



Epidemiological Cut-off Feasibility Study

Executive Summary

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INTRODUCTION

The Epidemiological Cut-off Feasibility Study aims to assess the reliability of the Kessler Psychological Distress Scale (K10) as a predictor of mental disorders in the total Australian population and the population of persons who have ever served in the Australian Defence Force. Analysis was conducted using five ABS population surveys, three of which included information on whether respondents had ever served in the Australian Defence Force. In this study, a statistical tool known as epidemiological cut-offs was used to assess the likelihood of a person having a mental disorder based on their level of psychological distress.

BACKGROUND

In 2010 the Centre for Traumatic Stress Studies (CTSS) at the University of Adelaide, on behalf of the Department of Defence (Defence) and the Department of Veterans' Affairs (DVA), undertook the *Mental Health in the Australian Defence Force: 2010 Australian Defence Force Mental Health Prevalence and Wellbeing Study* (MHPWS), which researched the wellbeing of currently serving Australian Defence Force (ADF) personnel (McFarlane et al 2011).

One aim of the MHPWS was to refine methods for detecting mental health conditions in the ADF population. Participants were screened for Post-Traumatic Stress Disorder (PTSD), psychological distress and alcohol use disorders using three instruments routinely used by the ADF, including the Kessler Psychological Distress Scale (K10). Analysis of the screening indicated comparable trends between self-reported mental health condition prevalence measures compiled by CTSS and the diagnostic interviews conducted (McFarlane et al 2011).

The MHPWS recommended screening cut-offs for the K10 and other instruments to be employed to identify the maximum number of ADF members for early intervention. The study also recommended the use of epidemiological cut-offs to accurately monitor prevalence of disorders over time (McFarlane et al 2011).

The Epidemiological Cut-off Feasibility Study was undertaken to add to this field of research. Aims of the study include:

- exploration of existing information from Australian Bureau of Statistics (ABS) health surveys to understand the relationship between levels of psychological distress based on the K10 and prevalence of mental health conditions.
- assessment of the accuracy of the K10 to determine the likelihood of whether someone in the general population or the population who had ever served in the ADF had anxiety, affective or substance use disorders.
- determining whether different screening and epidemiological cut-offs are applicable to the general population and the population who had ever served in the ADF (referred to in this study as the '**optimal screening cut-off**' and the '**optimal epidemiological cut-off**' respectively).
- assessment of the feasibility of using epidemiological cut-offs as a proxy measure of prevalence of mental disorders.

KEY FINDINGS

MENTAL HEALTH

- In 2007, when age structure is taken into account, 21% of people aged 16-85 years who had ever served in the Australian Defence Force (ADF) had a mental disorder in the previous 12 months, similar to that of the total Australian population of the same age (20%) (2007 Survey of Mental Health and Wellbeing).
- For persons who had ever served in the ADF, anxiety disorders were the most common disorder type (14.0%), followed by affective disorders (8.3%) and substance use disorders (4.7%). This was similar to rates of anxiety disorders, affective disorders and substance use disorders experienced in the total Australian population (14.5%, 6.3% and 5.3% respectively (2007 SMHWB).

RELATIONSHIP BETWEEN PSYCHOLOGICAL DISTRESS AND MENTAL DISORDERS

- For the total Australian population, the 1997 and 2007 SMHWB showed the strongest association between psychological distress as measured by the Kessler Psychological Distress Scale (K10) and mental disorders experienced in the past 30 days.
- For the total Australian population, K10 has excellent discrimination in predicting the existence of affective disorders, good discrimination for anxiety disorders and fair discrimination for substance use disorders (as assessed through analysis of the 2007 SMHWB).
- For persons who have ever served in the ADF, K10 has good discrimination in predicting the existence of affective disorders, excellent discrimination for anxiety disorders and fair discrimination for substance use disorders (as assessed through analysis of the 2007 SMHWB).

OPTIMAL SCREENING CUT-OFFS

- For the total Australian population, the 2007 SMHWB indicates that the optimal screening cut-off for affective disorders is 21, for anxiety disorders 18, and for substance use disorders 17.
- In comparison, the *Mental Health in the Australian Defence Force: 2010 ADF Mental Health Prevalence and Wellbeing Study* (MHPWS) found that optimal screening cut-offs for the ADF population were 19 for affective disorders and 17 for anxiety disorders. The higher cut-offs for the total Australian population may imply that for persons showing increased levels of psychological distress, these levels are less likely to be associated with the presence of either affective or anxiety disorders in the general population than the ADF population.
- For persons who have ever served in the ADF, the 2007 SMHWB indicates that the optimal screening cut-off for combined affective, anxiety and substance use disorders is 18.

OPTIMAL EPIDEMIOLOGICAL CUT-OFFS

- For the total Australian population and persons who have ever served in the ADF, optimal epidemiological cut-offs derived from K10 scores in each ABS survey provide predicted prevalence rates of mental disorders similar to the actual prevalence rates from the same survey.
- However, when optimal epidemiological cut-offs determined from one ABS survey were applied to K10 data in other ABS surveys, predicted prevalence rates did not match actual rates from those surveys. This may be due to differences in methods used to measure mental disorders across surveys, as well as changes in reporting patterns by respondents over time.

METHODS

Results in this study are based on analysis of five ABS population surveys that include the Kessler Psychological Distress Scale (K10) and questions on mental disorders:

- 1997 National Survey of Mental Health and Wellbeing of Adults
- 2007 Survey of Mental Health and Wellbeing
- 2007-08 National Health Survey
- 2011-12 National Health Survey
- 2014-15 National Health Survey

Populations included in analysis are the total Australian population and persons who have ever served in the Australian Defence Force (ADF), disaggregated by sex and selected age groups.

Data for the ADF population are available from the 2007 Survey of Mental Health and Wellbeing, 2011-12 National Health Survey and 2014-15 National Health Survey. The question asked to identify this population is 'Have you ever served in the Australian Defence Force?'.

Mental disorders considered for analysis are:

- Affective, anxiety and substance use disorders (that is, persons with any of the three conditions)
- Affective and anxiety disorders (persons with any of the two conditions)
- Affective disorders
- Anxiety disorders
- Substance use disorders

CONCLUSIONS

The Epidemiological Cut-off Feasibility Study explored the relationship between psychological distress as measured by the Kessler Psychological Distress Scale (K10) and prevalence of mental disorders for the total Australian population, and for persons who have ever served in the Australian Defence Force (ADF).

For both populations, there is a predictive relationship between K10 and mental disorders, demonstrated by the area under the Receiver Operating Characteristics curves. These indicate that K10 has a strong association with the prevalence of affective and anxiety disorders, and a weaker association with substance use disorders.

The strength of the relationship between K10 and affective and anxiety disorders supports the potential use of screening cut-offs to assess whether persons are at risk of having either disorder. The optimal screening cut-offs for the Australian population determined in this study are higher than those recommended for use for the currently serving population in the *Mental Health in the Australian Defence Force: 2010 ADF Mental Health Prevalence and Wellbeing Study* (MHPWS). The higher cut-offs for the total Australian population may imply that for persons showing increased levels of psychological distress, these levels are less likely to be associated with the presence of either affective or anxiety disorders in the general population than the ADF population.

While a strong relationship between K10 and mental disorders has been established, trends produced by applying optimal epidemiological cut-offs from particular surveys to K10 scores in other ABS surveys, which may imply an increase in prevalence of mental disorders over time, were not able to be verified. These trends should be interpreted with caution. Data from the 2017-18 National Health Survey, when available, may inform on the validity of the use of optimal epidemiological cut-offs in monitoring trends over time.

For more information, see the *Epidemiological Cut-Off Feasibility Study June 2017* report which includes more detail about

- methodology
- data sources
- results
- data tables

FOR MORE INFORMATION . . .

For more detailed information about the Epidemiological Cut-Off Feasibility Study, see the **Epidemiological Cut-Off Feasibility Study Full Report**.

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