Evidence Compass

Technical Report

What is the prevalence of risk-taking behaviours in the children of former or current military personnel?

A Rapid Evidence Assessment

August 2015

Australian Government
Department of Veterans' Affairs

Disclaimer

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Please forward any comments or queries about this report to at-ease@dva.gov.au

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Executive Summary

- This literature review examines the evidence for the prevalence of risk-taking behaviour by children of former or current military personnel. The review examines risk-taking behaviour by focusing on the evidence for the following specific behaviours that carry an immediate or near immediate risk of harm or are proxies of such behaviour: high-risk drinking, illicit drug use and pharmaceutical misuse, dangerous driving, unsafe sex, crime, delinquency and school absenteeism.Using the Rapid Evidence Assessment (REA) methodology developed for the Department of Veterans' Affairs (DVA) by Phoenix Australia—Centre for Posttraumatic Mental Health (previously known as the Australian Centre for Posttraumatic Mental Health (ACPMH)), a systematic literature search was undertaken of all research studies published between 2001–15 that investigated the prevalence of one or more of the specific risk behaviours in a population of children of former or current military personnel.
- Strict inclusion and exclusion criteria were applied to the search. Studies were excluded if they did not investigate the defined REA population, did not explore the specific risk behaviours, focused on a non-OECD population, or did not contain useable empirical data from a primary research study, systematic review, meta-analysis or REA.
- Eleven (11) studies met the REA inclusion criteria. All studies were conducted in the USA, with the exception of one Australian study of the offspring of Vietnam veterans and Vietnam-era personnel.
- The included studies investigated various specific risk behaviours: four considered alcohol and drug use; three investigated school absenteeism; and four investigated multiple risk behaviours.
- Ten (10) of the eleven (11) studies focused on juvenile and adolescent children of military personnel and were undertaken in the USA.
- One (1) study addressed an Australian population of adult children of Vietnam-era military personnel and Vietnam veterans.
- None of the included studies were rated as "good" quality or as highly generalisable to the target population.
- The heterogeneity of methods and samples used by the studies included in the review meant that it was not possible to produce a meaningful overall prevalence rate for risk- taking behaviour by the children of military parents.
- The evidence for unsafe sex, delinquency and school absenteeism by the children of past or present military parents (whether adult or juvenile) was too contradictory and/or of insufficient quantity, quality and generalisability, to allow

for the extrapolation of meaningful prevalence rates for each of these behaviours.

- It was possible to extract prevalence rates for recent binge drinking, marijuana use, use of other illegal drugs and criminal behaviour for some sub-groups within the larger population of people with a past or present military parent. However, the lack of any studies rated as “good” quality or that were highly generalisable to the target population means that there is very low certainty that any of these rates reflect the true prevalence rates for even a subsection of the target population:
- High risk drinking (drinking with a risk of immediate harm) rates for the adolescent children of current military personnel were as follows:
  - adolescent past fortnight to 30-day binge drinking of between 9% and 17% for (USA) students in Grade 8;
  - adolescent past fortnight to 30-day binge drinking of between 25% and 33% for (USA) students in grades 10 to 12;
  - adolescent past 30-day alcohol use of between 19% and 22% for (USA) students in grades 8 to 12.
- Illicit drug use rates were as follows:
  - adolescent children of current military personnel past 30-day (USA) marijuana use rates of 10% to 14%;
  - adolescent children of current military personnel past 30-day (USA) other drug use rates of 8% to 10%;
  - adult children with a past or present military parent: lifetime marijuana use: 56% to 68%;
  - adult children with a past or present military parent: past 12-month marijuana use: 18%.
- Although some reviewed studies suggested that the adolescent children of military parents might have a greater propensity for binge drinking and the use of illicit drugs (other than marijuana), other studies of equal quality found no significant difference between the populations. The one study investigating the adult children of past or present military personnel did not include a civilian comparison group.
- A single study of moderate quality and generalisability reported that 4% to 7% of the surveyed adult children of Vietnam veterans and contemporaneous Defence members had a recorded criminal conviction. A comparable civilian population was not surveyed. The focus on a specific generational cohort of military offspring, and the lack of any supporting studies, means that there is very low certainty that this rate reflects the true prevalence rates in target population.
- There was also some evidence that military dependents have similar or lower rates of hospital admissions for motor vehicle related injuries in which they were

the driver than do non-military dependents. The lack of any supporting evidence of even moderate quality and generalisability means that there is a very low certainty that these results can be applied to the target population.

- No conclusions can be drawn as to whether there is a meaningful difference between the propensity of military and non-military offspring to engage in the measures of risk-taking behaviour investigated here.
- Further research is required, particularly in the Australian context, to obtain a better understanding of either the rates of risk-taking behaviour in the children of military parents or the relative propensity of military children to engage in risk-taking behaviour.

Introduction

This literature review aims to examine and synthesise the recent research evidence for the prevalence of risk-taking behaviour by the children of current and former military personnel. In particular, the review focuses on the following high-risk behaviours or proxies for high-risk behaviour:

- **high-risk drinking—**defined here as drinking leading to a risk of short-term harm; i.e. “binge drinking” (more than five drinks in one sitting) and/or underage drinking (National Health and Medical Research Council [NHMRC], 2009);
- **illicit drug use** and **pharmaceutical misuse—**defined as the use of illegal substances and the non-medical use (misuse) of pharmaceuticals (prescription or non-prescription) (Australian Drug Foundation, 2015);
- **dangerous driving—**defined as a driving under the influence of alcohol or drugs, at a dangerous speed, or in a reckless or negligent manner which may result in the death or injury of another person (*Crimes Act 1958* (Vic.));
- **unsafe sex—**defined as having unprotected sex;
- **criminal behaviour—**defined as having been formally convicted of a crime in a court of law;
- **delinquency—**defined as misbehaviour and wrongdoing (potentially overlapping with criminal behaviour in relation to minor crime); and
- **school absenteeism—**time spent not in school as a result of truancy, suspension or expulsion.

There is a growing body of research evidence addressing the health and wellbeing of the family and children of military parents. In particular, there is increasing understanding of the potential for intergenerational transmission of war and combat-related trauma and of the possible psychosocial impacts of parental deployment on military-connected children (Creech, Hadley, & Borsari, 2014; Davidson & Mellor, 2001; Herzog, Everson, & Whitworth, 2011; Maršanić, Paradžik, Bolfan, Zečević, & Grgić, 2014; see also Aranda, Middleton, Flake, & Davis, 2011; Chandra et al., 2010; Chandra, Martin, Hawkins, & Richardson, 2010; Chartrand, Frank, White, & Shope, 2008; Flake, Davis, Johnson, & Middleton, 2009; Gorman, Eide, & Hisle-Gorman, 2010; Huebner & Mancini, 2005; McGuire et al., 2012; Orthner & Rose, 2005).

Of particular relevance to the Australian context, and to the context of this literature review, are two studies on the health of Australian Vietnam veterans' families suggesting that the children of Vietnam veterans have relatively high rates of accidental death. The Vietnam Veterans Health Study (Australian Institute of Health and Welfare [AIHW], 1999), for example, investigated the self-reported health of all Australian Vietnam veterans and their partners and children and found significantly higher rates of death due to accident among male veterans' children than in the general population. Deaths from accident/other causes were approximately 1.6 times as high as expected based on the Australian community standard (AIHW, 1999). The authors of this report hypothesised that military-connected children may have a particular propensity to engage in risky behaviour, hence the high accidental death rates.

The more recent Vietnam Veterans Family Study (Commonwealth of Australia, 2014) advanced and updated this prevalence data. The 2014 study similarly reported a significantly higher rate of death due to external causes (such as motor vehicle accidents and injuries) among the offspring of Vietnam veterans than in the general population. Further, the study found that children from the families of Vietnam veterans had 5.72 more deaths from external causes per 1,000 children than did the children of Australian ex-Army men who did not serve in the Vietnam War; that is, twice the rate of deaths from external causes (Forrest, Edwards, & Daraganova, 2014a). Again, these higher death rates from external causes were hypothesised as suggestive of "a tendency to engage in risky and unhealthy behaviours" (Commonwealth of Australia, 2014, p. 66).

In light of this background research, this literature review aims to gather and assess empirical evidence for the prevalence of risk-taking behaviour in children of former and current military personnel.

Method

Rapid Evidence Assessment methods

This literature review uses a Rapid Evidence Assessment (REA) methodology developed for the Department of Veterans' Affairs (DVA) by Phoenix Australia (Australian Centre for Posttraumatic Mental Health [ACPMH], 2014b). The particular REA model used here was developed specifically for DVA's Evidence Compass and employs particular procedures for defining the research question and assessing evidence. In common with other REAs, it uses the methods of a traditional systematic review to search and summarise the knowledge base on a particular issue but accelerates the review process by placing limits on the breadth and depth of the search and on the assessment process (Ganann, Ciliska, & Thomas, 2010). Although not as exhaustive as a systematic review or meta-analysis, the strength of the REA method lies in its use of clear inclusion and exclusion criteria and rigorous quality assessment processes to provide a synthesis of available research on a defined topic relatively quickly.

The research focus

The first step in the REA process was to clearly define the scope of the research question (ACPMH, 2014b). The REA's general area of focus was risk-taking behaviour by the children of military parents.

"Risk-taking" can refer both to the behaviour itself and to a person's willingness to take risks (which is, in turn, informed by behavioural and personality constructs such as risk perception, assessment and acceptance) (Trimpop, 1994). Accordingly, risk-taking behaviour might be conceptualised in terms of either:

- personality constructs that relate to *risk-taking propensity*; or
- "real-life" addictive and non-addictive health and safety *risk behaviours*.

Risk-taking propensity may encompass impulsivity (e.g. acting without thinking, making quick cognitive decisions and a lack of concern about the future) and sensation seeking (e.g. thrill/adventure seeking, danger seeking and disinhibition) as the main risk-related personality constructs (Harrison, Young, Butow, Salkeld, & Solomon, 2005). By comparison, typical examples of *risk behaviours* discussed in the literature included drug, alcohol and substance use and abuse, smoking, unsafe sex, gambling, criminal activity (such as stealing), reckless driving (such as driving without a seatbelt and drink driving) school drop-out, and delinquency and violence (Lerner & Galambos, 1998; Lejuez et al., 2002).

This review specifically focuses on *risk behaviours*. Given the REA methodology's need for a relatively tight focus, the topic was refined to focus on seven specific risk behaviours. These are: high-risk drinking, illicit drug use and pharmaceutical misuse, dangerous driving, unsafe sex, criminal behaviour, delinquency and school absenteeism.

These behaviours were adapted from the Australian Bureau of Statistics' (ABS) examination of risk-taking among adolescents aged 15–24 and reflect typical "real-life" addictive and non- addictive health and safety risk behaviours "where the potential harm is immediate" (ABS, 2008). The exception is *school absenteeism*, which was included on DVA's suggestion as a proxy indicator of risk-taking behaviour. This suggested indicator emerges from the Vietnam Veterans Family Study (VVFS) finding that "problems at school" among the sons and daughters of veterans were one of three factors explaining the intergenerational impact of deployment on a range of mental health, substance use, physical health measures and financial stress measures (Forrest, Edwards, & Daraganova, 2014b).

The research question's key components were articulated using the Population Intervention Comparison Outcome (PICO) framework (see Table 1). The PICO framework defines the population of interest and their specific characteristics.

Table 1: PICO Framework			
P Patient, Problem, Population	**I** Intervention	**C** Comparison	**O** Outcome
Person [child or adult] with a parent or parents who have been on military service [date range of service to be determined]. Disorder: risk behaviours (high-risk drinking, illicit drug use and pharmaceutical misuse; dangerous driving, criminal behaviour, delinquency, unsafe sex and school absenteeism) Age: no age limit; any child of a defence parent Gender: No restrictions Country: OECD countries (special focus on Australia, Canada, UK, New Zealand, USA, Denmark, Finland, Norway, Sweden)	None	None	Prevalence rates for specific risk behaviours (high-risk drinking, illicit drug use and pharmaceutical misuse, dangerous driving, criminal behaviour, delinquency, unsafe sex and school absenteeism) in the children of a parent(s) who has been in military service
Research question in PICO format: What is the prevalence of specific risk behaviours [high-risk drinking, illicit drug use and pharmaceutical misuse, dangerous driving, crime, delinquency, unsafe sex and school absenteeism] in the children of former or current military personnel?			

The key population of interest is children of a parent(s) who has/have been in military service. Studies with a sample of young children or adolescents were included in the REA as were studies in which the sample comprised adult children. The potential for evidence on risk- taking behaviours to be skewed towards adolescent samples—given the common association of risk-taking behaviour with adolescence, as a normative developmental process—was noted.

During the PICO process it became clear that two types of question were possible: (i) a *prevalence* question, assessing the prevalence of risk-taking behaviour in children of deployed parents; or (ii) a *descriptive* question—exploring the effects of deployment on children's risk- taking behaviour. It was decided to focus the question on assessing the prevalence rates of specific risk behaviours. Thus, the final research question was cast as:

What is the prevalence of specific risk behaviours (high-risk drinking, illicit drug use and pharmaceutical misuse, dangerous driving, unsafe sex, criminal behaviour, delinquency and school absenteeism) in the children of former or current military personnel.

The literature search

The literature search systematically gathered all potentially relevant literature by making a list of relevant subject headings and free-text search terms (see Table 2). The search comprised a range of terms denoting military service so as to capture the totality of current or former military personnel, both in Australia and internationally. “Children” were also broadly defined to include juvenile and adult offspring. Search terms for specific risk behaviours reflected the variety of ways in which these behaviours are referred to in the literature. The chosen risk behaviour terms simultaneously sought to exclude the vast literature focused on “at risk” military children. This literature body tended to report on children’s developmental risks and was not relevant to this REA.

Table 2: Search Terms
Field 1: child* OR adolescen* OR teen* OR youth OR "dependents" OR offspring
AND
Field 2: “: military OR "armed forces" OR "defence force" OR ADF OR veterans OR army OR navy OR "air force" OR airforce OR "national guard" OR "defence family" OR "ex defence members" OR "ex serviceman" OR "ex servicemen" OR "ex service members"
AND
Field 3: "risk taking" OR "risky" OR "risk attitude" OR "risk propensity" OR "sensation seeking" OR "thrill seeking" OR impulsiv* OR "school absenteeism" OR "school drop out" OR "substance use" OR "substance abuse" OR "drug use" OR "drug abuse" OR "alcohol use" OR "alcohol abuse" OR "drinking problem" OR "binge drinking" OR "dangerous driving" OR "reckless driving" OR crime OR criminal OR delinquen* OR jail OR gaol OR prison OR imprisonment OR incarceration OR "unsafe sex" OR "unprotected sex"

In accordance with the “rapid” nature of this search and assessment, the search for research literature was confined to major databases, or key sector websites and clearinghouses. Systematic searches of the title/s, abstract/s, subject/s and keyword/s fields of the following databases and websites were undertaken.

Databases:

- EBSCO databases—Academic Search Premier, E-Journals, PsycARTICLES, Psychology and Behavioural Sciences Collection, PsycINFO, SocINDEX;
- Informit databases—Australian Family and Society Abstracts (the Australian Institute of Family Studies [AIFS] database), Family and Society collection, Humanities and Social Sciences collection, Health collection and the Journal of Military and Veterans’ Health;
- Social Care online;
- PubMed (MEDLINE);
- ProQuest Social Sciences;
- Cochrane Library;

- AIFS library catalogue; and
- New Zealand Defence Force Library (via New Zealand Libraries Catalogue).

Websites:

- Clearinghouse for Military Family Readiness, Penn State University, Pennsylvania, USA;
- Institute for the Health and Security of Military Families, Kansas State University, USA;
- Military Family Research Institute at Purdue University, USA;
- National Guideline Clearinghouse, USA;
- Defence Research Reports database, by Defence Research and Development Canada, CA;
- ADFA research page at the University of New South Wales, AU;
- Australian Clearinghouse for Youth Studies, AU;
- Centre for Australian Military and Veterans Health, AU;
- Clinical Practice Guidelines Portal Australia, AU;
- New Zealand Veterans Affairs resources page, NZ;
- Finnish National Defence University, including the Journal of Military Studies, FI;
- Swedish Defence University; Stockholm International Peace Research Institute; and Stockholm Defence Research Agency, SE;
- Norwegian Defence Research Establishment, including the Forsvarets forsknings institutt (FFI) reports database, NO;
- Royal Danish Defence College; Danish Institute for International Studies; and the Centre for Military Studies at the University of Copenhagen, DK.

To source as much available evidence as possible, the AIFS team initially used all extended search-term strings on all target databases and websites with “advanced search” functions. Where source databases did not recognise particular search terms, or where this approach failed to yield references, a more limited set of search terms was used. This method typically increased the number of hits and the likelihood of capturing more potential sources. However, it also produced a greater number of potentially irrelevant references for screening.

Information management

The majority of the results from the database searches were recorded and managed through an EndNote library (*n* = 552). Results from website searches, which could not be collated in EndNote, were recorded and managed in separate hardcopy and electronic files (*n* = 154).

The total number of results from both database and website searches (*n* = 706) were itemised in a summary Excel spreadsheet. Duplicate records were excluded (*n* = 149) and the remaining records (*n* = 557) were noted for screening. The Excel spreadsheet also recorded the exclusion of literature during each stage of the screening and assessment process.

Research literature screening

Screening methods

AIFS used clear inclusion criteria to define the type of research evidence chosen for review (see Table 3). The REA limited the selection of studies to a specific time-frame (the last 15 years) and to published peer-reviewed research studies written in or translated into English. It did not include "grey literature", such as unpublished pilot studies or reports, difficult-to- obtain material, non-English language studies and studies that did not address the primary research population of children of current or former military personnel. Papers were also excluded if they failed to report prevalence rates.

Included:
1. Published, peer-reviewed research studies 2. Research papers that were published within the last 15 years (2001–15) 3. Studies exploring the key dependent variables: namely the specific risk behaviours [high-risk drinking, illicit drug use and pharmaceutical misuse, dangerous driving, crime, delinquency, unsafe sex and school absenteeism] 4. Human children of a military parent (no age or gender limit) 5. English language papers 6. Papers based on military population and families in OECD countries
Excluded:
1. Grey literature (i.e. non-peer-reviewed literature) 2. Papers not written or translated into English 3. Papers more than 15 years old (published before 2001) 4. Papers where a full-text version is not readily available 5. Animal studies 6. Study based on a non-OECD population 7. No useable data in study (e.g. prevalence rates not reported)

In accordance with the Developer's Guide (ACPMH, 2014b), the AIFS team employed a two- step screening process for all the retrieved studies. In Step 1, the titles of all records were screened for relevance against the inclusion criteria. The records retained after the title screening were then screened against the inclusion criteria based on information included in the abstract. A second reviewer assessed this list of abstracts.

Records excluded at screening Step 1 (*n* = 512) tended to be:

- studies of risk behaviour prevalence among military deployed adults, veterans and military spouses (particularly where childhood abuse was found to modify/predict risk behaviours);
- studies using mandatory military conscription intakes to collect data for risk behaviours—without a focus on populations' military or non-military family background;
- studies examining military involvement/enlistment as a determinant of risk-taking behaviour among youth and adult populations (i.e. without a focus on a populations' military or non-military family background);
- studies investigating links between the "military interests" of adolescents and risk behaviours;
- papers about children's armies and the recruitment of child soldiers; and
- reviews of literary work whose authors or characters had military involvement.

Also excluded at Step 1 were several—but not all—studies exploring the psychosocial wellbeing of children in military families. Such studies were typically framed in the context of the intergenerational transmission of trauma or the impacts of deployment on children. Studies of this type were excluded if they focused on the *emotional* symptomology of children's psychological wellbeing (e.g. resilience, adjustment, emotional changes, vulnerability and "at-risk-ness"). Retained studies were those that focused on *behavioural* symptomology (e.g. externalising behaviour, behaviour problems). Closer screening of these studies' full text was needed to understand the relevance of the child behaviour measures used.

In Step 2, full-text versions were obtained for all remaining records (n = 45). These full-text articles were assessed for eligibility against the research question and inclusion criteria. The full-text papers were screened in discussion with a second reviewer.

Records excluded at screening Step 2 (n = 36) included:

- one (1) article whose full text was not available in English;
- one (1) article stating a correction to another article—we noted the correction on the original;
- nine (9) research reviews or summaries—used only to cross-check source lists;
- 21 records whose risk behaviour measures were not explicit enough, or not relevant; and

- four (4) articles that didn't report prevalence rates and whose study data was therefore not usable.

Also, two (2) additional records were sourced at Step 2, as a result of scrutinising source lists of the nine research reviews/summaries. Table 4 summarises the search results at each stage of the screening phase.

Table 4 summarises each stage of the screening process.

Table 4: Literature screening results

Processing stage	Results	No.
Identification and retrieval	Number of records identified through database and website search *Duplicates removed*	**706** **149**
Screening step 1: title/abstract	Number of records excluded after reading title/abstract—*not eligible against inclusion criteria*	512
	Excluded at abstract—*no full text readily available*	0
Screening step 2: full text	Number of full text articles assessed for eligibility	36
	Number of full text articles excluded—*not eligible against inclusion criteria*	5
Inclusion and assessment	Final number of studies included for assessment	2

Evidence evaluation methods

A screening process was adopted to code the eligibility of papers acquired through search strategy. Papers were directly imported into the bibliographic tool Endnote X5, and then processed using Excel. All records that were identified using the search strategy were screened for relevance against the inclusion criteria. Initial screening for inclusion was performed by one reviewer, and was based on the information contained in the title and abstract. Full text versions of all studies which satisfied this initial screening were obtained.

In screening the full-text paper, the reviewer made the decision on whether the paper should be included or excluded, based on the pre-defined inclusion and exclusion criteria. If the paper met the criteria for inclusion, then it was subject to data abstraction. At this stage in the information management process, 10% of the articles being processed were randomly selected and checked by a second independent reviewer. It was found that there was 100% inter-rater agreement between the two reviewers. The following information was extracted from studies that met the inclusion criteria: (i) study description, (ii) intervention description, (iii) participant

characteristics, (iv) primary outcome domain, (v) main findings, (vi) bias and (vii) quality assessment.

Evaluation of the evidence

As noted in section 2.2, the "descriptive" research question explored in this REA does not readily lend itself to ranking evidence but rather focuses on compiling an overall picture; in this instance, describing family protective and risk factors for transitioning and former Defence members. Nevertheless, it is possible to examine the quality of evidence for the individual studies and for the overall evidence base in order to assess how well the included studies answer the research question.

The ACPMH-designed methodology used for this REA does not detail procedures for assessing evidence quality for descriptive studies but does include criteria for assessing evidence quality for prevalence studies. We have adapted these criteria for use here. Although not all of the criteria for prevalence questions are applicable to a descriptive question (especially to a non-clinical topic that includes qualitative research as a valid form of evidence), the following three criteria were used to provide an indicative measurement of the strength of the research evidence.

a) **Quality and risk of bias** reflected how well the studies were conducted, including how the participants were selected, allocated to groups, managed and followed-up, and how the study outcomes were defined, measured, analysed and reported. The process for assessing quality and bias in individual studies and meta-analyses /systematic reviews is presented below.
   - Individual studies - an assessment was conducted for each individual study with regard to the quality and risk of bias criteria utilising a modified version of the Chalmers Checklist for appraising the quality of studies of interventions[20] (see Appendix 3). Three independent raters rated each study according to these criteria, and together a consensus agreement was reached as to an overall rating of 'Good', 'Fair', or 'Poor'.
   - Meta-analyses and systematic reviews - in the instance that either a meta-analysis or systematic review was included in the review they were rated according to an adapted version of the NHMRC quality criteria[21] (see Appendix 4). Three independent raters rated each study according to these criteria, and together a consensus agreement was reached as to an overall rating of 'Good', 'Fair', or 'Poor'.

b) **Quantity** of evidence reflected the number of studies that were included as the evidence base for each ranking. The quantity assessment also took into account the number of participants in relation to the frequency of the outcomes measures (i.e. the statistical power of the studies). Small underpowered studies that were otherwise sound may have been included in the evidence base if their findings were generally similar- but at least some of the

studies cited as evidence must have been large enough to detect the size and direction of any effect.

c) **Level of evidence** reflected the study design. The details of the study designs which are covered by each level of evidence are as follows:
   - Level I: A systematic review of RCTs
   - Level II: An RCT
   - Level III-1: A pseudo-randomised controlled trial (i.e. a trial where a pseudo-random method of allocation is utilised, such as alternate allocation).

Overall strength

A judgement was made about the strength of the evidence base, taking into account the quality and risk of bias, quantity of evidence and level of evidence. Agreement was sought between three independent raters and consensus about the strength of the evidence based was obtained according to the categories below:

High beneficial strength
Clear evidence of beneficial effect. One or more Level I studies with a low risk of bias **OR** three or more Level II studies with a low risk of bias

Moderate beneficial strength
*Evidence suggestive of beneficial effect***.** One or two Level II studies with a low risk of bias **OR** two or more Level III studies with a low risk of bias

Low beneficial strength
Insufficient evidence at present. One or more Level I through to Level IV study with a high risk of bias

High non-beneficial strength
No effect or a harmful effect. One or more Level I studies with a low risk of bias **OR** three or more Level II studies with a low risk of bias

Consistency

The consistency component of the ranking system of the body of the evidence assessed whether the findings were consistent across the included studies (including across a range of study populations and study designs). It was important to determine whether study results were consistent to ensure that the results were likely to be replicable or only likely to occur under certain conditions.

All studies are consistent reflecting that results are highly likely to be replicable

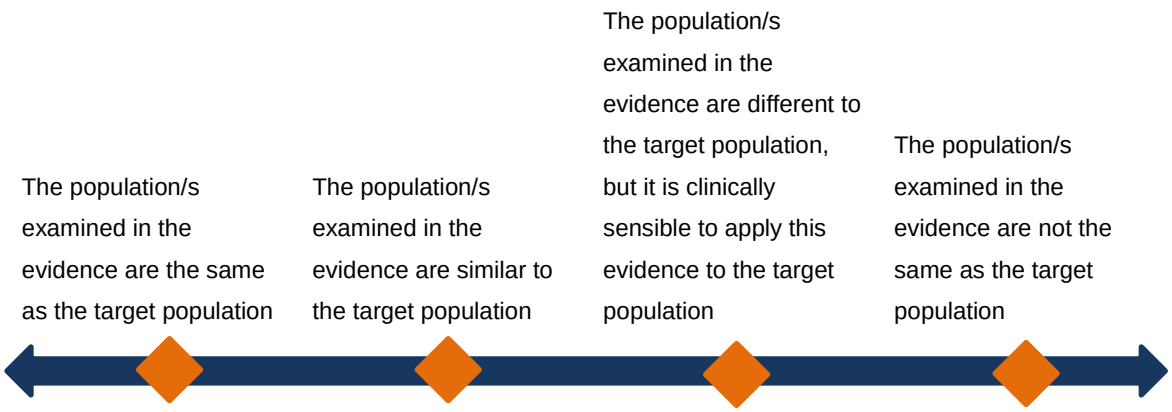
Most studies are consistent and inconsistency may be explained, reflecting that results are moderately-highly likely to be replicable

Some inconsistency reflecting that results are somewhat unlikely to be replicable

All studies are inconsistent reflecting that results are highly unlikely to be replicable

Generalisability

This component covered how well the participants and settings of the included studies could be generalised to the target population. Population issues that might influence this component included gender, age or ethnicity, or level of care (e.g. community or hospital). The generalisability continuum is presented below:



Applicability

This component addressed whether the evidence base was relevant to the Australian context, or to specific local settings (such as rural areas or cities). Factors that may reduce the direct application of study findings to the Australian context or specific local settings include organisational factors (e.g. availability of trained staff) and cultural factors (e.g. attitudes to health issues, including those that may affect compliance). Applicability was ranked as following:

Ranking the evidence

On balance, taking into account the considerations of the strength of the evidence (quality and risk of bias, quantity of evidence and level of evidence), consistency, generalisability and applicability, the total body of the evidence was then ranked into one of four categories: 'Supported'; 'Promising'; 'Unknown'; or 'Not Supported' (see Figure 1). Agreement was sought between three independent raters. A brief overview of the studies that contributed to the ranking results is presented in Appendix 7.

Figure 1: Categories within the intervention ranking system

SUPPORTED	PROMISING	UNKNOWN	NOT SUPPORTED
Clear, consistent evidence of beneficial effect	Evidence suggestive of beneficial effect but more research required.	Insufficient evidence of beneficial effect. More research required.	Clear, consistent evidence of no effect or negative / harmful effect

Results

Evidence screening results

The following 11 studies satisfied the REA inclusion criteria:

1. Acion, L., Ramirez, M. R., Jorge, R. E., & Arndt, S. (2013). Increased risk of alcohol and drug use among children from deployed military families. *Addiction*, *108*(8), 1418–1425.
2. Forrest, W., Edwards, B., & Daraganova, G. (2014b). *Vietnam Veterans Family Study, Volume 2*: *A study of health and social issues in Vietnam Veteran sons and daughters*. Canberra: Department of Veterans' Affairs.
3. Gilreath, T. D., Cederbaum, J. A., Astor, R. A., Benbenishty, R., Pineda, D., & Atuel, H. (2013). Substance use among military-connected youth: The California Healthy Kids Survey. *American Journal of Preventive Medicine*, *44*(2), 150–153.
4. Grasso, D. J., Saunders, B. E., Williams, L. M., Hanson, R., Smith, D. W., & Fitzgerald, M. M. (2013). Patterns of multiple victimization among maltreated children in Navy families. *Journal of Traumatic Stress*, *26*(5), 597–604.
5. Harpaz-Rotem, I., Rosenheck, R. A., & Desai, R. (2006). The mental health of children exposed to maternal mental illness and homelessness. *Community Mental Health Journal*, *42*(5), 437–448.

6. Harpaz-Rotem, I., Rosenheck, R. A., & Desai, R. (2009). Assessing the effects of maternal symptoms and homelessness on the mental health problems in their children. *Child and Adolescent Mental Health*, *14*(4), 168–174.

7. Hutchinson, J. W. (2006). Evaluating Risk-Taking Behaviors of Youth in Military Families. *Journal of Adolescent Health*, *39*(6), 927–928.

8. Pressley J. C., Dawson P., & Carpenter, D. J. (2012). Injury-related hospital admissions of military dependents compared with similarly aged nonmilitary insured infants, children, and adolescents. *Journal of Trauma and Acute Care Surgery, 73*(4), S236–242.

9. Reed, S. C., Bell, J. F., & Edwards, T. C. (2011). Adolescent well-being in Washington State Military. *American Journal of Public Health*, *101*(9), 1676–1682.

10. Weber, E. G. (2005). Geographic relocation frequency, resilience, and military adolescent behaviour. *Military Medicine*, *170*(7), 638–642.

11. Wickman, M., Greenberg, C., & Boren, D. (2010). The relationship of perception of invincibility, demographics, and risk behaviors in adolescents of military parents*. Journal of Pediatric Health Care*, *24*(1), 25–33.

The criteria and results of the initial quality assessment of these papers are provided in Appendix A. Descriptions of the reviewed papers are supplied in Appendix B.

Type of Evidence

All studies were conducted in the USA, with the exception of an Australian study of the offspring of Vietnam veterans and Vietnam-era personnel by Forrest, Edwards, and Daraganova (2014b). The year in which the included studies were published is presented in Figure 1. All included studies were published in the last ten years.

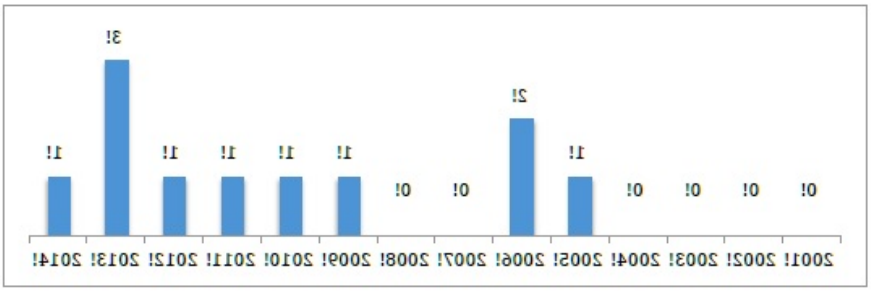


Figure 1: Year of publication of included studies

Risk behaviours investigated

Specific risk behaviours investigated by the studies varied. Alcohol and drug use were the most commonly researched risk behaviours. Of the 11 studies included for assessment:

- four (4) considered drug and alcohol use (Acion et al., 2013; Gilreath et al., 2013; Hutchinson, 2006; and Reed et al., 2011);
- three (3) investigated school absenteeism/drop out (Harpaz-Rotem et al., 2006, 2009; and Weber, 2005); and
- four (4) investigated multiple risk behaviours (Forrest et al., 2014b; Grasso et al., 2013; Pressley et al., 2012 and Wickman et al., 2010).

The studies investigating multiple risk behaviours included:

- Drug and alcohol use, criminal conviction, and school absenteeism, drop out, suspension and expulsion (Forrest et al., 2014b);
- Poisoning by drugs, and motor vehicle injuries where the military dependent was driving (Pressley et al., 2012);
- Drug and alcohol use, and delinquent behaviour (Grasso et al., 2013);
- Drug and alcohol use, risky sexual behaviour, risky driving, and delinquency (Wickman et al., 2010).

Sample sources and sizes

Of the 11 included studies, six studies conducted analyses using secondary data. Secondary data were from: US statewide schools-based surveys (Acion et al., 2013; Gilreath et al., 2013; Reed et al., 2011); US hospital paediatric admissions records from 16 states (Pressley et al., 2012); and a health program evaluation (Harpaz-Rotem, 2006, 2009). Among these studies, larger sample sizes were features of those whose secondary data derived from statewide school-based surveys (Acion et al., 2013; Gilreath et al., 2013; Reed et al., 2011) and paediatric admissions data (Pressley et al., 2012) (see Table 5).

By contrast, five studies used primary data sources. Primary data were collected from: adolescents presenting at health clinics (Hutchison, 2006; Wickman et al., 2010); students at four military-connected secondary schools (Weber, 2005); children of families referred to the US Navy's Family Advocacy Program (Grasso et al., 2013); and adult children of Vietnam veterans and Vietnam-era personnel (Forrest et al., 2014b). With the exception of Forrest et al. (2014b) and Hutchinson (2006), the studies using primary data had samples of less than 200 participants (see Table 5)

Table 5: Included studies' data sources and samples

Secondary data sources	Sample size (*N*)	Sample description
Acion et al. (2013)	78,240—of which 1,578 had a military-deployed parent	Enrolled 6th, 8th and 11th grade students in the US state of Iowa, grouped by those with and those without a deployed parent
Gilreath et al. (2013)	14,149—of which 9.2% (~1,301) had a military parent	5th, 7th, 9th and 11th grade students in military-connected public school districts in Southern California, USA, grouped by those without a military connection, those with a parent in the military and those with a sibling in the military; also grouped by the number of deployments of a family member in the past 10 years
Harpaz-Rotem et al. (2006)	195	Youngest child of female US veterans seeking medical and mental health care and who have been, are, or are at risk of being, homeless
Harpaz-Rotem et al. (2009)	142	Youngest child of female US veterans seeking medical and mental health care and who have been, are, or are at risk of being, homeless
Pressley et al. (2012)	742,375—of which 12,316 had a military parent	Children, teenagers and adolescents admitted for paediatric care in 16 US states, grouped by their status as military dependents and non- military dependents
Reed et al. (2011)	10,066—of which the proportion with a military parent or deployed parent was not reported	8th, 10th and 12th grade public school students in the US state of Washington, grouped by those with a military parent, deployed parent, or civilian parent
Primary data sources	**Sample size (N)**	**Sample description**
Forrest et al. (2014b)	2,200	Adult children of Australian Vietnam veterans and Vietnam-era personnel
Grasso et al. (2013)	195	Children from families referred to the US Navy's Family Advocacy Program due to alleged parent-inflicted abuse
Hutchinson (2006)	908	Adolescents in military families presenting to one of two adolescent health clinics in the US
Weber (2005)	179	Adolescents at US secondary schools receiving Military Impact Aid
Wickman et al. (2010)	125	Adolescents of US active duty and retired military personnel seeking care from a military medical facility

Quality and risk of bias

The included studies were rated against the quality assessment criteria designed by Phoenix Australia (ACPMH, 2014b) and using a scoring system adapted from Giannakopoulos, Rammelsberg, Eberhard, & Schmitter (2012) (see Appendix A). The highest possible quality score was 10. Studies with a total quality score of 0–3 were rated as "poor"; those with a score of 4–7 were rated as "moderate"; and studies with a score of 8–10 as "good".

Nine studies of the reviewed studies obtained a moderate quality rating: Acion et al. (2013), Forrest et al. (2014b), Gilreath et al. (2013); Grasso et al. (2013), Harpaz-Rotem et al. (2009), Hutchinson (2006), Pressley et al. (2012), Reed et al. (2011) and Wickman et al. (2010). The two remaining studies, Harpaz-Rotem et al. (2006) and Weber (2005), were rated as poor. The highest scoring study was that by Pressley et al. (2012), which achieved a score of 7 out of 10.

All included studies applied appropriate statistical analyses and the majority—eight out of 11 studies—had a well-defined target population. However, studies' measurement reliability and information about non-responders was generally poor. Only four of the 11 studies used standardised or validated data collection tools; namely Acion et al. (2013), Gilreath et al. (2013), Pressley et al. (2012), and Wickman et al. (2010). Analysis of non-responder differences was reported by only three of the 11 studies: Forrest et al. (2014b), Harpaz-Rotem et al. (2009), and Hutchinson (2006).

Assessed against the REA quality assessment criteria used for this review, studies using secondary data were rated lower on quality and risk of bias. Despite this, several of the reviewed studies using secondary data had the strength of larger sample sizes for the population of interest (Acion et al., 2013; Forrest et al., 2014b; Gilreath et al., 2013; Pressley et al., 2012; and Reed et al., 2011). On the whole, studies performed poorly against the Phoenix Australia criteria for representativeness (sampling method). Studies using secondary data tended to not report the primary sampling method used, or whether weighting was upheld. Two exceptions were the study by Reed et al. (2011), which reported that the secondary data source had originally applied sophisticated probability sampling; and the study by Pressley et al. (2012), which stated that the secondary data source had originally used a random sampling approach. Among the five studies using primary data, only one reported application of simple random sampling (Grasso et al., 2013); however, this probability sampling method was used only for a portion of the total sample (refer to note in the Appendix A table).

A possible explanation for the lack of representativeness among samples of military offspring was a necessary reliance on convenience sampling (in studies using primary data) due to the difficulty of accessing this population. Sample bias is potentially introduced when military parents are required to facilitate their children's participation in a study. Though many included studies were silent on the topic of bias, Forrest et al.'s (2014b) study of adult

children of veteran fathers directly addressed this issue. While the study's precursor sample of veteran fathers was randomly selected, the authors noted three possible types of selection bias in the sample of adult children: veteran fathers' failure to respond or participate; veteran fathers' failure to nominate their adult children; nominated adult children's failure to respond or participate.

In summary: Nine studies were rated as being of moderate quality and two were of poor quality.

Generalisability

The target population for the REA is Australian children of past and present military personnel and includes both adult and juvenile (under 18) children. As such, no specific age or gender requirements apply to the target population. However, because the assessed literature focuses on *either* adult *or* juvenile children of military personnel—and because these age groupings can have different behaviour profiles—the review assessed the generalisability of studies of adolescents to the adolescent section of the target population, and studies of adults to the adult section of the target population.

AIFS also assessed sample size and geographic scale or distribution (as per Table 5 above), and standard measures of sample generalisability such as nationality, ethnicity and the specificity of the populations studied (see evidence assessment criteria in section 2.5). Studies were classified as being of low, moderate or high generalisability to the population of interest.

Ten of the 11 included studies originated from the USA, potentially reducing their applicability to the Australian context. The ethnic makeup of the US studies' participants also affected the generalisability of the studies' findings to an Australian context (see Table 6). For example, the US studies included participants of ethnicities—such as African American, Hispanic/Latino, American Indian and Native Alaskan—that are uncommon in the Australian target population and that potentially have population-specific prevalence rates for specific behaviours. Studies in which these ethnicities are dominant (Gilreath et al., 2013, and Harpaz- Rotem et al., 2006, 2009) or where ethnicity was unreported (Weber, 2005) were less generalisable to the Australian context.

Table 6: Ethnicity of US study populations

	Caucasian (%)	African American (%)	Hispanic/ Latino (%)	Mixed race (%)	AI/AN (%)	Asian/ PI (%)	Missing/ Other (%)
Acion et al. (2013)*	77.1	9.9	6.6	n/a	3.5	3.8	n/a
Gilreath et al. (2013)**	26.6	6.8	34.5	19.2	12.9[#]		n/a
Grasso et al. (2013)	51.8	29.7	2.6	8.7	1.0	5.7	0.5
Harpaz-Rotem et al. (2006)	25.1	47.2	9.2	n/a	n/a	n/a	16.9
Harpaz-Rotem et al. (2009)	26.8	62.7	6.3	n/a	n/a	n/a	4.2
Hutchinson (2006)***	42.3	16.3	21.2	19.3	n/a	n/a	0.8
Pressley et al. (2012)****	51.9	13.5	7.7	n/a	n/a	n/a	26.9
Wickman et al. (2010)	60.0	12.0	8.0	n/a	4.0[##]	16.0	

AI = American Indian; AN = Alaskan Native; PI = Pacific Islander

* Deployed group

** Military parent group

*** Students in grades 9–12

**** Military group

Combined figure for AI/AN/Asian/PI

Combined figure for Native American/Other

Note: Weber (2005) did not report ethnicity data; Reed et al. (2011) reported detailed ethnicity data for subpopulations at a level too detailed for inclusion in this table: Caucasian participants were the majority proportion for all subpopulations of adolescent girls and boys with a military or deployed parent, with fewer Other, Hispanic and African-American participants.

The focus on highly specific subpopulations in some of the US studies—for example, military offspring with a parent with an experience of homelessness (Harpaz-Rotem et al., 2006, 2009) and the victims of alleged parent-inflicted child abuse (Grasso et al., 2013)—also limited their generalisability to the target population of all children of military parents.

Forrest et al. (2014b) was the sole study to address an Australian population, and was one of the few studies to explore adult children. Of the 11 studies included for review, Forrest et al. (2014b) provided the evidence of broadest interest to this review in that it addressed an Australian study population closest to the target population and its breadth of investigation provided evidence across several variables of interest: high-risk drinking, illicit drug use, school absenteeism, and also criminal behaviour. However, the study's focus on a very specific cohort—the adult children of male Vietnam veterans and Vietnam-era personnel— reduced its generalisability to the broader target population.

In summary: Five studies were classified as having moderate generalisability: Acion et al. (2013), Forrest et al. (2014b), Gilreath et al. (2013), Pressley et al. (2012) and Reed et al. (2011). Six studies were considered to have low generalisability: Grasso et al. (2013), Harpaz- Rotem et al. (2006, 2009), Hutchinson (2006), Weber (2005) and Wickman et al. (2010).

Health status

The health status of study populations reflected sample sources. The populations of five studies were classified "otherwise healthy" and four of these used school-based samples. Six studies had populations whose health was compromised. Poorer health statuses were attributed to samples sourced via presentations or admissions to health clinics or hospitals, health program evaluations or family advocacy program referrals. Specifically, these samples included:

- adolescents in military families presenting to adolescent health clinics (Hutchinson, 2006);
- adolescents seeking outpatient services from military medical facilities (Wickman et al., 2010);
- military dependents admitted to hospital for paediatric care (Pressley et al., 2012);
- veteran mothers seeking medical and mental health care and who have been, are, or are at risk of being, homeless (parent-report data was collected for the youngest child) (Harpaz- Rotem et al., 2006, 2009);

and

- children of families referred to the US Navy's Family Advocacy Program and who are alleged victims of parent-inflicted child abuse (Grasso et al., 2013).

Evidence summary

This section outlines the evidence for each specific risk behaviour explored in the literature review. In order to increase the reliability of extrapolated rates, only the results of studies rated as having at least moderate quality and moderate generalisability were considered when estimating prevalence rates.

High-risk drinking

A total of four studies investigating alcohol use met the REA inclusion criteria for high-risk drinking (drinking with a risk of immediate harm); all were rated as "moderate" quality with three rated as being moderately generalisable to the target

population. All included studies focused on underage drinking and measured "current" alcohol use, "past fortnight", "past 30- day", "past year" and "lifetime" alcohol use rates (with usage defined as more than a few sips of alcohol). Two studies reported rates specifically for binge drinking (Acion et al., 2013; Reed et al., 2011). Although the NHMRC 2009 Guidelines suggest that not drinking is the safest option for people under 18, because of this review's focus on risk-taking behaviour—defined as behaviour with a risk of immediate or acute harm—the discussion below focuses on past fortnight, past 30-day and binge drinking in adolescents. Lifetime measures of past alcohol use do not measure how often the subject has consumed alcohol, or in what context, so were therefore not considered explicit enough as a measure of risk-taking behaviour.[1]

Acion et al. (2013) compared past 30-day underage alcohol use and past 30-day underage binge drinking for grade 6, 8 and 11 students with a currently or recently deployed parent and students without a parent in the military. Data was gathered from the 2010 Iowa Youth Survey. The rate of all types of alcohol use was higher for students with a deployed parent than for students from non-military families across the three school grades measured. Past 30- day alcohol use was higher for students in the deployed group (22%) compared to students in the non-military group (15%). Past 30-day binge drinking was also higher for students with a deployed parent (18%) compared to students in the non-military group (10%).

Although Acion et al.'s (2013) study showed that base rate alcohol use for both groups increased with age (with the magnitude of difference remaining consistent across the three grades), explicit grade-specific alcohol use rates were not reported. However, a table of predicted alcohol use, controlling for sex, ethnicity and living arrangements, suggested past 30-day alcohol use for military-connected 6th graders as between 10% and 15% (compared to civilian 0 and 5%); for 8th graders as between 15% and 20% (civilian 10%); and 11th graders as between 35% and 40% (civilian 30%). Predicted past 30-day binge drinking for military-connected 6th graders was 5–10% (compared to civilian 0–5%); for 8th graders it was 10–15% (civilian 5%), and for 11th graders it was 25–30% (civilian 20–25%). The study by Acion et al. (2013) was of moderate quality and low to moderate generalisability; the study's focus on children of *deployed* parents, rather than children of all military parents (deployed or non-deployed; current or former), reduces its generalisability to the target population.

Reed et al. (2011) studied the prevalence of binge drinking in the past fortnight for adolescent boys and girls attending public schools in the US state of Washington.

[1] For example, Grasso et al. (2013) examined "past year" alcohol use among children and adolescents with a Navy parent/s, who were alleged victims of parent-inflicted child abuse, but did not explore high-risk drinking. The authors described "about half" of the sample as having consumed alcohol in the past year. Similarly, Forrest et al. (2014b)

The authors compared rates among adolescents with either a military, deployed or civilian parent. Binge drinking in the past two weeks were reported separately for the following subgroups:

- among adolescent girls in 8th grade: 9% for girls with a military parent and 17% for girls with a deployed parent, compared to 9% for girls with civilian parents (association between civilian parents and deployed parent, and between military parent and deployed parent, significant at $p < .05$);
- among adolescent girls in 10th and 12th grades: 29% for girls with a military parent and 29% for girls with a deployed parent, compared to 18% for girls with civilian parents (association between civilian parents and military parent, and between civilian parents and deployed parent, significant at $p < .05$);
- among adolescent boys in 8th grade: 10% for boys with a military parent and 14% for boys with a deployed parent, compared to 8% for boys with civilian parents (association between civilian parents and deployed parent, significant at $p < .05$); and
- among adolescent boys in 10th & 12th grade: 33% for boys with a military parent, 33% for boys with a deployed parent, compared to 23% for boys with civilian parents (association between civilian parents and military parent, and between civilian parents and deployed parent, significant at $p < .05$).

The study by Reed et al. (2011) was of moderate quality and moderate generalisability. Gilreath et al. (2013) examined past 30-day alcohol use for a subsample of a statewide survey of grade 5, 7, 9 and 11 students; with the subsample taken from students in Southern California attending public schools in military-connected districts (i.e., districts with an average daily attendance by military children of more than 400 or 10%). Prevalence rates were compared according to youths either having no military connection, having a parent in the military, or having a sibling in the military. The authors found that past 30-day alcohol use was lower for youth with a military parent (19%), compared to youth with no military connection (21%) and that current military connection was not in itself a predictor of alcohol use. Grade-specific results were not reported.

Gilreath et al. (2013) also compared alcohol use prevalence according to the number of familial deployments in the past 10 years (none, one, or two or more) reported by youth. These data should be interpreted with caution, as they combine both parent and sibling deployments. Youth who reported either one, or two or more, familial deployments had the highest prevalence of: lifetime alcohol use (42% and 43% respectively, compared to 41% of youth with no familial deployments); and past 30-day alcohol use (23% and 22%, respectively, compared to 20% of

youth with no familial deployments).** The data suggest that deployment may be associated with increased alcohol use prevalence among military- connected youth. The study by Gilreath et al. (2013) was of moderate quality and moderate generalisability.

Hutchinson (2006) investigated current alcohol use among adolescent offspring of active and retired military personnel in the USA, who were presenting to either of two adolescent health clinics. Of students in grades 9 through 12, high school alcohol use overall was significantly lower among adolescent offspring of active and retired military personnel (21%), compared with a national percentage of 45% in the US' Youth Risk Behaviour Surveillance (YRBS) data ($p < .0001$). While not specifically described, the author claimed to have compared current alcohol use for all grades, gender and ethnicities and found the prevalence among military-connected adolescents to be consistently and significantly lower. The study by Hutchinson (2006) was of moderate quality but low generalisability.

Summary: The results of the included studies were mixed, with some consistency in overall prevalence rates for adolescent binge drinking, past 30-day alcohol use and current alcohol use, but divergent results when comparing such drinking rates to non-military children. The two studies of past 30-day underage binge drinking (Acion et al., 2103 & Reed et al., 2011) reported broadly similar prevalence rates for military-connected youth with drinking rates increasing according to age. Past fortnight to 30-day binge drinking for the children of military and/or deployed military in grade 8 ranged between 9% and 17% (compared to 5–9% for non-military youth). For grades 10 to 12, the rates ranged between 25% and 33% (compared to 18–25% for non-military youth). Acion et al. (2013), however, measured past 30-day binge drinking, while Reed et al. (2011) measured past-fortnight binge drinking, meaning caution must be exercised in comparing the results.

The two moderately generalisable studies of past 30-day alcohol use among adolescents, Acion et al. (2013) and Gilreath et al. (2013), also reported broadly similar rates of past 30- day alcohol use—with an average use across the measured school grades of between 19% and 22%—but divergent results relative to the civilian population. That is, despite their similar use of US statewide school survey data (albeit from different states), Acion et al. (2013) reported past 30-day alcohol use as significantly *higher* for youth with a deployed parent than for youth in non-military families (at 15%), while Gilreath et al. (2013), in contrast, reported past 30-day alcohol use as *lower* for youth with a military parent than for students with no military connection (at 21%).

Hutchinson's (2006) exploration of current drinking rates was assessed as of low generalisability, but was consistent with the above two studies in reporting a current

alcohol use of 21% by the children (in grades 9 to 12) of active and retired military personnel.

However, the author reported that this was significantly *lower* than alcohol use in the general national adolescent population. Despite the broad similarity in age-specific rates for high-risk drinking, the results of these US-specific and deployment-focused studies have to be applied to the Australian context with caution, particularly given the inconsistency of measured *civilian* rates of high-risk alcohol use.

The lack of any studies rated as “good” quality studies or with a high generalisability to the target population means that there is very low certainty that such rates reflect a true prevalence rate for the target population or indicate a meaningful difference between military and non-military offspring.

Illicit drug use and pharmaceutical misuse

Seven of the included studies investigated the prevalence of illicit (illegal) drug use and pharmaceutical misuse among children of military parents. The studies measured current, past 30-day, past 12-month and lifetime prevalence rates. An eighth study (Pressley et al., 2012) reported on poisoning by drugs including psychotropic agents (antidepressants, tranquilisers, antipsychotics, psychostimulants and hallucinogens), non-psychotropic medication and drugs (all other medications from antibiotics to specific systemic agents), and non-medicinal substances (alcohol, carbon monoxide, pesticides, other gases, asbestos and lead). These eight studies were all rated as of moderate quality. Because of the focus of these studies on illegal drug use and pharmaceutical misuse, both of which by definition constitute risk-taking behaviour, lifetime use rates have been included as a measure.

Acion et al. (2013) compared past 30-day marijuana use, illegal drugs use and prescription drug misuse for grade 6, 8 and 11 students with a deployed parent and students without a parent in the military. The rate of all types of drug use was higher for students with a deployed parent than for students from non-military families. Past 30-day marijuana use was higher for students with a deployed parent (10%) compared to students who did not have a parent in the military (5%). Past 30-day illegal drug use was higher for students in the deployed group (10%) compared to students in the non-military group (3%). Past 30-day prescription drug misuse was higher for students in the deployed group (15%) compared to students in the non-military group (7%). Acion et al.’s (2013) study was of moderate quality and moderate generalisability.

Gilreath et al. (2013) examined lifetime and past 30-day marijuana, prescription drugs and other drugs use for a sample population of children of military parents living in Southern California and attending public schools (grades 5, 7, 9 and 11) in districts

with a high number of military children. Gilreath et al.'s (2013) study, rated as being of moderate quality and with moderate generalisability, found:

- Lifetime marijuana use was lower for youth with a military parent (24%), compared to youth with no military connection (27%).*
- Lifetime other drugs use was higher for youth with a military parent (16%) compared to youth with no military connection (15%);
- Lifetime prescription drug misuse was similar for youth with a military parent (17%) and youth with no military connection (17%);
- Past 30-day marijuana use was lower for youth with a military parent (13.7%), compared to youth with no military connection (14%); and
- Past 30-day other drugs use was higher for youth with a military parent (8%), compared to youth with no military connection (7%).

Gilreath et al. (2013) also compared prevalence rates according to the number of familial deployments in the past 10 years (none, one, or two or more) reported by youth. As previously stated, these data should be interpreted with caution as they combine both parent and sibling deployments. The data suggest that deployment of a parent or sibling may be associated with increased illicit drug use and pharmaceutical misuse among military- connected youth across all drug types. Youth who reported either one, or two or more, familial deployments had the highest prevalence of:

- lifetime marijuana use (28% and 27% respectively, compared to 26% of youth with no familial deployments);
- lifetime other drug use (17% and 17% respectively, compared to 13% of youth with no familial deployments);**
- lifetime prescription drug use (20% and 19%, respectively, compared to 18% of youth with no familial deployments);
- past 30-day marijuana use (16% and 14% respectively, compared to 13% of youth with no familial deployments);** and
- past 30-day other drug use (8% and 9% respectively, compared to 6% of youth with no familial deployments).**

Grasso et al. (2013) reported prevalence of past-year marijuana use among children and adolescents with a Navy parent/s, who were alleged victims of parent-inflicted child abuse. The authors described "about a sixth" of the sample as having used marijuana in the past year. Prevalence of past-year marijuana use was also reported according to a three-class solution of an exploratory latent class analysis. Children in Class 1 reported the highest prevalence (50%) of past-year marijuana use ($p < .001$)

and were significantly older and reported greater incidence of victimisation than children in other classes. Grasso et al.'s (2013) study was of moderate quality but low generalisability to the population of interest, with the focus on victims of alleged child abuse inflicted by a military parent a confounding factor.

Hutchinson (2006) investigated current marijuana use among US adolescents in military families presenting at one of two adolescent health clinics. High school marijuana use overall was significantly lower among adolescent offspring of active and retired military personnel (8%), compared with a national percentage of 22% in the US' Youth Risk Behaviour Surveillance (YRBS) data ($p < .0001$). Current marijuana use was compared for all grades, gender and ethnicities and was consistently and significantly lower with one exception: for

12th grade males, marijuana use was 20% among military-connected adolescents, compared to 25% statewide and 30% nationally ($p < .06$). Hutchinson's (2006) study was of moderate quality but low generalisability.

Reed et al. (2011) explored the prevalence of past 30-day drug use for adolescent boys and girls attending public schools in one US state. Adolescents reported their use of marijuana and "another illegal drug (not counting alcohol, tobacco, or marijuana)" in the last 30 days; those with a self-reported frequency of one day or more on these questions were categorised as drug users. The authors compared rates for adolescents with either a military, deployed or civilian parent. Drug use in the past 30 days was:

- higher for adolescent girls in 8th grade with a military parent (11%) or deployed parent (11%), compared to girls with civilian parents (8%);
- higher for adolescent girls in 10th and 12th grades with a military parent (26%) or deployed parent (31%), compared to girls with civilian parents (19%) (association between civilian parents and military parent, and between civilian parents and deployed parent, significant at $p < .05$);
- higher for adolescent boys in 8th grade with a military parent (12%) or deployed parent (13%), compared to boys with civilian parents (10%); and
- higher for adolescent boys in 10th and 12th grades with a military parent (32%) or deployed parent (37%), compared to boys with civilian parents (22%) (association between civilian parents and military parent, and between civilian parents and deployed parent, significant at $p < .05$).

Reed et al.'s (2011) study was of moderate quality and moderate generalisability. Spanning both alcohol and drug use, Wickman et al. (2010) compared responses from adolescents of active duty and retired military

personnel attending a military medical facility with concurrent, general population findings from the national US Youth Risk Behaviour Surveillance System (YRBSS) survey. The authors reported fewer substance risk behaviours among military teens compared to YRBSS adolescents nationally. Only 7% of military teens stated that family or friends had told them that they should cut down on their drinking or drug use, compared to 30% of YRBSS adolescents. Additionally, 5% of military teens indicated that they felt addicted to alcohol or drugs; and 8% stated that they had started using more and more drugs to get the effect they wanted—however, no comparative YRBSS data were reported for these two measures. The study was assessed as of moderate quality, with a moderate risk of bias due to the opportunistic collection of data from youth seeking health care from military health facilities, and low generalisability.

Pressley et al. (2012) approached the drug-use risk behaviour from a different perspective. The authors reported on drug-related poisonings by using paediatric admissions data for military dependents. Military dependents had higher rates of diagnoses for poisoning by psychotropic agents and non-psychotropic medications and drugs. For poisoning by psychotropic agents, military dependents had 32.5 diagnoses per 1,000 injury-related hospital admissions, compared to 25.5 diagnoses for non-military dependents ($p = .002$). For poisoning by non-psychotropic medications and drugs, military dependents had 88.1 diagnoses per 1,000 injury-related hospital admissions, compared to 60.2 diagnoses for non-military dependents ($p < .0001$). Pressley et al.'s (2012) study was conducted using secondary hospital admissions data and with a typical protocol for data collection, a normal procedural environment and using a large sample. The study was assessed as moderate in quality and generalisability.

Forrest et al. (2014b) compared lifetime and past 12-month marijuana/hashish use for adult children of Vietnam veterans and Vietnam-era personnel. Lifetime marijuana/hashish use for offspring of Vietnam veterans (68%) was significantly higher than for offspring of Vietnam- era personnel (56%) ($p < .001$). Past 12-month marijuana/hashish use was higher (but not significantly so) for offspring of Vietnam veterans (18.4%) compared to offspring of Vietnam-era personnel (17.6%). Forrest et al.'s (2014b) study was of moderate quality and moderate generalisability; although it was the sole study to explore an Australian population, its focus on a specific generational cohort reduced its generalisability to the target population.

In summary: eight studies of moderate quality captured a range of drug use prevalence rates (including current, past 30-day, past year and lifetime as well as drug-related poisoning admissions) against different drug types (including

marijuana/hashish, pharmaceuticals, illegal or other drugs and, for drug-related poisonings, psychotropic and non-psychotropic medications and drugs).

The different measures of usage and the range of drug types measured in these studies make comparison of usage rates difficult. However, two studies of moderate quality and moderate generalisability did use similar measures in reporting past 30-day drug use rates for marijuana use and “other drug” use (Acion et al., 2013; Gilreath et al., 2013). When considering the two studies together, the following prevalence rates can be extrapolated:

- past 30-day marijuana use prevalence rates for the children of military parents ranged from 10% to 14% (compared to 5–14% for civilian offspring); and
- past 30-day other drug use prevalence rates ranged from 8% to 10% for military offspring (compared to 3–7% for civilian offspring).

The different methods and measures used by Pressley et al. (2012) do not allow for comparison with the above studies but are indicative of higher rates of illicit drug use and pharmaceutical misuse by military children. Reed et al. (2011) also suggest higher rates of all illicit drug use (combined) by military adolescents, with the differences most significant for students in grades 10 and 12.

Although the extrapolated prevalence ranges suggest possible higher rates of illicit drug use (particularly drugs other than marijuana) among military juveniles and adolescents in comparison to civilian juveniles and adolescents, the lack of a single study rated either as “good” quality or as highly generalisable to the target population means there is a very low certainty that these rates reflect a true prevalence rate for the adolescent or juvenile section of the target population. Moreover, although Acion et al. (2013) reported higher rates of past 30- day marijuana, other drug and pharmaceutical misuse by adolescent military offspring, and Gilreath et al. (2013) reported marginally higher past 30-day “other drug” use by military offspring, Gilreath et al. (2013) also reported non-significant differences and/or lower military offspring rates for marijuana use and for lifetime rates for marijuana, other drug and pharmaceutical misuse. The low generalisability studies by Hutchinson (2006) and Wickman et al. (2010) also reported lower drug use by military offspring.

Forrest et al. (2014b) was the only study to report drug use prevalence rates among adult military offspring. However, the rates of 56% to 68% for lifetime marijuana/hashish use and 17.6% to 18.4% for past 12-month use among Vietnam veteran offspring and Vietnam-era personnel offspring respectively, were not compared with a civilian population.

School absenteeism

The search criteria identified four studies that investigated the prevalence of school absenteeism among children of military parents. Of these studies, two were of poor quality and two were of moderate quality. School absenteeism was defined by the included studies using various proxy indicators. These included enrolment and days absent from school (Harpaz-Rotem et al., 2006, 2009), as well as participants' experiences of suspension or expulsion from school (Forrest at al., 2014b; Weber, 2005)

Harpaz-Rotem et al. (2006) found that only 66% of veteran mothers' children ages 5 and older were enrolled in school. Children of homeless veteran mothers, regardless of their current custodial status, were significantly less likely to be enrolled in school ($p < .05$) than children whose veteran mothers were not homeless. The average number of days that school children missed during a 30-day period, although investigated by the study, was not reported. However, children of homeless veteran mothers ($p < .01$) and married veteran mothers ($p < .01$) were reported to have missed significantly more days of school than those children whose veteran mothers were not homeless or were single, separated or divorced. The study by Harpaz-Rotem et al. (2006) was of low quality and low generalisability. Its specific focus on a population experiencing homelessness reduced its generalisability to the target population. Moreover, the population of children with a veteran parent currently or formerly at risk of homelessness was a clear confounding factor likely to have influenced risk behaviour prevalence as much as the military affiliation.

The authors' follow-up study (Harpaz-Rotem et al., 2009) reported that 87% of veteran mothers' children ages 5 and older were enrolled in school. Enrolled children missed an average of 1.52 days of school during a 30-day period, with changes in the number of days their mother was homeless being significantly associated with reduced school enrolment ($p = .01$). Children were estimated to be about 20% less likely to be enrolled in school for every 10 days of the previous 90 that their veteran mothers spent homeless. This later study by Harpaz- Rotem et al. (2009) was of moderate quality but low generalisability.

Using a sample of students from four US secondary schools receiving Military Impact Aid, Weber (2005) investigated associations between military-connected youths' "aberrant behaviours" at school and their families' frequent geographic relocation. The author found school suspensions were rare (11%) in the study population and were not strongly associated with lifetime geographic relocation frequency. The study by Weber (2005) was of low quality and low generalisability.

By contrast, Forrest et al. (2014b) found higher overall rates of suspension/expulsion among Australian adult offspring of servicemen. The authors compared prevalence

rates for suspension/expulsion from primary or secondary school between adult children of Vietnam veterans and Vietnam-era personnel. The experience of being suspended or expelled from school was significantly higher among the offspring of Vietnam veterans (43%) than for the offspring of Vietnam-era personnel (33%) ($p <$ .01). The study by Forrest et al. (2014b) was of moderate quality and moderate generalisability.

Studies also measured school absenteeism less explicitly, such as by condensing several school-related issues into a single indicator. Prevalence rates reported using these indicators should be interpreted with caution, as the data may represent constructs other than those risk behaviours of interest to this REA. For example, Forrest et al. (2014b) investigated school absenteeism as part of a "behavioural problems" indicator, in combination with bullying. The binary indicator measured whether the respondent was absent for more than 10% of days in a school year or was bullied at school or institution (Forrest et al., 2014b, p. 55). The rate of school absenteeism/bullying was significantly higher for offspring of Vietnam veterans (10%) than for offspring of Vietnam-era personnel (5%), ($p < .01$).

Forrest et al. (2014b) also measured school drop out as part of a "learning problems" indicator, in combination with other learning difficulties items. The binary indicator measured whether the respondent repeated a year (including failing exams); worked with a psychologist, counsellor, or specialist teacher to assist with a learning difficulty; was placed in a remedial class; or dropped out of a course (Forrest, et al., 2014b, p. 55). The rate of learning problems was significantly higher among offspring of Vietnam veterans (38%) compared to offspring of Vietnam-era personnel (31%), ($p < .05$). All school absenteeism data analysed by Forrest et al. (2014b) are from retrospective reports by adult military offspring, who described what happened to them as school children.

Although Hutchinson (2006) did not explicitly investigate school attendance or absenteeism, the author reported the proportion of participants "not in school" (5 %) within a description of sample demographics.

In summary: No overall prevalence rate for school absenteeism was able to be determined due to the diversity of prevalence rates reported by the studies as well as the variety of different proxy indicators used for the risk behaviour. Two studies of poor quality and two of moderate quality found variable prevalence rates among their study populations. Prevalence rates for school suspension/expulsion ranged from 11% in Weber's (2005) US population (of low generalisability) to between 33% and 43% in Forrest et al.'s (2014b) Australian population. Forrest et al. (2014b) also found statistically significant prevalence rates of between 5% and 10% for school

absenteeism/bullying, and between 31% and 38% for school drop out. The study did not compare prevalence in the study population to the general population.

Criminal behaviour

For the purposes of this review, criminal behaviour was defined as having been formally convicted of a crime in a court of law. Only one study met the inclusion criteria for criminal behaviour among children of military parents. Forrest et al. (2014b) compared rates of criminal conviction for adult children of Vietnam veterans and Vietnam-era personnel. The authors found higher rates of criminal conviction among offspring of Vietnam veterans (7%) than for offspring of Vietnam-era personnel (4%); however, these differences were not statistically significant. This study was Australian, and was rated as having moderate quality and generalisability.

In summary: Although Forrest et al. (2014b) found prevalence rates of between 4% and 7% for criminal conviction in a population of offspring of deployed and non-deployed Vietnam servicemen, the study did not compare prevalence to a general population. The study population is of moderate generalisability to the population of interest, but the lack of supporting moderate or good studies means the results must be applied to the target population with extreme caution.

Unsafe sex

Only one study included for review examined unsafe (i.e. unprotected) sex among children of military parents. The absence of evidence on this topic is emphasised elsewhere in the recent literature (Klein & Adelman, 2008). Wickman et al. (2010) compared responses by military teens with concurrent YRBSS data. Fewer military teens indicated having sex without a condom (30%) than YRBSS adolescents nationally (42%). The study was of moderate quality but low generalisability.

In summary: One study of moderate quality and low generalisability found a prevalence rate of 30% for unsafe sex in a population of low generalisability to the population of interest.

This prevalence rate was lower than for the general national adolescent population; however, no statistically significant difference was reported.

Dangerous driving

Dangerous driving was defined for the REA as driving under the influence of alcohol or drugs, at a dangerous speed, or in a reckless or negligent manner, which may result in the death or injury of another person (*Crimes Act 1958* (Vic.)). The two studies reporting on dangerous driving by children of military parents found a lower prevalence among the study group compared to non-military or national adolescent populations.

Pressley et al. (2012) reported paediatric hospital admissions for motor vehicle injuries where a military dependent was the driver. This indicator is applied cautiously as a proxy for dangerous driving, as it is unclear whether the military dependent's driving was explicitly reckless and caused the injury. Military dependents had 16.3 diagnoses per 1,000 injury- related hospital admissions, compared to 18.7 diagnoses per 1,000 hospital admissions for non-military dependents (p = .90). Pressley et al.'s (2012) study was of moderate quality and moderate generalisability to the population of interest.

Wickman et al. (2010) also observed lower rates of risky driving among military teens than among adolescents nationally. The study found 4% of military teens reported driving a car while drunk or high in the past month, compared to 13% of YRBSS adolescents nationally. The study by Wickman et al. (2010) was of low generalisability to the target population.

In summary: Two studies of moderate quality found lower prevalence rates for risky driving among military dependents than among other populations. One study reported injury diagnoses indicative of risky driving as occurring at a rate of 16.3 per 1,000 in a population of moderate generalisability. The prevalence rate was not statistically significant when compared to that for non-military dependents and the study did not compare prevalence to a general population. A second study found a prevalence rate of 4% in a population of low generalisability to the population of interest. When compared to the general national adolescent population no statistically significant difference was reported. The methodological differences between the studies, and the lack of supporting studies, mean that a meaningful overall prevalence rate for risky driving could not be extrapolated.

Delinquency

For the purposes of this review, delinquency was defined as misbehaviour and wrongdoing. This definition permitted potential overlap with criminal behaviour in relation to minor crime. Two studies included for review examined delinquency among children of military parents. Both studies were of moderate quality; however, only one reported a prevalence rate.

Grasso et al. (2013) reported prevalence of past-year delinquency among children and adolescents with a Navy parent/s, who were alleged victims of parent-inflicted child abuse. Delinquent behaviour was considered present if youths endorsed having exhibited at least one of seven specific behaviours in the past year, such as "been arrested", or "been sent to jail or juvenile detention". The behaviours were selected from a modified version of the self-report delinquent behaviour scale used in the US National Youth Survey (Elliott, Huizinga, & Ageton, 1985, in Grasso et al., 2013). The authors described "a tenth" of the sample (n = 195) as having committed at least one

delinquent act in the past year. Prevalence of past-year delinquency was also reported according to a three-class solution of an exploratory latent class analysis. Children in Class 1 reported the highest prevalence (31%) of past-year delinquency ($p < .001$) and were significantly older and reported greater incidence of victimisation than children in other classes. The study by Grasso et al. (2013) was of moderate quality but low generalisability.

Finally, Wickman et al. (2010) measured—but did not report the prevalence of—aggressive and delinquent behaviours among military teens. In investigating the correlation between perceived invincibility and risk behaviours, the authors reported a significant relationship between aggressive and delinquent behaviour and the Adolescent Invincibility Tool ($r = .39$, $p = .000$) at $p < .01$. The study was rated as moderate quality but low generalisability.

In summary: Of the two moderate quality studies examining delinquency, one reported a prevalence rate of one tenth of the population; however, this study was of low generalisability to the population of interest and did not compare prevalence rates to the general population. The other study did not report prevalence but rather highlighted a significant correlation between feelings of invincibility and delinquency and aggression.

Discussion and conclusion

This review aimed to investigate the prevalence rate of risk-taking behaviour in the (adult and juvenile) children of past and present military personnel by exploring the evidence for specific behaviours that could be used as a proxy for risk-taking. These behaviours—high-risk drinking, illicit drug use and pharmaceutical misuse, dangerous driving, unsafe sex, criminal behaviour, delinquency and school absenteeism—were chosen because they reflected health and safety risk behaviours with the potential for immediate harm or, in the case of school absenteeism, at the request of DVA.

Most of the evidence available was for alcohol and other drug use rather than for the other risk behaviours, and only one study met the inclusion criteria for either high-risk sex or criminal behaviour. The evidence in all categories focused almost exclusively on children and adolescents, with only one study focused on the adult children of military parents (Forrest et al., 2014b). Because risk-taking behaviour among adolescents is frequently seen as a normative developmental process, with *all* teenagers potentially having a greater susceptibility to engage in risky behaviours in comparison to adult populations (Kelley, Schochet, & Landry, 2004; Turner, 2014), when attempting to extrapolate prevalence rates AIFS applied them to the relevant part of the target population; that is, AIFS considered the generalisability of adolescent studies to the adolescent part of the target population rather than the total population of military offspring.

Due to the heterogeneity of methods and samples used by the studies included in the review, it was not possible to combine the results from each of the behaviour types to produce a single prevalence rate for risk-taking behaviour by the children of military parents or to produce separate prevalence rates for adult children and juvenile children of military parents.

Similarly, within all but three of the specific behaviour categories used as a proxy for risk-taking behaviour in this review—namely, high-risk drinking and illicit drug use/pharmaceutical misuse and dangerous driving—there was insufficient moderate or good quality evidence, with moderate to high generalisability, to extrapolate an estimated prevalence rate for the target population. Specifically, there was both insufficient evidence overall, and a lack of even moderately generalisable evidence, to estimate meaningful prevalence rates for unsafe sex and for delinquency. The evidence for school absenteeism was similarly too inconsistent in sampling methods, populations sampled and results to estimate a meaningful prevalence rate.

When considering the results only of the moderate quality studies with moderate generalisability, prevalence rates *could* be extrapolated for adolescent military

offspring rates of high-risk drinking (binge drinking and past 30-day drinking) and both adolescent and adult rates for some forms of illicit drug use and adult criminal behaviour. A prevalence rate could not be extrapolated for dangerous driving but indicative results from a study of injury-related hospital admissions were noted (see discussion below). However, as indicated by the REA guidelines, an ample quantity of "good" quality studies with that are highly generalisable to the target population are required to extrapolate prevalence rates with a "high degree of certainty" (ACPMH, 2014b). The previous edition of the Developer's Guide (ACPMH, 2014a), which *did* provide criteria for ranking the certainty that estimates of prevalence reflect the true rate in the target population, stated that there had to be at least one study of either "good" quality or high generalisability to qualify even as "low certainty". The lack of a single study, for any behavioural measure, that was rated as either "good" quality or of high generalisability means that there is a very low certainty that the extrapolated rates for high- risk drinking and illicit drug use reflect true prevalence rates (even for the adolescent or juvenile section of the target population). Hence, attempts to generalise these rates to even a subsection of the target population should be undertaken with extreme caution.

High-risk drinking

High-risk drinking rates among the military and non-military adolescent children were reported by three moderate quality studies with moderate generalisability undertaken in the USA (Acion et al., 2013; Gilreath et al., 2013; Reed et al., 2011). When examining specific measures of high-risk drinking among adolescents, specifically past fortnight to 30-day binge drinking and past 30-day alcohol use, there was some evidence for overall prevalence rates; however, the evidence was somewhat contradictory with regard to whether such rates were high or low relative to the non-military population.

The two studies of past 30-day underage binge drinking (Acion et al., 2013 & Reed et al., 2011) reported past fortnight to 30-day binge drinking for the children of military and/or deployed military as between 9% and 17% for students in grade 8 (compared to 5–9% for non-military youth), and rates of 25% and 33% for students in grades 10 to 12 (compared to 18–25% for non-military youth). Both studies found higher overall rates of binge drinking among military children than among non-military children, with base rates of drinking increasing with age.[2]

Two studies (Acion et al., 2013 & Gilreath et al., 2013) also measured past 30-day alcohol use. Again, there was some consistency in the evidence for usage rates,

[2] By way of comparison, the AIHW reported that 15.4% of males and 11.3% of females aged 12–17 reported exceeding the adult guidelines for single occasion risk in last 12 months (AIHW 2014). However, comparing past-30-day measures with past 12-month measures, particularly across national contexts, is problematic.

with an average use across the measured school grades (8 to 12) of between 19% and 22%. However, Acion et al. (2013) reported past 30-day alcohol use as significantly *higher* for youth with a deployed military parent than for youth in non-military families (at 15%), while Gilreath et al. (2013), in contrast, reported no significant difference between the populations and suggested that a current military connection was not a predictor of alcohol use.

Caution must therefore be exercised in interpreting these results. Although the evidence suggests that recent binge-drinking rates might be higher among military children, the evidence is of insufficient quality or quantity to state with more than very low certainty that this evidence reflects the true rates within the adolescent subsection of the target population. Care also has to be exercised when comparing these rates to the Australian target population given the different national military context, patterns of deployment and national base alcohol consumption rates.

Illicit drug use and pharmaceutical misuse

The different measures of usage, population types, and the range of drug types measured in the research exploring illicit drug use and pharmaceutical misuse make comparison or distillation of usage rates difficult. Nevertheless, there was some consistency in the rates of past 30-day marijuana use and other drug use by adolescents within two moderate quality, moderately generalisable USA-based studies (Acion et al., 2013 & Gilreath et al., 2013). Specifically, these studies suggested that past 30-day marijuana use rates for the children of military parents ranged from 10% to 14% (compared to 5–14% for civilian offspring); and past 30-day other drug use prevalence rates ranged from 8% to 10% for military offspring (compared to 3–7% for civilian offspring).

The evidence was again, however, somewhat contradictory with regard to whether rates were high or low relative to the non-military population. Acion et al. (2013) reported higher rates of past 30-day marijuana, other drug and pharmaceutical misuse by adolescent military offspring, and other moderate quality (but non-comparable) studies by Pressley et al. (2012) and Reed et al. (2011) suggested higher rates of all illicit drug use and pharmaceutical misuse by military children. Gilreath et al. (2013), however, did not find any significant differences overall between the military and non-military rates for past 30-day or lifetime marijuana use, other drug use or pharmaceutical misuse.

Hence, although the extrapolated prevalence ranges suggest possible higher rates of illicit “other drug” use (in particular) among military juveniles and adolescents in comparison to civilian juveniles and adolescents, the lack of a single study rated as “good” quality or of high generalisability means that there is a very low certainty that

the rates noted above reflect a true prevalence rate for the adolescent or juvenile section of the target population or a tendency toward greater drug use.

The sole study focusing on an adult population, Forrest et al. (2014b), reported combined rates of 56% to 68% for lifetime marijuana/hashish use by Vietnam veteran offspring and Vietnam-era personnel offspring and 17.6% to 18.4% for the last 12 months. Forrest et al. (2014b) did not use a comparator civilian population but their findings can be cautiously compared with the findings of the AIHW (2014) survey of drug and alcohol use in which an estimated 35% of people aged 14 or older had used cannabis in their lifetime and about 10% had used cannabis in the previous 12 months. Lifetime usage rates for the Australian population aged 40–49 (a broadly comparable age range to the Forrest et al. sample) were 46%. Although this suggests potentially higher rates among the children of Vietnam era- personnel, the lack of good quality or highly generalisable supporting evidence means there is a very low certainty that these findings reflect a true prevalence rate.

Criminal behaviour

One study, Forrest et al. (2014b), reported that 4% to 7% of the surveyed children of Vietnam veterans and contemporaneous Defence members had a recorded criminal conviction. A comparable civilian population was not surveyed. The focus on a specific generational cohort of military offspring, and the lack of supporting studies, means that there is a very low certainty that the rates reflect the true rates in the target population.

Dangerous driving

The one study of moderate quality and generalisability, Pressley et al. (2012), reported on rates of paediatric hospital admissions for motor vehicle injuries, as a percentage of all injury-related admissions, rather than for overall population rates. Hence, a meaningful prevalence rate could not be extracted and applied to the target population. The study did provide some indicative data suggesting that, in the area of study, military dependents had lower rates of admissions for motor vehicle related injuries in which they were the driver than did non- military dependents. The lack of supporting evidence of even moderate quality and generalisability means that there is a very low certainty that these rates reflect the true prevalence rates in the target population. Further, inferring risk-taking behaviour or dangerous driving from hospital admissions must be undertaken with caution because it is unclear whether the accident was caused by reckless driving.

Study limitations

There are several limitations that should be considered when reading the results of this report. The relatively short time frame inherent to an REA necessarily imposes restrictions on its breadth and depth in comparison to a systematic review or meta-analysis. Hence, there may be relevant studies that were excluded because they were, for example, contained within unpublished reports or were published outside the 15-year time limit. Moreover, even had there been sufficient evidence to do so, this review would not have used a meta-analysis methodology to combine or synthesise the study results statistically. Rapid reviews of this kind also do not customarily use a meta-analysis methodology to combine or synthesise the study results statistically; it is possible that such an analysis might have been able to mitigate reconcile some of the contradictory results for specific behavioural indicators, although the issues of reliability, quality and generalisability would remain unchanged.

An additional limitation was the lack of evidence for risk-taking behaviour overall and of any studies of good quality or high generalisability to the target population that addressed the proxy measures of risk-taking behaviour; this considerably reduced the certainty with which extrapolated rates could be generalised to the target population. The use of specific proxy measures should also be noted, as it is possible that there may be a greater quantity or quality of evidence for other behavioural measures addressing risk-taking behaviour that were not considered in this review.

Conclusion

The evidence for each behavioural category of dangerous driving, unsafe sex, criminal behaviour and delinquency was of insufficient quantity, quality and generalisability to allow for the extrapolation of prevalence rates for the children of military parents (whether adult or juvenile). The evidence for school absenteeism was similarly too inconsistent in methods, populations sampled and results to estimate a meaningful prevalence rate.

It was possible to extract rates for the following behaviours; however the quality and generalisability of the evidence was such that there is a very low certainty that the following rates reflect the true prevalence rates in the target population:

High risk drinking (with a risk of immediate harm):

- past fortnight to 30-day adolescent binge drinking of between 9% and 17% for (USA) students in grade 8;

- past fortnight to 30-day adolescent binge drinking of between 25% and 33% for (USA) students in grades 10 to 12;
- past 30-day adolescent alcohol use of between 19% and 22% for (USA) students in grades 8 to 12;

Illicit drug use

- past 30-day (USA) adolescent marijuana use rates of 10% to 14%;
- past 30-day (USA) adolescent other drug use rates of 8% to 10%;
- Adult lifetime marijuana use: 56% to 68%;
- Adult past 12-month marijuana use: 18%.

Criminal behaviour

- Lifetime criminal conviction rates of 4.1% and 6.7% of total surveyed population **o**f the offspring of Vietnam-veterans and Vietnam-era Defence member

There was also some evidence that military dependents have similar or lower rates of admissions for motor vehicle related injuries in which they were the driver than do non- military dependents, although the nature of the evidence did not allow for the estimation of a prevalence rate. The lack of supporting evidence of even moderate quality and generalisability means that there is a very low certainty that these results can be applied to the target population.

Overall, the lack of any studies rated as of “good” quality or that were highly generalisable to the target population for any of the reviewed measures means that there is very low certainty that the rates reflect the true prevalence rates in even the adolescent section of the target population. Hence, these rates are of questionable usefulness when applied to the target population.

Moreover, when comparing use rates between military offspring and non-military offspring within and across the studies—a comparison that provides the most meaningful measure of whether the children of military personnel have a particular propensity to engage in any of the measures of risk-taking behaviour—the findings were inconsistent. Although some studies suggested that the adolescent children of military parents might have a greater propensity for binge drinking and the use of illicit drugs, particularly drugs other than marijuana, other studies of equal quality found no significant difference. Subsequently, no conclusions can be drawn with any certainty as to whether there is a meaningful difference between military and non-military offspring’s propensity to engage in risk-taking behaviour (at least on the behaviours measured here).

Additional, more focused, research would be required to increase knowledge of risk-taking behaviour—either as a general tendency or in relation to specific high-risk behaviours— among the offspring of past or present Australian military personnel. In particular, there is little research on the adult offspring of military personnel in general or on juvenile Australian children with past or present military parents.

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Appendix 1

Checklist for considering the quality of descriptive, observational prevalence studies	Study 1 Acion et al. (2013)	Study 2 Forrest et al. (2014b)	Study 3 Gilreath et al. (2013)	Study 4 Grasso et al. (2013)	Study 5 Harpaz-Rotem et al. (2006)	Study 6 Harpaz-Rotem et al. (2009)
1. Target population • Target population clearly defined, including: age, sex, employment, ethnicity, religion AND • Relevant data from health questionnaire of sampled persons, if appropriate	Yes	Yes	Yes	Yes	No	Yes
• Target population not clearly defined: limited data available on: age, sex, employment, ethnicity, religion AND • Relevant data from health questionnaire of sampled persons, if appropriate	No	No	No	No	Yes	No
• Target population poorly defined: little or no information on age, sex, employment, ethnicity, religion OR • Little or no information from relevant data from health questionnaire of sampled persons, if appropriate	No	No	No	No	No	No
2. Sampling method (Representativeness)						
• Sophisticated probability sampling used (e.g. stratified sampling; cluster sampling; multistage	No	No	No	No	No	No

sampling; multiphase sampling)						
• Simple probability sampling used (e.g., simple random sampling)	No	No	No	Yes	No	No
• No probability sampling used	Yes	Yes	Yes	No	Yes	Yes
3. Measurement (Reliability)						
• Standardised data-collection methods (e.g. validated clinical interview or diagnostic instrument/criteria) OR • Reliable survey instruments (e.g. validated self-report measure/validated screening instrument)	Yes	No	Yes	No	No	No
• Non-standardised data collection • OR • Non-validated interview or non-validated self-report measure	Yes	No	Yes	Yes	Yes	Yes
4. Information about non-responders						
• Analysis of differences of non-responders	No	Yes	Yes	Yes	Yes	No
• No analysis of differences information provided on non-responders OR • Only proportion (e.g., percentage) of non-respondents supplied without any other information	Yes	No	Yes	Yes	Yes	No

5. Additional Information						
• Information that may affect the overall rating (e.g., Were special features accounted for? Were there satisfactory/appropriate statistical analyses, confidence intervals, etc.?)	Yes	Yes	Yes	Yes	Yes	Yes
TOTAL QUALITY SCORE (HIGHEST POSSIBLE 10)	**6**	**6**	**6**	**5**	**3**	**6**

Checklist for considering the quality of descriptive, observational prevalence studies	**Study 7 Hutchinson (2006)**	**Study 8 Pressley et al. (2012)**	**Study 9 Reed et al. (2011)**	**Study 10 Weber (2005**	**Study 11 Wickman et al. (2010)**
1. Target population • Target population clearly defined, including: age, sex, employment, ethnicity, religion AND • Relevant data from health questionnaire of sampled persons, if appropriate	Yes	Yes	No	No	Yes
• Target population not clearly defined: limited data available on: age, sex, employment, ethnicity, religion AND • Relevant data from health questionnaire of sampled persons, if appropriate	No	No	Yes	Yes	No
• Target population poorly defined: little or no information on age, sex, employment, ethnicity, religion OR • Little or no information from relevant data from health	No	No	No	No	No

questionnaire of sampled persons, if appropriate					
2. Sampling method (Representativeness)					
• Sophisticated probability sampling used (e.g. stratified sampling; cluster sampling; multistage sampling; multiphase sampling)	No	No	Yes	No	No
• Simple probability sampling used (e.g., simple random sampling)	No	Yes	No	No	No
• No probability sampling used	Yes	No	Yes	Yes	No
3. Measurement (Reliability)					
• Standardised data-collection methods (e.g. validated clinical interview or diagnostic instrument/criteria) OR • Reliable survey instruments (e.g. validated self-report measure/validated screening instrument)	No	Yes	No	No	Yes
• Non-standardised data collection OR • Non-validated interview or non-validated self-report measure	Yes	No	Yes	Yes	No
4. Information about non-responders					
• Analysis of differences of non-responders	Yes	No	No	No	No
• No analysis of differences information provided					

on non-responders OR • Only proportion (e.g., percentage) of non-respondents supplied without any other information	No	Yes	Yes	Yes	Yes
5. Additional Information					
• Information that may affect the overall rating (e.g., Were special features accounted for? Were there satisfactory/appropriate statistical analyses, confidence intervals, etc.?)	Yes	Yes	Yes	Yes	Yes
TOTAL QUALITY SCORE (HIGHEST POSSIBLE 10)	**6**	**7**	**5**	**3**	**6**

Health Status	Study No., authors and year	Design	Country	Population (source)	Primary & Secondary Outcomes	Sampling Methodology	Number of Participants	Age and Gender (%)
Alcohol and drug use								
Otherwise healthy	1. Acion, Ramirez, Jorge & Arndt (2013)	Observational and cross-sectional study using secondary data source; self-report online survey	USA	2010 statewide Iowa Youth Survey (IYS) of enrolled 6th, 8th and 11th graders. All schools in the state of Iowa are invited to participate.	Ever drink more than a few sips of alcohol and past 30-day use: binge drinking, marijuana use (classified separately due to higher frequency of use than for other drugs), illegal drug use (sniffing/breathed contents, methamphetamines, cocaine, stimulants) and prescription drug misuse. Data are reliable with >85%	Secondary analysis of statewide IYS alcohol and drug use outcomes data: response rate of 69%	*N* = 78,240 students, comprising: Deployed: *N* = 1,758 Non-military:	Deployed: Age: 13.1 (*M*) M = 58.9% Non--military: Age: 13.5 (*M)* M = 49.1%

Health Status	Study No., authors and year	Design	Country	Population (source)	Primary & Secondary Outcomes	Sampling Methodology	Number of Participants	Age and Gender (%)
					of community variation due to community differences.		*N* = 57,637 Plus *N* = 18,845 excluded from analysis	
Findings: The rate of alcohol and substance use was higher in the deployed group than in the non-military (NM) group: Deployed group ever drink alcohol (36.18%) *cf.* NM (28.31%); Deployed group alcohol 30-day use (22.31%) *cf.* NM (14.46%); Deployed group binge (>5 drinks in a sitting) (17.60%) *cf.* NM (9.58%); Deployed group marijuana 30-day use (10.12%) *cf.* NM (4.82%); Deployed group illegal drug 30-day use (10.19%) *cf.* NM (3.09%); and Deployed group prescription drug 30-day misuse (15.29%) *cf.* NM (6.71%).								
Adolescence in military families presenting to either of two adolescent health clinics	7. Hutchinson (2006)	Cross-sectional study using self-report computer survey	USA	Adolescent offspring of active and retired military personnel, who present to one of two adolescent clinics in May-June 2004.	Current alcohol and marijuana use[3]	Rates of risk-taking behaviour were compared with 2003 statewide & national Youth Risk Behaviour Surveillance (YRBS) data.	N = 78,240 students, comprising: Deployed: *N* = 1.758 Non-military: *N* = 57,637 Plus *N* = 18,845 excluded from analysis	Deployed: Age: 13.1 *(M)* M = 58.9% Non-military: Age: 13.5 *(M)* M = 49.1%

[3] Adolescents' history of sexual intercourse was also reported by the study; however, this measure was considered not explicit enough as to indicate "risky sexual behaviour".

Health Status	Study No., authors and year	Design	Country	Population (source)	Primary & Secondary Outcomes	Sampling Methodology	Number of Participants	Age and Gender (%)
Prevalence findings: Of students in grades 9 through 12, current alcohol and marijuana use were compared with YRBS state and national statistics and were consistently and significantly lower, with one exception: for 12th grade males, marijuana use was 20% in the study group, compared with 26% statewide and 30% nationally ($p < .06$). High school alcohol use overall was 20.8% compared with a national percentage of 44.9% in the YRBS data ($p < .0001$). Marijuana use for high school students in the study was 7.8%, compared with 22.4% in the YRBS data ($p < .0001$). Though school attendance or absenteeism was not explicitly investigated by the study, the proportion of the sample "not in school" was reported as being 5.1%.								
Otherwise healthy	9. Reed, Bell, & Edwards (2011)	Cross-sectional cohort study using secondary data source; self-report hardcooy survey.	USA	2008 Washington State Healthy Youth Survey collected in public schools grades 8, 10, and 12.	Binge drinking (yes/no): "Think back over the last 2 weeks. How many times have you had 5 or more drinks in a row (a drink is a glass of wine, a bottle of beer, a shot of liquor, or a mixed drink)?" Drug use: "During the past 30 days, on how many days did you use marijuana or hashish (grass, hash, pot))?" and "During the past 30 days, on how many days did you (not counting alcohol, tobacco, or marijuana) use another illegal drug?". Adolescents with self- reported frequency of 1 day or more on these questions were categorised as drug users.	Clustered sampling design: after randomisation, participation is voluntary for schools and students. Response rates were 77% of 8th grade, 60% of 10th grade and 50% of 12th grade students.	*N* = 10,606 students, comprising students with a military parent, deployed parent or civilian parent (proportions not reported) Adolescent girls in 8th grade (*N* = 2,097) and 10th & 12th grades (*N* = 3,137) Adolescent boys in 8th grade (*N* = 1975) and 10th & 12th grade (*N* = 2801)	Age: N/A (Grade reported) Gender: N/A reported as number of adolescent girls or boys per grade

Health Status	Study No., authors and year	Design	Country	Population (source)	Primary & Secondary Outcomes	Sampling Methodology	Number of Participants	Age and Gender (%)
Findings: Binge drinking in past 2 weeks for adolescent girls in 8th grade was 9%[c] for girls with a military parent, 17%[b,c] for girls with a deployed parent *cf.* 9%[b] for girls with civilian parents. Binge drinking in past 2 weeks for adolescent girls in 10th & 12th grade was 29%[a] for girls with a military parent, 29%[b] for girls with a deployed parent *cf.* 18%[a,b] for girls with civilian parents. Binge drinking in past 2 weeks for adolescent boys in 8th grade was 10% for boys with a military parent, 14%[b] for boys with a deployed parent *cf.* 8%[b] for boys with civilian parents. Binge drinking in past 2 weeks for adolescent boys in 10th & 12th grade was 33%[a] for boys with a military parent, 33%[b] for boys with a deployed parent *cf.* 23%[a,b] for boys with civilian parents. Drug use in past 30 days for adolescent girls in 8th grade was 11% for girls with a military parent, 11% for girls with a deployed parent *cf.* 8% for girls with civilian parents. Drug use in past 30 days for adolescent girls in 10th & 12th grade was 26%[a] for girls with a military parent, 31%[b] for girls with a deployed parent *cf.* 19% [a,b] for girls with civilian parents. Drug use in past 30 days for adolescent boys in 8th grade was 12% for boys with a military parent, 13% for boys with a deployed parent *cf.* 10% for boys with civilian parents. Drug use in past 30 days for adolescent boys in 10th & 12th grade was 32%[a] for boys with a military parent, 37%[b] for boys with a deployed parent *cf.* 22%[a,b] for boys with civilian parents. [a] Association between civilian parents and military parent significant at $p < .05$ [b] Association between civilian parents and deployed parent significant at $p < .05$ [c] Association between military parent and deployed parent significant at $p < .05$								
Otherwise healthy	3. Gilreath, Cederbaum, Astor, Benbenishty, Pineda, & Atuel (2013	Cross-sectional study using secondary data source; self-report hardcopy survey	USA	Subsample of the statewide 2011 California Healthy Kids Survey (CHKD). Subsample comprised	Lifetime use of alcohol, tobacco, marijuana, other drugs or prescription drugs; and recent (past 30 days) use of alcohol, tobacco, marijuana and other drugs	Secondary analysis of subsample of CHKD students—those in class at military- connected public schools (i.e. having average daily attendance of more than 400 military students or 10%)— with a	*N* = 14,149 students, comprising: <u>No military connection:</u> 86.5% <u>Parent in military:</u> 9.2%	Age: N/A (Grade reported) <u>Overall sample:</u> F = 52.1% M = 47.9%

Health Status	Study No., authors and year	Design	Country	Population (source)	Primary & Secondary Outcomes	Sampling Methodology	Number of Participants	Age and Gender (%)
				5th, 7th, 9th, and 11th grade students in schools in Southern California in military-connected public school districts		response rate of 86.5%.	Sibling in military: 4.3% AND No deployments in past 10 years: 73% 1 deployment in past 10 years: 9.5% 2 or more deployments in past 10 years: 17.5%	

Findings: Youth who reported either one, or two or more familial deployments had the highest prevalence of substance use. Youth who reported a sibling in the military had highest prevalence of all lifetime substance use. Lifetime alcohol, marijuana and prescription drug use varied according to military-connection status. No differences were found in prevalence of recent drug use. Youth with a parent in the military lifetime drug use (yes): alcohol = 37.5%; marijuana = 23.6%; other drugs = 15.9%; prescription drugs = 17.2%.

Youth with a parent in the military past 30-day drug use (yes): alcohol = 19.4%; marijuana = 13.7%; other drugs = 8.3%.

Youth with one deployment of a family member in past 10 years lifetime drug use (yes): alcohol = 42.3%; marijuana = 27.6%; other drugs = 16.6%; prescription drugs = 19.5%. Youth with one deployment of a family member in past 10 years past 30-day drug use (yes): alcohol = 22.8%; marijuana = 16.1%; other drugs = 7.5%.

Youth with two or more deployments of a family member in past 10 years lifetime drug use (yes): alcohol = 43.2%; marijuana = 26.8%; other drugs = 17.2%; prescription drugs = 18.7%. Youth with two or more deployments of a family member in past 10 years past 30-day drug use (yes): alcohol = 22.3%; marijuana = 14.3%; other drugs = 8.5%.

Youth with a sibling in the military lifetime drug use (yes): alcohol = 45.8%; marijuana = 30.1%; other drugs = 17.3%; prescription drugs = 21.7%. Youth with a sibling in the

Health Status	Study No., authors and year	Design	Country	Population (source)	Primary & Secondary Outcomes	Sampling Methodology	Number of Participants	Age and Gender (%)
military past 30-day drug use (yes): alcohol = 23.9%; marijuana = 15.3%; other drugs = 6.6%								
Seeking paediatric hospital care	8. Pressley, Dawson, & Carpenter (2012)	Cross-sectional study using secondary data source; parent report via baseline	USA	Military dependents aged 0.1 year to 17 years identified by expected primary or secondary medical insurance payer, using the 2006 Kids Inpatient Database of the Healthcare Cost and Utilisation Project (KID). KID contains data on paediatric admissions in 38 US states; 16 states had data meeting the military dependents criteria.	Classification of patient diagnoses including: • motor vehicle driver; • poisoning by psychotropic agents (antidepressants, tranquilisers, antipsychotics, psychostimulants and hallucinogens); • poisoning by non-psychotropic medication and drugs (all other medications from antibiotics to specific systemic agents); • poisoning by non-medicinal substances (alcohol, carbon monoxide, pesticides, other gases, asbestos and lead)	Secondary analysis of paediatric admissions data for military children, adolescents and teenagers. Systematic random sampling used (every *n*th paediatric admission).	*N* = 742,375 children, teenagers and adolescents, comprising: <u>Military:</u> *N* = 12,310 <u>Non-military:</u> *N* = 730,065	<u>Military:</u> Age distribution provided: 0–4: 48.5% 5–9: 14.4% 10–14: 16.2% 15–17: 20.9% M = 51.4% <u>Non-military:</u> Age distribution provided: 0–4: 49.7% 5–9: 14.0% 10–14: 15.2% 15–17: 21.1% M = 50.5%

Health Status	Study No., authors and year	Design	Country	Population (source)	Primary & Secondary Outcomes	Sampling Methodology	Number of Participants	Age and Gender (%)
Findings: For *all types of poisoning*, military dependents had 114.4 diagnoses per 1,000 injury-related hospital admissions *cf.* 84.3 diagnoses per 1,000 hospital admissions for non-military (NM) dependents ($p < .0001$). For *poisoning by psychotropic agents*, military dependents had 32.5 diagnoses per 1,000 injury-related hospital admissions *cf.* 25.5 diagnoses per 1,000 hospital admissions for non-military (NM) dependents ($p = .002$). For *poisoning by other medications/drugs*, military dependents had 88.1 diagnoses per 1,000 injury-related hospital admissions *cf.* 60.2 diagnoses per 1,000 hospital admissions for non-military (NM) dependents ($p < .0001$). For *poisoning by non-medicinal substances*, military dependents had 20.5 diagnoses per 1,000 injury- related hospital admissions *cf.* 21.8 diagnoses per 1,000 hospital admissions for non-military (NM) dependents ($p = .54$). For *motor vehicle injuries where the dependent was the driver*, military dependents had 16.3 diagnoses per 1,000 injury-related hospital admissions *cf.* 18.7 diagnoses per 1,000 hospital admissions for non-military (NM) dependents ($p = .90$).								
School absenteeism								
Mothers seeking medical and mental health care from the US Department of Veterans Affairs (DVA) and who have been, are, or are at risk of being, homeless	5. Harpaz-Rotem, Rosenheck, & Desai (2006)	Cross-sectional study using secondary data source; parent report via baseline in-depth interview with mother at time of entry into a medical and mental health care program	USA	Subsample of baseline (program entry) data collected as part of an outcomes evaluation of a specialised medical and mental health care program for homeless female veterans of the US armed forces. Sub-sample comprised female veterans who had minor children: 26.7% mothers were homeless; 34.6% were at risk; 24% lived in a residential facility; 14.7% were housed. The program was founded by	Child school enrolment and attendance data collected from the mothers: school enrolment (yes/no); and, among those enrolled, typical number of days of school missed in a month.	Secondary analysis of a subsample of female veterans of the US armed forces engaged in a program outcomes evaluation—those with minor children (N = 195)—representing 33% of the total study sample (N = 582 women). Parent report data was collected for the youngest child.	*N* = 195	Mothers: Age: 40.2 (*M)* F=100% Child: Age and gender unreported

Health Status	Study No., authors and year	Design	Country	Population (source)	Primary & Secondary Outcomes	Sampling Methodology	Number of Participants	Age and Gender (%)
				DVA at 11 sites nationally				
Findings: 66.2% of veteran mothers' children ages 5 and older were enrolled in school. Children of homeless veteran mothers, regardless of their current custodial status, were significantly less likely to be enrolled in school ($p < .05$) than children whose veteran mothers were not homeless. The average number of days of school children missed during a 30-day period, although measured, was not reported. However, children of homeless veteran mothers ($p < .01$) and married mothers ($p < .01$) were reported to have missed significantly more days of school than those children whose veteran mothers were not homeless or who were single, separated or divorced.								
Otherwise healthy	10. Weber (2005)	Cross-sectional correlational study; adolescent self-report via hardcopy survey	USA	Students at four US secondary schools receiving Military Impact Aid (funding stream for schools with large numbers of military attendees)	Individual objective data on school suspensions	US secondary schools receiving Military Impact Aid were invited; four schools participated. Sampling method was not reported.	*N* = 179	Age: 15.8 (*M*) F = 54.7% (N=98) M = 45.2% (N = 81)
Findings: School suspensions (10.6%) were rare in the study population and were not strongly associated with lifetime geographic relocation frequency.								
Mothers seeking medical and mental health care from the US Department of Veteran Affairs (DVA) and who have	6. Harpaz-Rotem, Rosenheck, & Desai (2009)	Cross-sectional study using secondary data source; parent report via in-depth interviews with mothers over the course of one year, occurring every three months	USA	Mothers who were veterans of the US armed forces.	Youngest child school enrolment and attendance data collected from the mothers: school enrolment (yes/no); and, among those enrolled, number of days of school missed in the past month.	Secondary analysis of a subsample of mothers who were veterans of the US armed forces and who completed two or more clinical evaluation interviews. Parent-report data was collected for the	*N* = 142	Mothers: Age: 39.9 (*M*) F = 100% Children: Age: 9.54 (*M*) Gender unreported.

Health Status	Study No., authors and year	Design	Country	Population (source)	Primary & Secondary Outcomes	Sampling Methodology	Number of Participants	Age and Gender (%)
been, are, or are at risk of being, homeless		after entering a medical and mental health program				youngest child.		
Findings: 86.6% of veteran mothers' children ages 5 and older were enrolled in school. Children missed an average of 1.52 days of school during a 30-day period. Changes in the number of days the mother was homeless were significantly associated with reduced school enrolment (p = .01). Children were estimated to be about 20% less likely to be enrolled in school for every 10 days of the previous 90 that their mothers spent homeless.								
Adolescents seeking medical care from a military medical facility that provides outpatient services	11. Wickman, Greenberg, & Boren (2010)	Cross-sectional study; adolescent self-report hardcopy survey.	USA	Adolescents of active duty and retired military personnel	Students responded to 25 invincibility items via the Adolescent Invincibility Tool (AIT), an instrument developed for the study (measurement reliability examined). Specific risk behaviours (including alcohol and other drug use, risky sexual behaviour, risky driving and aggressive behaviour/delinquency) were measured using the National Institute on Drug Abuse Problem Oriented Screening Instrument for Teenagers (POSIT) questionnaire, of established reliability	Convenience sample obtained at a large military medical facility	*N* = 125	<u>Age:</u> 14–17: 24.8% 16–17: 36% 18–19: 35.2% 20: 4% F = 62% M = 38%
Findings: Where possible, results were compared with concurrent findings from the national 2001 Youth Risk Behavior Surveillance System (YRBSS) survey. Substance and sexual risks behaviours were fewer among military teens. 6.8% (n = 9) of military teens stated that family or friends had told them they should cut down on their drinking or drug use ("problem/episodic drinking"), *cf.* 29.9% of YRBSS adolescents; 3.8% (n = 5) of military teens reported driving a car while drunk or high in the past month, *cf.* 13% of YRBSS adolescents nationally; and 30.1% (n = 40) of military teens indicated having sex without a condom, *cf.* 42% of YRBSS adolescents nationally. Additionally, 5.4% (n = 7) of military teens indicated that they felt addicted to alcohol or drugs; and 7.5% (n = 9) of military teens stated that they had started using more and more drugs to get the effect they wanted. A significant relationship was demonstrated between aggressive and delinquent behaviour and the AIT (r = .39, p = .000) at p < 0.01. Teens who engaged in aggressive and delinquent behaviours had highest levels of invincibility as indicated by higher mean AIT scores.								
Otherwise healthy	2. Forrest, Edwards, & Daraganova (2014)	Quantitative self-report questionnaire by offspring of Vietnam (i.e. army personnel	Australia	Adult children (sons and daughters) of VV and VEP.	Drug use ever: Binary indicator of whether son/ daughter has ever tried marijuana/hashish. Drug use last 12 months: Binary indicator of whether	The analyses were restricted to members of a random-select sample of VV and least one child who	*N* = 2,200 offspring, comprising: *N* = 1,509 sons and daughters of 1,407 VV fathers VEP offspring: *N* = 691 sons and daughters of 505	Age: 37.4 (*M*) F = 63.1% M = 36.9% VEP offspring: Age: 37.7 (*M*) F = 63.4% M = 36.6%

Health Status	Study No., authors and year	Design	Country	Population (source)	Primary & Secondary Outcomes	Sampling Methodology	Number of Participants	Age and Gender (%)
		who were deployed between 1962 and 1975) and offspring of Vietnam-era Personnel (VEP) (i.e. Army personnel who served between 1962 not deploy to Vietnam).			son/daughter has used marijuana/hashish in the past 12 Current alcohol use:[4] *Low risk*: up to 4 (sons)/ up to 2 (daughters) standard drinks per day; *Risky*: 5 to 6 (sons)/ 3 to 4 (daughters) standard drinks per day; *High risk*: 7 or more (sons)/ 5 or more daughters) standard drinks per day. Been convicted: Binary indicator of whether son/ daughter was ever convicted of criminal offence. indicator of whether the respondent was suspended or expelled from primary or high school.[5]	had participated in the original Vietnam Veterans Family Study survey, and who registered their family members. An average of 57.20% of VV offspring and 52.42% of VEP responded to the survey.	VEP fathers	
Findings: VV offspring drug use ever (68.4%) *cf.* VEP offspring (55.9%) (p<.001); VV offspring drug use last 12 months (18.4%) *cf.* VEP offspring (17.6%) (ns); VV offspring low risk alcohol use (56.7%) *cf.* VEP offspring (62.1%) (ns); VV offspring risky alcohol use (28.1%) *cf.* VEP offspring (26.4%) (ns); VV offspring high-risk alcohol use (15.1%) *cf.* VEP offspring (11.5%) (ns); VV offspring been convicted (6.7%) *cf.* VEP offspring (4.1%) (ns); VV offspring suspended or expelled (43.1%) *cf.* VEP offspring (33.0%) (p<.01).								

[4] Categories of alcohol risk were derived according to National Health and Medical Research Council guidelines separately for sons and daughters (Forrest, Edwards, & Daraganova, 2014, p.40).

[5] The study also investigated VV and VEP offsprings' school experiences; however, the measures were not explicit enough to strictly indicate school attendance/school drop-out. School absenteeism was measured as part of a "Behavioural problems" indicator, in combination with bullying: "Binary indicator of whether the respondent was absent for more than 10% of days in a school year *or* was bullied at school or institution". School drop out was measured as part of a "Learning problems" indicator, in combination with other learning difficulties items: "Binary indicator of whether the respondent repeated a year (including failing exams); worked with a psychologist, counsellor or specialist teacher to assist with a learning difficulty; was placed in a remedial class; *or dropped out of a course*" (Forrest, Edwards & Daraganova, 2014, p.55). There were significant differences in prevalence rates for VV offspring *cf.* VEP offspring for both Behavioural problems and Learning problems indicators.