR "air force" OR "army" OR "military" OR "defence force" OR "marines") AND (“reintegration program” OR “transition program” OR “alcohol intervention”) AND (“alcohol”). The search was executed across three electronic databases: SCOPUS, Web of Science, and Google Scholar. Once records were obtained through the search, duplicates were removed, and titles and abstracts were screened to determine eligibility. Records were excluded when they were not in English, published prior to 1990, and not a peer-reviewed journal publication or government report (e.g., conference papers or unpublished theses). Inclusion criteria were applied requiring records/papers to involve veterans, services personnel, or personnel and their families; addressed alcohol use or substance abuse, included or drew upon empirical data, and was a transition or reintegration intervention study, evaluation, review of a specific intervention, or design of an intervention.

Each of the studies that were included in the final pool of studies was considered a study of interest, and was examined to extract information on the approach used and any success factors that would provide insights for future interventions (Higgins & Green, 2008). Elements from each study were qualitatively examined (Thomas et al., 2004), to determine if the program provided support to veterans across the domains of a military-to-civilian transition framework by Karre et al. (2024). These domains are: physical health, mental health, social health; and employment and financial health.

Results

The search resulted in 2435 records, and after the exclusion and inclusion processes, 18 interventions reported in 36 papers (some interventions were the subject of multiple papers) were retained. Most studies were conducted in the United States of America (16 of 18). All studies included male and female participants, but in each, the majority of participants were male, reflective of the nature of most military populations. Six interventions were online programs, and the rest were conducted in person, as sessions, weekend workshops, or with clinical outpatient care. Alcohol was the primary or dominant focus for eight interventions, whereas the other ten programs used a range of strategies to prepare and support veterans for post-service life, addressing alcohol as a secondary focus. In terms of the life domains considered important for a successful military-to-civilian transition, most programs explicitly addressed physical well-being (12 of 18 interventions). Mental health was also included as a part of many interventions (16 of 18 interventions). Social or family well-being was considered in 15 of 18 interventions. Finally, employment or financial strategies were included in 9 of 18 interventions. Unfortunately, many of the interventions in this review did not measure changes in alcohol consumption following participant engagement with the program. Of those that did (11 studies), 8 observed a decrease in alcohol consumption. Some of the programs measure participant satisfaction with the program or subjective assessments of whether the participants thought the program helped them. Broader interventions measured outcomes such as physical health, behavioural or mental health, and employment outcomes—which may reflect the program objectives.

Discussion

In this review, approximately half of the programs focused on providing specific skills for moderating alcohol consumption, while the remainder attempted to support veterans' health and well-being more broadly. Behaviour change requires more than knowledge and can require continuous engagement over a long period, together with support from family, friends, or community members to be successful (Potvin & Jones, 2011; Sørensen et al., 2023). Therefore, programs that support veterans beyond the point of transition may be needed to avoid the harmful effects of alcohol use disorders. It was difficult to draw conclusions about the effectiveness of the programs in this review, because of the lack of measurement of alcohol consumption in many of the studies. However, the nature of the programs and the outcomes reported in the studies underscore the need to adopt a holistic approach and provide programs that support veterans long term. Other considerations for future programs include the need to design culturally appropriate programs that include spirituality to better support veterans' well-being. Overall, this review indicates there are still gaps in intervention development, delivery and redesign; and programs could be improved to benefit veterans.

Study 2: Exploring Alcohol Harm for New Zealand Veterans through Interviews

The systematic literature review from study 1 acknowledges that the harm from alcohol spans across physical, individual, and social realms of society. More than a single factor causes or contributes to this harm. Previous research provides insight into several factors that contribute to veteran drinking. These include PTSD, trauma, and the military drinking culture. Drawing on findings from the extant literature, study 2 explores harmful drinking patterns for New Zealand veterans. Through interviews, study 2 addresses the impacts drinking has on the overall health and well-being of both veterans and their immediate families. While there is a significant body of research regarding drinking cultures at a national or *exosystem* level (Bronfenbrenner, 1977), there is a need for more in-depth discussion of the needs of veterans in a holistic manner. Therefore, this study addresses the subtler complexities of the issue and the range of influences on their alcohol consumption (Savic et al., 2016).

To gain a holistic understanding of New Zealand veteran alcohol misuse and potential paths for intervention, this work applies a revised version of Bronfenbrenner's (2000) socioecological model (Trego and Wilson's model, 2021) to discuss contributing factors to veterans' vulnerability to alcohol misuse that endures beyond their transition from service to civilian life. This holistic perspective is guided by the research questions: What are the contributing factors that make New Zealand veterans prone to alcohol misuse at each of the socioecological levels? And what are the implications of these contributing factors in developing interventions? Previous studies have focused on single aspects that drive veteran drinking behaviour (such as drinking culture or PTSD) and have failed to take a multi-faceted picture of the issue. Also, they do not focus on New Zealand veterans, whose experience differ from veterans in other nations. Given these reasons, it is important to explore the issue of harmful drinking specifically for New Zealand veterans.

Method

The interviews followed the narrative interview protocol laid out by Jovchelovitch and Bauer (2000). Meyer and Ward's (2024) three-step coding method was used to analyse the interview transcripts. The steps were 1)

precoding, 2) categorisation into concepts and themes, and finally, 3) categorising those according to theory. Each interview was conducted via video call, was video and audio recorded, transcribed verbatim, and checked for accuracy. Interviews were conducted past the point of thematic saturation (7 interviews) to ensure sample variance supported saturation up to the total sample size of 25. Coding was undertaken by two researchers as well as sense-checking that themes were accurately reflected by quotes. Overall, interviews totalled 1699 pages of transcripts and 32 hours of recorded footage.

Posts made on NZDF veteran social media pages were used to recruit participants. This resulted in interviews with 25 eligible participants. To be eligible, participants needed to meet the legal definition of a veteran according to the Veterans' Support Act of 2014. The final sample included a balanced cross-section of veteran profiles across ranks (entry level to Colonel), service lengths (4-40+ years), age (27-77 years at time of interview), and number of international deployments (1-9). To allow for the changes in military drinking culture over the decades, we included participants who had left the NZDF more than 20 years ago, as well as more recent departures (1995-2023). Different ages of enlistment were also represented among the participants (17-27 years at time of enlistment). In exploring the research questions, we have adopted a constructivist epistemology and a hermeneutical phenomenology methodology.

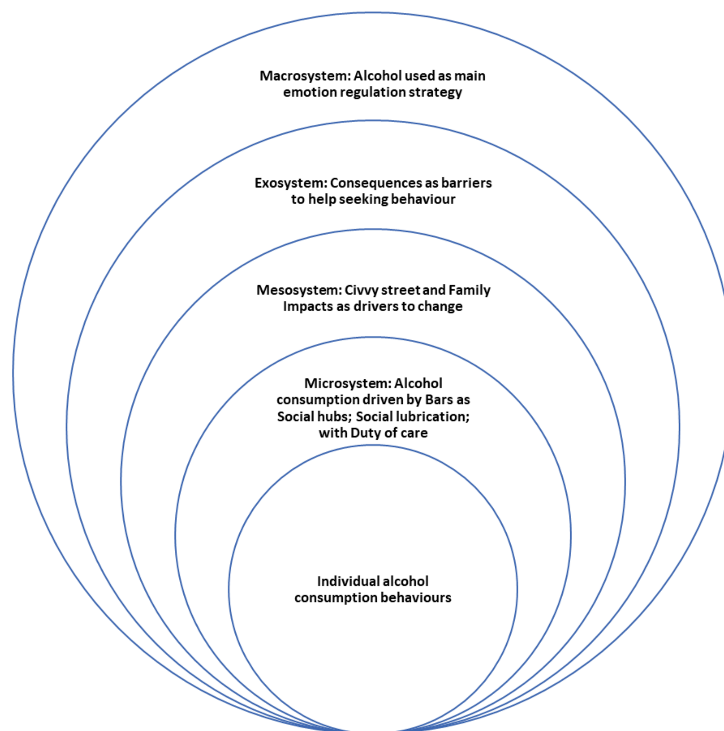
Results

During thematic analysis, 7 core themes were identified and categorised according to the different layers of the socio-ecological model (Trego & Wilson, 2021). The adapted socio-ecological model for veterans considers the military environment specifically, while treating development as a continual process both intergenerationally and through all life stages (Trego and Wilson, 2021). The amended model makes the ecosystem particularly applicable to veteran transition by acknowledging the appropriateness of a holistic view of veteran transition (Pedlar, Thompson, & Castro, 2019). The themes identified within the microsystem include bars and drinking as 1) social hubs; alcohol as 2) social lubrication; and 3) a work environment where a duty of care was shown. Notably, duty of care in military drinking environments is presented as a new theme to the literature. The exosystem themes include 4) consequences that increased barriers to seeking help, while the macrosystem showed cultural values of excessive alcohol consumption as an 5) emotion regulation strategy. This contributed to their interactions as veterans in the mesosystem in terms of their orientation towards 6) Civvy street, and 7) family impacts.

Discussion

Consistent with findings from Hamilton's (2015) review of the Australian Defence Force (ADF), participants' descriptions of alcohol consumption and drinking culture in the NZDF indicated that alcohol is used as a tool for stress release and emotional de-escalation following significant periods of grief or stress. While Hamilton's work focuses on those still in service, we found that this justification continues for veterans who designate alcohol as means to facilitate emotional release/stress relief or, in general, as an emotion regulation strategy even after ending their time in the NZDF. Specifically, participants reflected on their lack of emotional regulation skills and in some cases recommended more training around these skills towards overall emotional health.

Figure 1: The socio-ecological environment for veteran alcohol consumption



We found that while in service, the cultural values of using alcohol as an emotion regulation strategy were perpetuated by both the microsystem and macrosystem. The physical environment (including bars) enabled the behaviour while the well-meaning 'duty of care' reinforced it. Without further psychological training, and with barriers to help seeking, these drinking behaviours continued into veteran life with impacts on their whānau and employment. Barriers to seeking help, especially among young men (the main recruit of the defence forces), have been noted elsewhere (Palmer et al., 2024).

The seven themes identified through analyses included some of the ongoing contributing factors to New Zealand veterans' alcohol misuse. Alongside a need for emotional release after stressful experiences for which they feel ill-equipped, participants describe the influence of the NZDF environment on their tendencies towards alcohol misuse. This represents a dynamic relationship between the individual and their direct social context. What's more, this context undergoes significant, multi-stage alteration when an individual transitions from the military into civilian life.

This research indicated that equipping military service personnel and their families with emotional regulation skills and support systems from initial enlistment, through service, and after leaving the defence forces could be supportive in alleviating some of the emotionally charged reasons for alcohol misuse. This is aligned with other research that identifies the use of alcohol as a coping mechanism (Osborne et al., 2019). Specifically, efforts to reduce alcohol-related harm among veterans should aim to tackle causal factors by facilitating mental and emotional processing towards the integration of previous experiences.

In previous research and interventions, the role of partners and families has been largely underestimated. There are few programs that focus on partners' mental well-being and their contributions to managing and

reshaping the family environment following military discharge. However, family members interviewed in this study repeatedly described the flow-on effects of alcohol misuse at the whānau and community (exosystem) level. This further illustrates how alcohol misuse does not occur in isolation. Prolonged alcohol misuse can impact service personnel and their family members in both devastating and subtle ways. Given the role of families, they too should be offered such emotion regulation training when their family member transitions to civilian life. Study 3 sought further evidence and generalisability of the findings of this study.

Study 3: A Segmentation Approach to Informing Health Promotion Development

This study takes a quantitative approach to understanding alcohol use among former members of the New Zealand military. By analysing responses, we investigate whether distinct statistical groups exist that could inform better intervention development and transition plans for those leaving military roles. The study examines how past military experiences, emotional regulation strategies, and attitudes towards support services correlate with veterans' alcohol consumption patterns and what factors may contribute to alcohol use disorders (AUD). Key findings and contributions are summarised here.

Background and Objectives

Previous studies have shown that tailored interventions are needed to support veterans, focusing on the specific needs of priority groups. This study aims to understand: 1) whether harmful alcohol behaviours differ among former New Zealand Defence Force (NZDF) members; 2) what characteristics help identify those with potentially harmful alcohol use; and 3) how this information can aid in developing supportive interventions. Existing literature identifies several factors affecting alcohol harm post-military service. Exposure to combat trauma and the risk of PTSD are well-documented (Jacobson et al., 2008; Kehle et al., 2012). Military culture, which often normalises heavy drinking, can perpetuate misuse (Meadows et al., 2023). Other risk factors include younger age, male gender, lower educational attainment, and lack of social support (Capone et al., 2013; Cucciare et al., 2011; Kelley et al., 2013).

Protective factors include access to mental health services and strong social support networks, particularly involving family and non-military peers (Burnett-Zeigler et al., 2011). Positive coping strategies, such as seeking professional help or engaging in physical activity, also mitigate excessive alcohol consumption (Kehle et al., 2012). Understanding veterans' attitudes towards mental health services and their cognitive regulation strategies may reveal correlations with harmful alcohol consumption (Bystritsky et al., 2005; Garnefski & Kraaij, 2006; Vogt et al., 2014).

Segmentation analysis, which groups individuals into statistically significant clusters based on behaviours, offers a person-centric approach to understanding health needs. It allows for more targeted interventions, improving outcomes by addressing specific needs rather than applying a one-size-fits-all solution (Wood et al., 2022).

Methodology

Participants were recruited through RSAs, social media, direct contact, and newsletters to veterans. The Alcohol Use Disorders Identification Test (AUDIT-C) was used to assess harmful alcohol consumption. Various scales measured perceptions of military drinking culture and stigma towards mental health services. The survey also focused on perceived social norms, cultural factors, structural factors, and personal attitudes towards mental health services and emotional regulation techniques. Ethical standards were adhered to, and participation was voluntary, with an inducement of winning one of two iPads for completing the questionnaire. A total of 328 valid responses were collected.

Findings

The study identified three distinct segments among veterans based on their alcohol consumption patterns.
*Problematic Drinkers (*n=63); exhibited the highest levels of harmful drinking and negative emotional regulation strategies such as rumination and catastrophising. They perceived the military drinking culture as promoting overconsumption and reported significant stigma around accessing mental health services. This group also had the highest levels of childhood trauma.
Harmful but Coping (n=117); engaged in harmful drinking but to a lesser extent than the Problematic Drinkers. They employed healthier emotional regulation strategies and had a more positive perception of military drinking culture and mental health services.
Not Harmful (n=148); reported controlled alcohol consumption and the most positive attitudes towards support services and mental health care. They used various emotional regulation strategies to manage negative aspects of their lives.
Other findings include that younger participants reported significantly higher alcohol consumption. The length of overseas deployment did not correlate with harmful alcohol consumption but did correlate with increased stigma towards support services, catastrophising, and ruminating over negative aspects of life, making it harder for those needing help to seek support.

Contributions and Implications

Segmentation analysis has identified factors significantly associated with harmful alcohol behaviours, enabling a more targeted approach to interventions. For example, interventions for those at the highest risk should focus on breaking rumination and catastrophising thought processes and destigmatising support services. Addressing the perceived military drinking culture would also benefit this group. Additionally, no group felt adequately prepared for transitioning to civilian life, indicating a need for improved support programs for all departing NZDF members.

Limitations and Future Research

The study's reliance on self-reported data may lead to underreporting of alcohol consumption patterns (Mattiko et al., 2011). While the analysis identifies correlations, future research should explore causal relationships between the factors and alcohol misuse. The study sample was biased towards non-officer ranks, male participants, and army corps, reflecting the wider NZDF population. Further research could provide insights for other priority groups, enhancing targeted interventions.

Study 4: Veterans' preferences for alcohol harm reduction programs - a Co-design study

Introduction

Studies 1, 2 and 3 confirmed the NZ context as similar to prior research indicating that alcohol consumption is common and normalised in the military environment and used as a coping mechanism to regulate emotions and reduce anxiety (Osborne et al., 2022; Young et al., 2018). This normalisation of alcohol use during military life makes recognition of alcohol problems less likely and reduces help-seeking in veteran life (Cardow et al., 2021; Mohr et al., 2018). Findings from our studies indicated a need for programs that develop emotional regulation strategies and ensure readiness to transition from military to civilian life to prevent veterans from using alcohol as a coping mechanism.

Evidence also suggests that civilian programs are not necessarily transferable to the veteran population, and that brief alcohol interventions with a narrow focus have limited effects within this group (Wigham et al., 2017). Instead, researchers have suggested that the specific needs of the veteran population would be better served by tailored interventions. Brevity and a narrow focus should be avoided in favour of a holistic approach that includes strategies within multiple life domains to support veteran well-being (Karre et al., 2024). Furthermore, meeting Indigenous peoples' needs requires strategies that are culturally appropriate (Wilson et al., 2021). Therefore, developing programs for veterans that meet their specific needs and preferences is important.

This final study used a Participatory design method (Co-design), which encourages participants to contribute their knowledge and skills as 'experts of their unique experiences' (Dietrich et al., 2017). Participatory design methods offer the potential for improving outcomes such as adoption, satisfaction, retention, and effectiveness (Willmott et al., 2022). A participatory design approach states that the views of veterans and the veteran community are essential ingredients for success in the development of programs that are intended for them (Franco et al., 2023).

Method

This study was comprised of four co-design workshops, each approximately four hours long, from November 2023 to February 2024. Three workshops involved veterans, and one workshop involved Defence health professionals. Invitations were communicated to participants through social media, veterans' networks, and researcher networks encouraging attendance at the co-design workshops. The co-design sessions included twelve veterans and seven Defence health professionals. The veterans were predominately male (83%), aged 28 to 61 years. The health professional group was mainly male (57%) and aged 32 to 56 years.

A sequential co-design process was followed in the workshops (Trischler et al., 2019) which involved activities that have been used in other co-design workshops (Carins & Bogomolova, 2021; Rundle-Thiele et al., 2023). Following a brief warm-up activity, participants reviewed 12 veteran alcohol harm reduction programs (sourced from the literature review study), recording their responses on feedback grids containing categories—like, dislike and improvements. After this, they shared their feedback with the entire workshop group. This activity engaged participants in a critical thinking exercise, which prepares them for participation in

the next stage—the design task. The design task required participants to generate ideas for a new veteran program—for veterans like themselves, or veterans they know or have met as part of their practice. They were also offered descriptions of three veteran personas (from the segmentation study), should they wish to design for one of those personas. The program designs were recorded on large sheets of blank paper. At the end of the design step, participants again shared their thoughts and ideas with the larger group—and those members were invited to ask questions or provide comments. In the health professionals' workshop, participants were presented with a summary of the ideas from the veterans' workshops and invited to comment on the feasibility and attractiveness of those program ideas.

Results

Content analysis was used to synthesise veterans' and health professionals' ideas for new programs. The analysis commenced by comparing the data to existing well-being frameworks (Durie, 1994; Karre et al., 2024) and then proceeded to extract new ideas. Participants acknowledged the difficulties many veterans' have with alcohol consumption, recognising the presence of a pervasive drinking culture in the military, which extends to post-service. They also recognised the entrenched nature of drinking within everyday life. Importantly, they highlighted that drinking was not the problem; instead, alcohol was used as 'self-medication' to enable them to manage other challenges.

This recognition meant they viewed the well-being needs of veterans broadly, and their ideas during co-design extended beyond alcohol consumption, to the creation of holistic programs. Some of the suggested program elements could be categorised into domains present in the existing well-being frameworks, those of Durie (1994) and Karre et al. (2024). Those well-being domains are physical, mental, spiritual, social/family, and employment. Other program ideas reflected new themes, including a need to mitigate loss of identity, to manage trust, scepticism and stigma, and the need for connected records and networked services. The final step in the analysis was synthesis into a co-designed veteran well-being ecosystem – in which most program ideas could be represented. This involved early prevention, in-service elements, and ongoing support through transition and in post-service life. This is summarised in Figure 1 below, which shows the consolidation of co-designed program ideas for veteran well-being, to reduce excessive alcohol use.

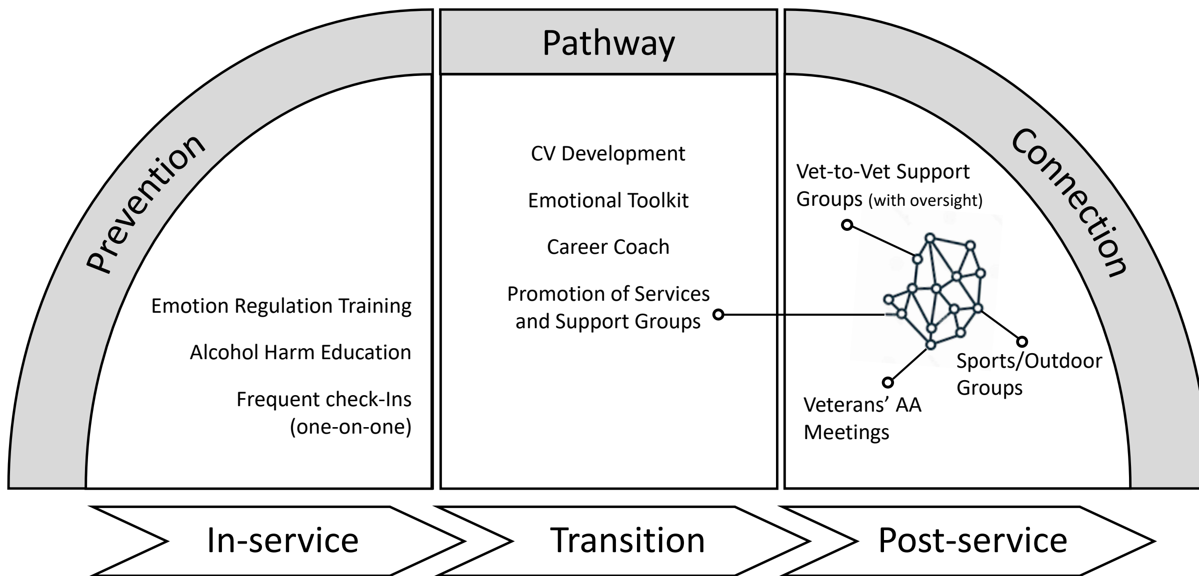
Discussion

This study used a co-design method to explore and develop new ideas for programs *with* veterans and health professionals rather than developing it *for* them. This allows program development to be grounded in veterans' lived experiences and moves towards offering tailored strategies that respect the differences between veterans in terms of who they are and what they prefer, as well as where they might be in their transition process (Franco et al., 2021).

The transition from military service to civilian life impacts the well-being of both veterans and their families/whānau. Adopting a holistic approach that covers the entire military career was proposed as an effective way to prevent the development of problems with alcohol consumption before separation and to provide support for veterans after transition. Alcohol awareness and emotion regulation training were proposed early in the military career, and regular touch points were suggested to ensure ongoing awareness and reinforce the benefits of training. Other elements of holism included recognition of the need for social support during

transition through the involvement of family and peers. Social bonds are developed throughout the military career during team-based activities and as a result of being part of a larger entity. After transition, many find that they need new connections within civilian society to fill that gap, and to foster purpose through service. For example, volunteering within a sports club enables veterans to continue a physically active lifestyle, as well as giving them a sense of purpose through service to the sporting club.

Figure 1. Consolidation of co-design ideas into an ecosystem of services for veteran well-being.



The study identified the need for a network of veteran services to support transition. The objective would be to connect veterans to a network of new and existing services so that they can easily find the support they need. The workshop participants provided suggestions for how this might occur. Online options offer flexibility and were recognised as being suitable for younger veterans. Support groups were valued, and participants suggested that they should be promoted more widely. Referral to clinical services and connection with employers or volunteer groups could be facilitated, so that veterans find these processes easier. The military health system provides care for personnel when in service, and referral occurs through the system (Bricknell & Cain, 2020). When personnel leave the military, they are required to re-learn the civilian healthcare system—which takes time and effort, and they are often reluctant to seek help (Kiernan et al., 2018). Furthermore, leaving the structure and nature of military life and navigating civilian life can leave veterans feeling less competent, and lost as they attempt to find what they want or need. Increasing the visibility of available services and effective promotion of a network of services would make it easier for veterans to locate the services they need and increase their feelings of competence during the process of transition.

Future research

This research provides a holistic view of the context in which New Zealand veterans struggle with harmful alcohol use. Secondly, it provides three groupings (segments) of veterans who each share similar behavioural, cognitive, and experiential profiles. Lastly, we provided recommendations for intervention points throughout the career and broad intervention ideas. Now we provide suggestions for future research to develop our recommendations into real-life interventions.

Future Research Study 1) Intervention Development and Pretesting

The next stage of research needed for this area is to use these findings and recommendations and undertake a rigorous process to:

- Co-Develop a program prototype (Phase 1)
- Pretest and evaluate the prototype (Phase 2)

Phase 1

Design thinking is a highly iterative and collaborative five-step process - empathise, define, ideate, prototype and test. Design thinking workshops bring together experts in alcohol treatment, those involved in veteran support, veteran program implementors, behavioural scientists, veteran family members, and veterans with lived experience of alcohol misuse. Veterans would be recruited to ensure representation across the previously identified segments (from Study 3). Workshops would each involve up to 30 participants, which are placed into smaller groups of 5. Participants are involved across all five stages of the process, working in their groups of 5, to develop a prototype (Hurley, et al., 2021). The stages are:

1) Empathise: Participants empathise with the experience of veterans who are vulnerable to alcohol misuse. Narratives from case studies and our qualitative research would be provided to participants along with a summary of the segmentation results to enable participants to engage in empathy mapping activities. In this activity, using an empathy map, participants would capture what those with lived experience ‘said, did, thought and felt’ about the topic. This will assist all design thinking participants to build empathy for veterans and to understand differences across the identified segment groups.
2) **Define**: Participants work in small groups to brainstorm Point of View (POV) statements that focus on the end user and their needs. Once POVs have been developed, the group is asked to take a deeper look to identify the root cause of the problem statements to further define the unmet need they are trying to address. This stage involves developing ‘How Might We…’ (HMW) questions to address the POV statements. This approach allows the group to embrace a broader perspective and consider new and creative ways to address the problem.
3) **Ideate**: The group then participates in a brainstorming session where they will develop as many ideas and solutions as possible to address the POV and HMW questions. Next participants begin to group and cluster ideas together, rank, vote and even discard some ideas to narrow down to 3-5 ideas they would like to carry forward to the next stage of the process.

4) **Prototype**: Participants (individually or in small groups) will be asked to choose one short-listed idea they would like to storyboard. Storyboards are used to convey prototype ideas outlining their recommended program ideas.
5) **Test**: Groups are provided with time to present their prototypes to other groups. Presenting groups pitch their prototypes to their paired group. Listening groups are supplied with a feedback grid. Following the pitch teams receive feedback from their audience who outline what they liked and disliked about the prototype idea. Ideas for improvement are discussed. The opportunity to gain feedback from up to 4 teams is provided equipping teams with data they can use to improve their prototype.

Teams are provided with time to reflect on feedback and refine their prototype before final presentation. Finally, design groups participate in a final pitch and invest activity where each group will pitch their final program to the group. Each group member will have 'money' to invest in one or more prototype solutions. The workshop will be hosted and facilitated by members of the research team.

Phase 2

Program Development: Based on the evidence collected from phase 1, a pilot program will then be developed in full and sense-checked in collaboration with experts in alcohol treatment, those involved in veteran support, and veteran program implementors.

Pilot Program and Evaluation: The resulting prototypes will be piloted with a small group of veterans. Evaluation and monitoring of this pilot will inform the major deployment of interventions to a wider audience. The pilot program will be run for 8-weeks followed by 4 weeks to measure impact against the objectives set. Measurement of efficacy of the program will involve a within-study test cohort approach (n=50) to measure any significant change between pre- and post-exposure to the pilot intervention. The test cohort will be asked to engage in pre-, during and post-intervention evaluations. Key objectives to address from the intervention will be participants' health literacy/knowledge of alcohol harm, actual behavioural measures, attitudes, behavioural intentions, and engagement with the intervention materials.

The key outcomes from the measuring and monitoring will be to determine the pre-intervention and post-intervention behaviours as well as other shifts in psychographic factors that may influence harmful alcohol use. Measurement of participants' understanding, and use of emotional regulation strategies, will be a key factor as these were identified as being crucial to curbing harmful alcohol behaviours in the previous study.

Analysis of variance will be employed to determine if there are statistically significant differences both between cohorts and from pre to post intervention. However, it should be noted that small participant groups are unlikely to yield statistical significance and so tailored qualitative reporting on intervention efficacy will also be employed to understand aspects of the pilot intervention that have been helpful and what could be improved for the future. If the intervention is fully deployed future research should continue efficacy measurement to ensure that significant improvements are long-standing and relevant to the wider population.

Future Research Study 2) Vet-Net Development and User Testing

The final stage of research needed for this area is to use these findings and recommendations and undertake a rigorous process to:

- Conduct search for and collation of veteran support groups and services (Phase 1)
- Develop and conduct user testing of Vet-Net website (Phase 2)

Phase 1 requires undertaking webscraping, manual searches of the internet for available veteran support groups and services. Direct contact with key veteran services would also be used to collate and finalise details for veteran support groups and services. A further step would be negotiating with other veterans' services to ensure that use of their materials is permissible on this centralised hub of information. Providing backlinks to the original source material, as well as ensuring engagement with multiple parties is done openly, will be a key deliverable at this stage.

Phase 2 would develop the website with descriptions, contacts and links to support groups and services. It would also conduct user testing during development to ensure all age groups, abilities and skill sets can easily navigate the page, along with ensuring search engine optimisation and marketing communications to raise awareness of the webpage. From here, web analytics will be analysed to ensure usability and promote the resources that are most accessed by visitors. Further maintenance of materials and dissemination of resources to a wide range of outlets will ensure ongoing engagement with the site and regular use by key stakeholders.

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