Comparing profiles of mental disorder across birth cohorts: Results from the 2007 Australian National Survey of Mental Health and Wellbeing

Author:

Sunderland, Matthew; Carragher, Natacha; Buchan, Heather; Batterham, Philip; Slade, Tim

Word Count: 4,888

Running head: Profiles of disorder across birth cohorts

Comparing profiles of mental disorder across birth cohorts: Results from the 2007 Australian National Survey of Mental Health and Wellbeing.

Matthew Sunderland, Research Fellow[1]

Natacha Carragher, Research Fellow[1]

Heather Buchan, Research Associate[1]

Philip J. Batterham, Fellow[2]

Tim Slade, Associate Professor[1]

In preparation for ANZJP

[1] NHMRC Centre for Research Excellence in Mental Health and Substance Use, University of New South Wales, Sydney, New South Wales, Australia.

[2] Centre for Mental Health Research, the Australian National University, Canberra, Australian Capital Territory, Australia.

Corresponding author: Dr Matthew Sunderland, National Drug and Alcohol Research Centre, Building R1, Randwick Campus, University of New South Wales, Australia. Email: matthews@unsw.edu.au. Ph: 612 9385 0106. Fax: 612 9385 0222.

ABSTRACT

Objective: To describe and compare individuals with any DSM-IV mental disorder from three different birth cohorts - young (16-34 years), middle age (35-60 years), and older age (60-85 years) - on a range of clinically relevant factors.

Methods: Data were derived from the 2007 Australian National Survey of Mental Health and Wellbeing. Individuals from three birth cohorts with a range of mental health and substance use disorders were identified using DSM-IV criteria and compared using regression analysis. The specific factors that were compared include: 1) type of disorder/disorders present, 2) suicidality, 3) number of co-occurring disorders, 4) levels of distress and impairment, 5) self-assessed physical and mental health, 6) presence of physical conditions, 7) size and quality of social support/network, and 8) treatment seeking behaviour

Results: The birth cohorts differed dramatically in terms of the specific disorders that were present. The older cohort were significantly more likely to experience internalising disorders and significantly less likely to experience externalising disorders in comparison to the young cohort. The older cohort were significantly more likely to experience co-morbid physical conditions as well as lower life satisfaction, poorer self-rated physical health, increased functional impairment, and more days out of role. The younger cohort had a significantly larger peer group that they could confide in and rely on in comparison to the older cohort.

Conclusions: Clinicians and researchers need to be cognisant that mental disorders manifest as highly heterogeneous constructs. The presentation of a disorder in a younger individual could be vastly different from the presentation of the same disorder in an older individual. The additional burden associated with these factors and how they apply to different birth cohorts must be taken into consideration when planning mental health services and effective treatment for the general population.

INTRODUCTION

Epidemiological studies from around the world have consistently indicated that the prevalence of common mental disorders is lower amongst older cohorts compared to younger cohorts (Kessler et al., 2010a; Kessler et al., 2010b; McEvoy et al., 2011; Trollor et al., 2007). This finding has led some researchers to conclude that numerous protective factors lead to reduced prevalence of disorder in older age (Jorm, 2000a). Such protective factors include improved resilience, coping skills and emotional control as well as a decrease in emotional responsiveness and neuroticism levels (Blazer and Hybels, 2005; Ernst and Angst, 1995; Mroczek and Spiro, 2003; Williams et al., 2006). Alternatively, researchers have questioned these findings and claim that prevalence of mental disorders in older cohorts may be underestimated due to poor validity of the diagnostic instruments and the complexity of epidemiological surveys (O'Connor and Parslow, 2010). These findings have often provided the image that disorders amongst the older population are rare in comparison to younger cohorts regardless of whether it is a true decline or artefact of assessment. Indeed, across younger age groups there is a steady increase in the prevalence and onset of most mental disorders before reaching a peak in middle age (Kessler et al., 2007).

This rise and fall trajectory of mental illness across age cohorts has encouraged clinicians and researchers to focus research and health service expenditure on younger cohorts in the population. Indeed, improving the quality and size of treatment services as well as utilisation of these services amongst the whole population is a key aim of the Australian government mental health policy reforms (Council of Australian Governments, 2012). However, the population boom in the 1940s and 1950s has resulted in large scale demographic shift that pose a significant challenge to mental health services, which may struggle to keep up with the greater demands of an aging population (Jeste et al., 1999; Karel et al., 2012). Therefore, further examination of mental health disorders amongst older cohorts

may result in significant improvements in mental health services and the development of treatment and prevention programs that reduce the incidence of mental disorders in old age by targeting known risk factors (Draper, et al., 2006).

Examination of the prevalence rates across the age cohorts might distort the picture of mental health experienced by various birth cohorts. Mental disorders are heterogeneous constructs, meaning that the use of polythetic diagnostic criteria and the possibility of receiving multiple related diagnoses can often result in large variations in the type of disorders, symptoms, and criteria that are experienced by individuals (Hyman, 2010; Krueger and Bezdjian, 2009). Moreover, mental disorders co-occur more often than expected by chance and a number of external but related factors influence course, severity, distress level, and treatment outcome. For example, the presence of suicidality, regardless of the diagnosis, is often used by clinicians as a marker of severity and requires special consideration when planning effective treatment (Claassen et al., 2007; Kim et al., 2011). Co-morbid physical and mental disorders also pose a growing problem that can result in higher degrees of severity and distress and increased levels of mortality, particularly in relation to mental disorders that co-occur with cardio-vascular and heart disease (Barth et al., 2004; Baumeister et al., 2011; Penninx et al., 2001). Finally, level of social support and treatment utilisation are important factors associated with a reduction in the burden of mental disorders faced by individuals (Thoits, 2011).

Therefore, whilst the prevalence of mental disorders provides a picture of improved mental health across age, it is unclear whether the disorder profile and associated clinical factors remain constant across birth cohorts. It is possible that disorders, whilst comparatively rare in older age, might be accompanied with additional, complicating factors that may not be present in younger cohorts and therefore require greater clinical attention, more nuanced treatment planning, and exert additional pressure on health services and government budgets.

Providing additional evidence that better describes the profiles of disorder across different age groups is a key step towards improving interventions and alleviating pressure on health services, clinicians, and government budgets.

Previous research provides support for a changing disorder profile with age, particularly research demonstrating higher rates of co-morbid physical and mental disorders in older age (Kessler et al., 2010b). Moreover, many physical disorders are often observed as a result of advanced aging, such as chronic pain due to arthritis or reduced bone and cartilage density. The increased symptom overlap between mental and physical disorders may also further contribute to poor recognition and diagnosis of mental disorders amongst older individuals (Mitchell, 2011). Research also indicates that psychosocial factors such as loneliness and social isolation are more common with increasing age and can contribute to increased severity of mental disorders (Jylha, 2004). Finally, in one of the few studies to directly compare the prevalence and determinants of mental disorders across middle age and older age cohorts, Trollor et al (2007) demonstrated that socio-demographic characteristics related to the diagnosis of any mental disorder (mood, anxiety, and substance use disorders) differ dramatically across the two age-cohorts, particularly in regard to marital status, sex, and employment status. In sum, previous evidence indicates a nuanced picture of mental disorders across age cohorts. However, there is a paucity of research examining whether the specific profiles of mental disorder (i.e. the types of disorders and pattern of co-morbidities that are present) and various clinical correlates of interest significantly differ across the birth cohorts in the general population.

The current study aims to address this gap by comparing individuals who receive a diagnosis of any mental disorder across three birth cohorts - young (16-34 years), middle age (35-60 years), and older age (60-85 years) - on a range of clinically relevant factors. The specific factors under examination include: 1) type of disorder/disorders present, 2)

suicidality, 3) number of co-occurring disorders, 4) levels of distress and impairment, 5) self-assessed physical and mental health, 6) presence of physical conditions, 7) size and quality of social support/network, and 8) treatment seeking behaviour. It is hypothesised that the birth cohorts will differ dramatically with respect to the profile of individuals with a mental disorder, thereby providing clinicians and researchers with a greater understanding about what to expect when diagnosing and treating mental disorders amongst community members from different birth cohorts. Ultimately, this research will benefit patients through the implementation of interventions that are tailored to different age groups/birth cohorts as well as providing a greater focus on more problematic and specific issues that are related to mental disorders experienced across birth cohorts.

METHODS

Sample

Data for the current study were derived from the 2007 Australian National Survey of Mental Health and Wellbeing (NSMHWB), a cross-sectional household survey of the Australian general population (excluding very remote areas). The survey employed a randomly selected, stratified, multistate area design of private non-institutionalised dwellings. The survey was administered to a total of 8,841 households representing a response rate of 60%. One member of each selected household within the designated age bracket (aged 16-85 years) was randomly selected to participant in the survey. Over-sampling of the older (aged 65-85 years) and young (aged 16-21 years) age-brackets was utilised to ensure the reliability of estimates from these traditionally under-represented age groups. Further information on the administration and sample design of the survey is provided elsewhere (Slade et al., 2009). Respondents were classified into three age brackets for the purpose of the current study: young (aged 16-34 years, n=2,761), middle age (aged 35-59 years, n=3,565) and older age (aged 60-85 years, n=2,515) Australians.

Assessment

The survey was administered by trained lay interviewers from the Australian Bureau of Statistics (ABS) between August and December of 2007. The survey assessed a range of socio-demographic factors, DSM-IV and ICD-10 diagnostic information for common mental health and substance use disorders, measures of psychological distress, physical impairment, chronic physical conditions, social networks, self-assessed health, suicidality, and treatment seeking.

Mental health measures

The World Mental Health version of the Composite International Diagnostic Interview (WMH-CIDI; Kessler and Ustun, 2004) was utilised as the base instrument to derive the lifetime presence of DSM-IV and ICD-10 diagnostic criteria of the common mental health and substance use disorders. Diagnostic modules of WMH-CIDI possess sound psychometric properties that have been described in detail elsewhere, including a clinical re-appraisal study using the clinical-administered Structured Clinical Interview for DSM-IV (SCID-IV) as the gold standard (Kessler et al., 2004).

Diagnostic criteria were assessed for several common mental disorders, including: depression, dysthymia, bipolar disorder (manic episode), panic disorder, agoraphobia, social phobia, generalised anxiety disorder, substance abuse, substance dependence, obsessive-compulsive disorder, and post-traumatic stress disorder. We further classified disorders into categorical groupings representing internalising (depression, dysthymia, bipolar disorder, panic disorder, agoraphobia, social phobia, generalised anxiety disorder, obsessive compulsive disorder, and post-traumatic stress disorder) and externalising (substance abuse, substance dependence) based on evidence regarding the underlying structure of DSM-IV disorders (Slade & Watson, 2006). Questions used to assess diagnostic criteria were worded using a lifetime timeframe and the presence of symptoms in the past 12 months and 30 days

was determined using additional recency questions. Respondents were coded as having a diagnosis in the past 12 months if they met criteria for the disorder across their lifetime and indicated that they had experienced symptoms of the disorder in the past 12 months.

Non-specific psychological distress experienced in the past 30 days was measured using the self-report Kessler 10 psychological distress scale (K10; Kessler et al., 2002). The K10 has excellent psychometric properties and has previously demonstrated strong predictive validity for DSM-IV defined serious mental illness in a variety of populations and settings (Andrews and Slade, 2001; Kessler et al., 2010c; Slade et al., 2011; Sunderland et al., 2011). The K10 consists of 10 items on a 5-point scale with scores ranging from 10 to 50; higher scores signify higher levels of psychological distress. Previous guidelines have suggested that scores above 20 are indicative of moderate to very high levels of distress and increase the probability of experiencing a DSM-IV diagnosis (Andrews and Slade, 2001; Australian Bureau of Statistics, 2001). The K10 has also proven suitable as a measure of psychological distress in older aged populations (Anderson et al., 2013).

To measure suicidality, screening questions were included in a stand-alone module of the WMH-CIDI. Three questions were asked to determine the presence of suicide ideation, suicidal plans, and suicide attempts in the past 12 months on a binary yes/no scale. The current study utilised these three questions as measures of self-reported suicidality. Self-assessed overall mental health was measured using a single question that rated each respondent's mental health on a five point scale, ranging from poor through to excellent. Finally, an additional question was utilised to determine how happy each respondent was with their overall health on a seven point scale ranging from "delighted" to "terrible".

Physical Health Measures

The World Health Organisation Disability Assessment Schedule II (WHODAS; Ustun et al., 2010) was utilised to measure physical impairment or activity limitation. This 12 item

scale assesses how difficult it would be for each respondent to complete a range of activities in the past 30 days, such as standing for long periods, learning a new task, joining in community activities, concentrating, getting dressed, day to day work, etc. Each activity is rated on a five point scale that ranges from no difficulty to extreme or cannot do. The WHODAS has sound psychometric properties including a stable factor structure and has established normative data (Andrews et al., 2012). The WHODAS was scored so that each individual received a score within 0 and 100 with higher scores indicating higher rates of impairment. Physical disability was also measured using the number of days out of role due to physical or mental poor health. Self-assessed overall physical health was rated using a single question that determined respondent's physical health on a five point scale ranging from "poor" to "excellent". Finally, self-reported chronic physical health conditions were determined by enquiring whether the respondent has had or if a doctor has diagnosed them with any one of 21 chronic physical conditions in the past 12 months.

Social Networks

To assess the degree and nature of social networks available to each respondent, four questions were included in the survey. Two questions required the respondents to provide information regarding 1) the number of family members they could confide in if they had a serious problem and 2) the number of family members they could rely on if they had a serious problem. The remaining two questions required respondents to provide information regarding the number of friends they could confide in and rely on if they had a serious problem. The response categories for all four questions were, 1) zero friends/family, 2) 1-2 friends/family members, 3) 3-4 friends/family members, 4) 5 or more friends/family members, 5) no contact with friends/family, and 6) no friends/family. A final binary (yes/no) question was included to determine the caregiver status of each individual.

Treatment seeking

Treatment seeking was assessed in the survey through a sequence of questions that sought to determine whether each individual had seen a health professional for a mental health problem across their lifetime and in the past 12 months. Health professionals included: alternative therapists, general practitioners (GPs), mental health nurses, specialist doctors or surgeons, psychiatrists, and clinical psychologists. For the current study, a final category was created that merged all health professionals together into a general treatment seeking variable for mental health concerns.

Data analysis

The data were weighted for sex and age according to the most recent Australian national census. Replicate weights and the Jack-knife repeated replication technique were utilised to correct the standard errors and significance tests for unequal probability of selection due to the complex sampling design. Within each birth cohort, only respondents who received a 12 month diagnosis of any mental disorder (affective disorders, anxiety disorders, and substance use disorders) were selected for the follow-up analyses. Respondents from each birth cohort with any mental disorder were compared on a range of mental, physical, and social indicators, including treatment seeking status. The older cohort was treated as the reference group in all analyses. Frequencies and standard errors were produced for categorical variables whereas means and standard errors were produced for continuous variables. The statistical significance of birth cohort characteristics when utilising categorical variables were determined using logistic regression, significance using censored continuous variables (K10 and WHODAS were censored at the upper and lower limits of attainable scores) were determined using censored regression, and significance using count variables (days out of role) were determined using Poisson regression. Regression analyses comparing age groups in terms of distress, impairment, disability, social support and treatment seeking were adjusted by including the type of disorder present (internalising disorder only,

externalising disorder only, or both). Analyses were conducted using Stata version 12 and SAS version 9.3.

RESULTS

The presence of any mental disorder in the past 12 months was evident in 647 (23%) respondents aged 16-34 years, 691 (19%) respondents aged 35-59 years, and 204 (8%) respondents aged 60-85 years. These groups formed the basis of the remaining analyses and birth cohort comparisons.

Diagnostic mental health status by birth cohort

The specific 12-month disorder diagnoses assigned to members of each birth cohort amongst those with any 12-month mental disorders are provided in Table 1. Birth cohorts significantly differed in a diagnosis of any internalising disorders and any externalising disorders. The young age cohort were significantly less likely to have an internalising disorder (OR=0.18, 95% CI=0.10-0.33) but significantly more likely to have an externalising disorder (OR=7.13, 95% CI=3.82-13.29) than the older cohort. There was no difference between middle age and older age cohorts in terms of internalising disorders but the middle age cohort were significantly more likely to have an externalising disorder (OR=2.27, 95% CI=1.24-4.15) than the older cohort. These differences were primarily driven by differential diagnoses of GAD, dysthymia and alcohol abuse and to a lesser extent major depression, PTSD, agoraphobia, panic disorder and drug abuse. A diagnosis of social phobia, in contrast, was more likely in the middle age cohort in comparison to the older age cohort (OR=2.06, 95% CI=1.29-3.31). Suicidal plans remained relatively stable across the age bands, however the younger (OR=2.17, 95% CI=1.24-3.80) and middle age (OR=2.09, 95% CI=1.12-3.91) cohort were significantly more likely to experience suicidal ideations in comparison to the older cohort. The younger cohort has a higher risk, although not significant, of having attempted suicide (OR=2.15, 95% CI=0.71-6.57). Interestingly, the level of co-morbidity

remained relatively stable across the three birth cohorts. However, the type of co-morbidity differed across the birth cohorts in terms of frequencies suggesting that cross-disorder cluster co-morbidity (internalising and externalising disorders) is more common in the young cohort (32%) compared to the older cohort (6%).

Self-assessed physical and mental health status by birth cohort

Estimates of self-assessed physical and mental health as well as the presence of diagnosed chronic physical conditions are provided in Table 2. Overall, the older cohort rated their physical health and satisfaction with life significantly lower than the young cohort. However, the difference between the older and young cohorts was less pronounced for self-assessed mental health. The presence of more physical conditions in the older age cohort confirms the results of the self-assessed measure and life satisfaction. In brief, the young cohort was significantly less likely to have cancer, stroke, cardio-vascular disease, gout, rheumatism, arthritis, diabetes, sinusitis, emphysema, epilepsy, kidney problems, hernias, fluid problems/oedema, stomach ulcer, thyroid trouble, and back or neck pain in comparison to the older cohort. Similarly, the middle age cohort were significantly less likely to have cancer, stroke, cardio-vascular, gout, rheumatism, arthritis, diabetes, emphysema, fluid problems, hernias, kidney problems, and thyroid trouble in comparison to the older cohort. Asthma was the only condition to be significantly more likely in the young age cohort in comparison to the older cohort.

Distress, impairment and disability by birth cohort

Mean scores and beta coefficients for the K10, WHODAS and days out of role are provided in Table 3. Lower rates of impairment and disability according to the WHODAS and days out of role due to mental and physical health were found for the young and middle age cohorts in comparison to the older cohort, albeit the difference between middle age and

older cohort for days out of role was not significant (*B*=-0.25, p=0.07). In contrast, there were no significant differences between the three cohorts when examining mean K10 scores.

Social networks and treatment seeking by birth cohort

Table 4 provides the frequencies, standard errors, and odds ratios between birth cohorts and the number and type of social network. Examining the descriptive frequencies, the birth cohorts differed on their social networks. Across both questions, the young cohort were significantly less likely to have no contact or no friends that they could rely on and confide in about a serious problem compared to the older age cohort. However, when considering family members, there were no significant differences between the cohorts. When considering caregiver status, members from the younger cohort were significantly less likely to be a primary caregiver in comparison to the older cohort (OR=0.57, 95% CI=0.35-0.95).

The results for treatment seeking status by birth cohort are also provided in Table 4. Overall, treatment seeking across all three birth cohorts was quite low with about 31% of the young, 43% of middle age, and 40% of the older age cohort seeking treatment from any professional. The birth cohorts were similar with respect to seeking treatment for their mental health problem in the past 12 months across a number of different treatment professionals, including alternative therapists, mental health nurses, specialist doctors, and psychiatrists. There was a significant difference between treatment seeking rates for psychologists, with the middle age cohort and to a lesser extent the younger cohort more likely to consult a psychologist in comparison to the older age cohort (OR=2.89, 95% CI=1.24-6.77; OR = 2.50, 95% CI=0.99-6.27, repectively). In contrast, approximately 32% of older respondents had reported seeing a GP for their mental health in the past 12 months compared to approximately

23% of younger respondents, albeit this decrease was not significant after adjusting for type of disorder present.

DISCUSSION

The current study has demonstrated that a number of differences exist between the young, middle age, and older age birth cohorts in the Australian general population on a range of clinically relevant factors. In particular, this study indicated that clinicians and researchers should be cognisant of how people from different birth cohorts in the population who present to treatment with a mental disorder may differ in terms of their profile of specific disorders, severity and distress rates, social network, treatment seeking behaviour, and physical co-morbidities. We now focus on some of the more notable disparities observed between the three birth cohorts.

The three birth cohorts differed dramatically in terms of the profile of specific disorders that are experienced amongst those with any mental disorder in the past 12 months. There is a preponderance of internalising disorders experienced in the middle and older age cohorts in comparison to the young cohort, particularly depression, social phobia, GAD, and PTSD. In contrast, there are substantially more externalising disorders, particularly alcohol abuse, observed in the younger cohorts than the middle or older age cohort. However, this is not to say that internalising disorders are experienced only in the middle to late life, as approximately 70% of the young cohort experiences any internalising disorder, a sizable proportion. Instead, it appears that there is a lack of externalising disorders diagnosed in the older cohorts. Although, it is unknown whether this is a true finding or an artefact of assessment, for example older cohort may be less likely to report drug or alcohol problems or the diagnostic criteria may not accurately reflect externalising disorders in older age. That being said, previous evidence has demonstrated significant age differences in affective

decision making that often precedes the engagement in risk taking behaviour, which includes greater experimentation with alcohol and drugs by adolescents (Cauffman et al., 2010).

The rates of specific internalising and externalising disorders are relevant when considering the degree and type of co-morbidity experienced. The results suggest that the number of co-morbid disorders remains relatively stable across the age bands, with a substantial number (~40%) of individuals with any mental disorder appearing to receive two or more diagnoses. However, the type of co-morbidity appears to differ across the birth cohorts, with the young cohort experiencing a greater degree of co-morbidity across the disorder clusters of internalising and externalising in comparison to the older cohorts who experience a greater degree of co-morbidity within the internalising cluster. This has important implications for treatment of co-morbid conditions and obtaining access to sufficient services that can treat co-occurring mental health and substance use disorders. Many existing treatment services often operate in a 'diagnostic silo', meaning that they specialise in the treatment of disorders within diagnostic clusters rather than between clusters, thereby creating additional burden amongst younger and middle aged individuals who present with co-morbid disorders between clusters and who fail to receive adequate treatment (Kavanagh et al., 2003).

The results also question the notion that older age is relatively blissful with regard to mental health and especially in the context of co-morbid physical and mental disorders. The results from the K10 indicate that all three cohorts with a mental disorder experience similar rates of distress, however older adults are more likely to rate their physical health and satisfaction with life as poor in comparison to the younger cohorts. As expected, the older age cohort experienced a preponderance of physical and mental health disorder co-morbidity with the greatest disparity occurring with cardio-vascular disease and chronic pain/joint problems. The relationship between depression and vascular disease has been identified by numerous

studies in the extant literature and has resulted in a vascular depression hypothesis. This states that vascular disease causes brain lesions and higher rates of white-matter hyperintensities that disrupt the capacity to regulate mood and therefore result in depressive states (McKinney and Sibille, 2013). This hypothesis would also suggest that depression may be qualitatively different in late life than early-onset and therefore older adults will present with clinically different symptom profiles, perhaps serving as an explanation for the poor recognition of depression in older age (Mitchell et al., 2010). Other notable qualitative differences between the disorder profiles observed in the current study include the higher rate of suicidality amongst the young age cohort in comparison to middle and older age cohorts. This finding is at odds with the finding of a higher prevalence of depression and GAD amongst the middle age and older age cohorts. The finding may represent the influence of additional risk factors for suicidality among young adults, such as increased substance use (Borges et al., 2000), relationship breakdown (Beautrais et al., 1997), impulsivity, and aggression (McGirr et al., 2008).

There were several significant differences between the birth cohorts and social networks, with the younger cohort less likely to state that they have no friends that they can confide in or rely on regarding a serious problem. Previous evidence has indicated that lower social support and higher degree of loneliness are related to lower rates of treatment seeking (Kang et al., 2007). However, our study found the conflicting result that treatment seeking overall was highest amongst the middle age and older age cohort. These results confirm previous studies that have questioned the link between social support and treatment seeking (Steel et al., 2006). Instead, treatment seeking might be primarily influenced by the perception and stigma of mental disorders, the quality of available services, as well as the degree of mental health literacy within the community (Cooper, et al., 2003; Jorm, 2000b). In addition, increased treatment seeking amongst the older cohorts might be due to the large lag

between first onset of disorder and time to seek treatment (Wang et al., 2005), suggesting that perhaps older individuals who have lived with a remitting and recurring disorder for most of their life may have come to the conclusion that professional help is warranted. Alternatively, poorer physical health experienced by members from the older cohort may result in a greater frequency of GP visits in comparison to younger cohorts and therefore additional mental health problems may be detected and treated by GPs through routine physical and mental health checks. This would also explain the finding regarding the greater role GPs have in the treatment of mental health conditions in comparison to psychologists among the older cohort. Although this trend may also reflect a higher rate of perceived stigma associated with visiting a psychologist by the older age cohort. Further investigations regarding differences in treatment seeking across age cohorts and the reasons for differential treatment rates are now warranted.

There were several strengths of the current study. These include the use of a representative general population-based sample, a comprehensive assessment of mental and physical disorders that allowed for assessment of co-morbidity, and the examination of different factors of clinical interest that provide a greater perspective of mental disorders across birth cohorts. However, there were some limitations that warrant further discussion. First, the current study was based on a cross-sectional survey of the Australian population, thereby providing a snapshot of the three birth cohorts under examination. It is not known whether the clinical factors related to mental disorders in the current older age cohort will continue to emerge in the middle age cohort 20 years from now. Indeed the differences between birth cohorts could reflect significant changes that come with age or differences between the environmental and social upbringing of the various cohorts. Further research using longitudinal designs is required to separate age from cohort effects. Second, the survey operationalised the standard DSM-IV diagnostic criteria across all birth cohorts using the

WMH-CIDI. Whilst this instrument has desirable psychometric properties, it is not firmly established that the DSM-IV criteria accurately capture the nature of mental disorders across different age brackets, particularly qualitative differences in late-life depression. Indeed, a key area of focus for revising the DSM-IV was the ability of the criteria to adequately account for development and different symptom expression across the lifetime (Narrow et al., 2007). The extent to which the publication of the DSM-5 has addressed these notable limitations has yet to be confirmed. Therefore, further research is required that utilise various diagnostic instruments and tools that are tailored for different birth cohorts as a means of detecting any differences in how disorders present clinically across the age bands.

In conclusion, the current study indicates that birth cohorts are distinguished by a number of important clinical factors. Clinicians and researchers need to be cognisant that mental disorders manifest as highly heterogeneous constructs. The presentation of a disorder in a younger individual could be vastly different from the presentation of the same disorder in an older individual. Indeed, older individuals tend to experience a greater frequency of internalising disorders in combination with physical disability and lack of social support, yet they are more likely than their younger counterparts to seek treatment, particularly from GPs. In contrast, younger individuals demonstrate a combination of internalising and externalising disorders and co-morbidity, less physical impairment and more social support, yet suicidal ideation and attempts are experienced at a higher rate. The additional burden associated with these factors and how they apply to different birth cohorts must be taken into consideration when planning mental health services and effective treatment for the general population.

ACKNOWLEGEMENTS

REFERENCES

Anderson TM, Sunderland M, Andrews G, et al. (2013) The 10-Item Kessler Psychological Distress Scale (K10) as a Screening Instrument in Older Individuals. *The American Journal of Geriatric Psychiatry* 21: 596-606.

Andrews G, Kemp A, Sunderland M, et al. (2009) Normative Data for the 12 Item WHO Disability Assessment Schedule 2.0. *PLoS ONE* 4: e8343.

Andrews G and Slade T. (2001) Interpreting scores on the Kessler Psychological Distress Scale (K10). *Australian and New Zealand Journal of Public Health* 25: 494-497.

Australian Bureau of Statistics. (2003) *Information paper: Use of the Kessler Psychological Distress Scale in ABS Health Surveys,* Canberra, Australia: Australian Bureau of Statistics.

Barth J, Schumacher M and Herrmann-Lingen C. (2004) Depression as a Risk Factor for Mortality in Patients with Coronary Heart Disease: A Meta-analysis. *Psychosomatic Medicine* 66: 802-813.

Baumeister H, Hutter N, Bengel J, et al. (2011) Quality of Life in Medically Ill Persons with Comorbid Mental Disorders: A Systematic Review and Meta-Analysis. *Psychotherapy and Psychosomatics* 80: 275-286.

Beautrais AL, Joyce PR and Mulder RT. (1997) Precipitating factors and life events in serious suicide attempts among youths aged 13 through 24 years. *Journal of the American Academy of Child and Adolescent Psychiatry*, 36: 1543-1551.

Blazer DG and Hybels CF. (2005) Origins of depression in later life. *Psychological Medicine* 35: 1241-1252.

Borges G, Walters EE and Kessler RC. (2000) Associations of substance use, abuse, and dependence with subsequent suicidal behaviour. *American Journal of Epidemiology,* 15: 781-789.

Claassen CA, Trivedi MH, Rush AJ, et al. (2007) Clinical differences among depressed patients with and without a history of suicide attempts: Findings from the STAR*D trial. *Journal of Affective Disorders* 97: 77-84.

Cooper AE, Corrigan PW and Watson AC. (2003) Mental illness stigma and care seeking. *The Journal of Nervous and Mental Disease* 191: 339-341.

Council of Australian Governments. (2012) The Roadmap for National Mental Health Reform 2012-2022. Website: https://www.coag.gov.au/sites/default/files/The Roadmap for National Mental Health Reform 2012-2022.pdf.pdf

Cauffman E, Shulman EP, Steinberg L, et al. (2010) Age differences in affective decision making as indexed by performance on the Iowa Gambling Task. *Developmental Psychology* 46: 193-207.

Draper B, Brodaty H and Low LF. (2006) A tiered model of psychogeriatric service delivery: an evidence-based approach. *International Journal of Geriatric Psychiatry* 21: 645-653.

Ernst C and Angst J. (1995) Depression in old age: is there a real decrease in prevalence? A review. *Eur Arch Psychaitry Clin Neurosci* 245: 272-287.

Hyman SE. (2010) The Diagnosis of Mental Disorders: The Problem of Reification. *Annual Review of Clinical Psychology* 6: 155-179.

Jeste DV, Alexopoulos GS, Bartels SJ, et al. (1999) Consensus statement on the upcoming crisis in geriatric mental health: research agenda for the next 2 decades. *Archives of General Psychiatry* 56: 848-853.

Jorm AF. (2000a) Does old age reduce the risk of anxiety and depression? A review of epidemiological studies across the adult life span. *Psychological Medicine* 30: 11-22.

Jorm AF. (2000b) Mental health literacy: Public knowledge and beliefs about mental disorders. *The British Journal of Psychiatry* 177: 396-401.

Jylhä M. (2004) Old Age and Loneliness: Cross-sectional and Longitudinal Analyses in the Tampere Longitudinal Study on Aging. *Canadian Journal on Aging* 23: 157-168.

Kang SH, Wallace NT, Hyun JK, et al. (2007) Social networks and their relationship to mental health service use and expenditures among Medicaid beneficiaries. *Psychiatric Services* 58: 689-695.

Karel MJ, Gatz M and Smyer MA. (2012) Aging and mental health in the decade ahead: what psychologists need to know. *American Psychologist* 67: 184-198.

Kavanagh DJ, Mueser KT and Baker A. (2003) Management of comorbidity. In: Teesson M & Proudfoot H (eds) *Comorbid mental disorders and substance use disorders: epidemiology, prevention, and treatment.* Canberra, ACT: Department of Health and Ageing, 78-120.

Kessler RC, Abelson J, Demler O, et al. (2004) Clinical calibration of DSM-IV diagnoses in the World Mental Health (WMH) version of the World Health Organization (WHO) Composite International Diagnostic Interview (WMH-CIDI). *International Journal of Methods in Psychiatric Research* 13: 122-139.

Kessler RC, Andrews G, Colpe LJ, et al. (2002) Short screening scales to monitor population prevalences and trends in non-specific psychological distress. *Psychological Medicine* 32: 959-976.

Kessler RC, Angermeyer M, Anthony JC, et al. (2007) Lifetime prevalence and age-of-onset distributions of mental disorders in the World Health Organization's World Mental Health Survey Initiative. *World Psychiatry* 6: 168-176.

Kessler RC, Birnbaum HG, Bromet E, et al. (2010a) Age differences in major depression: results from the National Comorbidity Survey Replication (NCS-R). *Psychological Medicine* 40: 225-237.

Kessler RC, Birnbaum HG, Shahly V, et al. (2010b) Age differences in the prevalence and co-morbidity of DSM-IV major depressive episodes: Results from the WHO world mental health survey initiative. *Depression and Anxiety* 27: 351-364.

Kessler RC, Green JG, Gruber MJ, et al. (2010c) Screening for serious mental illness in the general population with the K6 screening scale: results from the WHO World Mental Health (WMH) survey initiative. *International Journal of Methods in Psychiatric Research* 19: 4-22.

Kessler RC and Ustun TB. (2004) The World Mental Health (WMH) survey initiative version of the World Health Organization (WHO) Composite International Diagnostic Interview (CIDI). *International Journal of Methods in Psychiatric Research* 13: 93-121.

Kim S-W, Stewart R, Kim J-M, et al. (2011) Relationship Between a History of a Suicide Attempt and Treatment Outcomes in Patients With Depression. *Journal of Clinical Psychopharmacology* 31: 449-456 410.1097/JCP.1090b1013e3182217d3182251.

Krueger RF and Bezdjian S. (2009) Enchancing research and treatment of mental disorders with dimensional concepts: toward DSM-V and ICD-11. *World Psychiatry* 8: 3-6.

McEvoy PM, Grove R and Slade T. (2011) Epidemiology of anxiety disorder in the Australian general population: findings of the 2007 Australian National Survey of Mental Health and Wellbeing. *Australian and New Zealand Journal of Psychiatry* 45: 957-967.

McGirr A, Renaud J, Bureau A, et al. (2008) Impulsive-aggressive behaviours and completed suicide across the life cycle: a predisposition for younger age of suicide. *Psychological Medicine*, 38: 407-417.

McKinney BC and Sibille E. (2013) The age-by-disease interaction hypothesis of late-life depression. *American Journal of Geriatric Psychiatry* 21: 418-432.

Mitchell AJ. (2011) Why do physicians have difficulty diagnosing depression in the elderly? *Aging Health* 7: 99-101.

Mitchell AJ, Rao S and Vaze A. (2010) Do Primary Care Physicians Have Particular Difficulty Identifying Late-Life Depression? A Meta-Analysis Stratified by Age. *Psychotherapy and Psychosomatics* 79: 285-294.

Mroczek DK and Spiro A. (2003) Modeling Intraindividual Change in Personality Traits: Findings From the Normative Aging Study. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences* 58: P153-P165.

Narrow WE, First MB, Sirovatka PJ, et al. (2007) *Age and gender considerations in psychiatric diagnosis: a research agenda for DSM-V.* Arlington, VA: American Psychiatric Publishing, Inc.

O'Connor DW and Parslow RA. (2010) Mental health scales and psychiatric diagnoses: responses to GHQ-12, K-10 and CDI across the lifespan. *Journal of Affective Disorders*, 121: 263-267.

Penninx B, Beekman ATF, Honig A, et al. (2001) Depression and cardiac mortality: Results from a community-based longitudinal study. *Archives of General Psychiatry* 58: 221-227.

Slade T, Grove R and Burgess P. (2011) Kessler Psychological Distress Scale: normative data from the 2007 Australian National Survey of Mental Health and Wellbeing. *Australian and New Zealand Journal of Psychiatry* 45: 308-316.

Slade T, Johnston A, Oakley Browne MA, et al. (2009) 2007 National Survey of Mental Health and Wellbeing: Methods and key findings. *Australian and New Zealand Journal of Psychiatry* 43: 594-605.

Steel Z, McDonald R, Silove D, et al. (2006) Pathways to the first contact with specialist mental health care. *Australian and New Zealand Journal of Psychiatry* 40: 347-354.

Sunderland M, Slade T, Stewart G, et al. (2011) Estimating the prevalence of DSM-IV mental illness in the Australian general population using the Kessler Psychological Distress scale. *Australian and New Zealand Journal of Psychiatry* 45: 880-889.

Thoits PA. (2011) Mechanisms Linking Social Ties and Support to Physical and Mental Health. *Journal of Health and Social Behavior* 52: 145-161.

Trollor JN, Anderson TM, Sachdev PS, et al. (2007) Age shall not weary them: Mental health in the middle-aged and the elderly. *Australian and New Zealand Journal of Psychiatry* 41: 581-589.

Üstün TB, Chatterji S, Kostanjsek N, et al. (2010) Developing the World Health Organization disability assessment schedule 2.0. *Bulletin of the World Health Organization* 88: 815-823.

Wang P, Berglund P, Olfson M, et al. (2005) Failure and delay in initial treatment contact after first onset of mental disorders in the national comorbidity survey replication. *Archives of General Psychiatry* 62: 603-613.

Williams LM, Brown KJ, Palmer D, et al. (2006) The Mellow Years?: Neural Basis of Improving Emotional Stability over Age. *The Journal of Neuroscience* 26: 6422-6430.

TABLES

Table 1: Rates of Specific disorders (12 months), suicidality, and co-morbidity amongst those with any disorder (12 months) by birth cohort

		Young (16-34)		Middle (35-59)		Older (60-85)		Young vs. Older	Middle vs. Older
		%	SE	%	SE	%	SE	OR (95% CI)	OR (95% CI)
Specific disorder present	MDD	28.0	2.3	37.3	3.0	37.0	4.3	0.66 (0.42-1.05)	1.01 (0.64-1.60)
	Dysthymia	8.0	1.7	13.0	1.7	15.4	3.5	**0.47 (0.23-1.00)**	0.82 (0.44-1.52)
	Bi-polar	6.6	1.4	4.5	1.1	0.8	0.6	**8.35 (1.23-56.9)**	5.55 (0.79-38.9)
	Social phobia	20.1	1.8	28.5	2.1	16.2	2.7	1.30 (0.83-2.02)	**2.06 (1.29-3.31)**
	Agoraphobia	4.6	0.8	7.9	1.7	10.0	3.5	0.43 (0.17-1.10)	0.78 (0.28-2.19)
	Panic disorder	8.6	1.1	10.4	1.8	15.0	3.9	0.53 (0.28-1.10)	0.65 (0.33-1.28)
	GAD	10.2	1.3	28.3	2.9	23.9	3.9	**0.36 (0.23-0.57)**	1.26 (0.74-2.15)
	OCD	16.9	2.1	14.2	2.0	12.1	3.2	1.47 (0.71-3.04)	1.20 (0.57-2.50)
	PTSD	19.4	1.7	29.2	2.5	25.8	4.3	0.69 (0.42-1.12)	1.19 (0.71-1.97)
	Alcohol abuse	26.9	2.3	8.9	1.4	5.8	2.1	**6.00 (2.44-14.7)**	1.59 (0.67-3.76)
	Alcohol dependence	10.1	1.5	7.2	1.5	3.4	1.3	**3.17 (1.29-7.80)**	2.18 (0.84-5.71)
	Drug abuse	7.3	1.2	2.9	0.7	0.0	0.0	-	-
	Drug dependence	5.9	1.1	2.3	0.8	0.4	0.4	-	-
	Any Internalising	69.6	2.4	89.7	1.5	92.9	1.7	**0.18 (0.10-0.33)**	0.67 (0.35-1.26)
	Any Externalising	43.2	2.4	19.4	2.2	9.6	2.3	**7.13 (3.82-13.3)**	**2.27 (1.24-4.15)**
Suicidality (12 months)	Suicide ideation	9.6	1.3	9.2	1.5	4.6	1.2	**2.17 (1.24-3.80)**	**2.08 (1.12-3.90)**
	Suicide plans	3.0	0.7	2.2	0.6	1.9	0.9	1.56 (0.48-5.08)	1.17 (0.35-3.86)
	Suicide attempts	3.6	0.8	0.7	0.4	1.7	0.8	2.15 (0.71-6.57)	0.43 (0.09-2.09)
Number of disorders (12 months)	1	60.3	2.5	54.3	3.1	62.4	4.1	Ref	Ref
	2	21.9	2.2	24.6	2.7	19.2	3.2	1.08 (0.64-1.83)	1.26 (0.83-1.89)
	3+	17.7	1.8	21.1	1.9	18.4	3.7	0.87 (0.49-1.54)	1.29 (0.74-2.27)
Type of co-morbidity (12 months)*	Internalising and Externalising	32.3	3.8	20.1	3.4	6.7	4.4	Ref	Ref
	Internalising only	56.9	4.0	79.1	3.4	93.3	4.4	-	-
	Externalising only	10.8	2.3	0.8	0.4	0.0	0.0	-	-

Note: *Analysis was restricted to individuals who had at least 2 or more disorders. Bold indicates OR is significant at the p=0.05 level. Standard errors were calculated using the Jack-knife repeated replication technique. Frequencies were weighted. MDD = major depressive disorder, GAD= generalised anxiety disorder, OCD= obsessive compulsive disorder, PTSD=post-traumatic stress disorder, OR= odds ratio, 95% CI = 95% confidence interval. ORs were unavailable for "drug abuse", "drug dependence" and "type of co-morbidity" due to the presence of very low or zero cases in at least one cell. Internalising disorders encompass MDD, dysthymia, bipolar, social phobia, agoraphobia, panic disorder, GAD, OCD, and PTSD. Externalising disorders encompass alcohol abuse, alcohol dependence, drug abuse, and drug dependence.

Table 2: Self-assessed health (physical and mental) amongst those with any disorder (12 months) by birth cohort

		Young (16-34)		Middle (35-59)		Older (60-85)		Young vs. Older	Middle vs. Older
		%	SE	%	SE	%	SE	OR (95% CI)	OR (95% CI)
Self-reported physical health	Excellent	9.0	1.4	4.2	0.8	4.0	1.7	Ref	Ref
	Very good	33.2	2.2	28.3	2.8	18.0	3.5	0.82 (0.25-2.68)	1.50 (0.47-4.76)
	Good	41.0	2.6	35.8	2.7	34.6	3.9	0.52 (0.18-1.51)	0.99 (0.34-2.90)
	Fair	12.4	1.5	22.4	2.3	24.2	3.3	**0.23 (0.07-0.72)**	0.88 (0.29-2.68)
	Poor	4.4	1.2	9.4	1.8	19.2	3.4	**0.10 (0.03-0.36)**	0.47 (0.14-1.62)
Self-reported mental health	Excellent	13.7	1.7	8.6	2.2	7.4	2.5	Ref	Ref
	Very good	31.4	2.4	24.7	2.8	27.3	4.0	0.63 (0.29-1.37)	0.78 (0.32-1.92)
	Good	32.4	2.8	33.5	3.3	33.9	4.6	0.52 (0.21-1.14)	0.85 (0.35-2.09)
	Fair	18.4	2.7	25.6	2.5	22.9	4.5	0.44 (0.17-1.10)	0.96 (0.37-2.54)
	Poor	4.2	0.7	7.6	1.6	8.5	2.2	**0.27 (0.09-0.72)**	0.77 (0.27-2.19)
Life satisfaction scale	Delighted	14.4	1.5	5.7	1.0	2.7	1.2	Ref	Ref
	Pleased	27.5	2.4	19.0	2.5	18.0	3.4	**0.28 (0.09-0.92)**	0.49 (0.13-1.82)
	Mostly satisfied	23.2	2.6	27.3	3.2	32.0	3.4	**0.14 (0.04-0.39)**	0.40 (0.12-1.35)
	Mixed	28.7	2.6	30.9	2.6	27.7	3.9	**0.19 (0.07-0.54)**	0.52 (0.17-1.59)
	Mostly dissatisfied	2.0	0.6	5.7	1.4	7.3	2.4	**0.05 (0.02-0.12)**	0.38 (0.14-1.01)
	Unhappy/Terrible	4.0	0.9	11.2	1.9	12.3	3.8	**0.06 (0.02-0.25)**	0.42 (0.10-1.72)
Physical conditions	Asthma	34.8	2.3	23.2	2.7	19.3	3.4	**2.23 (1.37-3.65)**	1.27 (0.74-2.16)
	Cancer	2.5	0.8	10.9	1.9	23.5	3.0	**0.08 (0.04-0.18)**	**0.40 (0.24-0.67)**
	Stroke	0.3	0.2	2.6	0.7	11.9	2.5	**0.02 (0.00-0.13)**	**0.20 (0.09-0.44)**
	Cardio-vascular	5.6	0.9	23.5	2.6	59.6	4.0	**0.04 (0.03-0.06)**	**0.21 (0.14-0.32)**
	Gout, rheumatism or arthritis	6.3	1.3	25.1	2.4	56.7	5.3	**0.05 (0.03-0.10)**	**0.26 (0.16-0.42)**
	Diabetes	3.1	0.9	6.9	1.3	16.2	3.8	**0.17 (0.07-0.40)**	**0.39 (0.20-0.74)**
	Hay fever	17.3	1.8	17.8	2.6	16.5	3.2	1.06 (0.63-1.79)	1.10 (0.62-1.94)
	Sinusitis	11.4	1.8	19.1	2.7	22.9	3.8	**0.43 (0.26-0.72)**	0.79 (0.48-1.30)
	Emphysema	0.5	0.3	0.8	0.3	3.6	1.2	**0.12 (0.02-0.70)**	**0.20 (0.07-0.56)**
	Bronchitis	4.6	0.9	5.4	1.2	8.0	2.1	0.55 (0.28-1.10)	0.65 (0.31-1.36)
	Anaemia	5.9	1.1	4.7	1.1	5.4	1.9	1.09 (0.48-2.47)	0.85 (0.31-2.32)

Epilepsy	0.5	0.3	1.2	0.3	3.8	2.0	**0.13 (0.03-0.65)**	0.31 (0.09-1.03)
Fluid problems/oedema	1.3	0.7	4.1	0.8	14.5	3.6	**0.08 (0.02-0.27)**	**0.25 (0.12-0.51)**
Hernias	1.9	0.5	5.5	1.2	17.4	3.7	**0.09 (0.04-0.24)**	**0.28 (0.15-0.54)**
Kidney problems	1.9	0.7	3.2	0.7	8.1	3.0	**0.22 (0.07-0.68)**	**0.37 (0.14-0.95)**
Migraine	13.5	1.6	15.3	1.8	14.1	2.9	0.95 (0.54-1.65)	1.10 (0.65-1.86)
Psoriasis	3.3	0.7	3.0	0.6	6.9	2.0	0.46 (0.21-1.01)	**0.42 (0.18-0.97)**
Stomach ulcer or other gastrointestinal	3.9	0.9	6.2	1.1	10.8	2.7	**0.33 (0.16-0.72)**	0.54 (0.31-0.95)
Thyroid trouble/goitre	1.2	0.5	4.5	0.9	10.9	2.9	**0.10 (0.03-0.33)**	**0.39 (0.17-0.87)**
Tuberculosis	0.0	0.0	0.1	0.1	0.8	0.1	-	-
Back or neck pain	28.4	2.4	48.9	2.7	52.8	5.1	**0.35 (0.23-0.55)**	0.85 (0.55-1.33)

Note: Bold indicates OR is significantly different from 1.0. Standard errors were calculated using the Jack-knife repeated replication technique. Frequencies were weighted. The "terrible" and "unhappy" categories of the Delighted-Terrible scale were merged to provide sufficient numbers in each cell. ORs were unavailable for "Tuberculosis" due to the presence of zero cases in at least one cell.

Table 3: Psychological Distress and impairment amongst those with any disorder (12 months) by birth cohort

	Young (16-34)		Middle (35-59)		Older (60-85)		Beta (p-value)		
	M	SE	M	SE	M	SE	Young	Middle	Older
K10	18.9	0.3	20.4	0.5	19.6	0.6	-0.22 (0.73)	0.80 (0.30)	Ref
WHODAS	13.0	1.7	19.0	1.9	25.2	3.9	-10.66 (<0.01)	-5.49(0.02)	Ref
Days out of role	3.0	0.3	4.7	0.4	5.9	0.7	-0.62 (<0.01)	-0.25 (0.07)	Ref

Note: Standard errors were calculated using the Jack-knife repeated replication technique. Means were weighted. K10 = Kessler 10 psychological distress scale, WHODAS = World Health Organization Disability Assessment Schedule. Regression coefficients were adjusted for by type of disorder present (internalising only, externalising only, or both)

Table 4: Social Networks and treatment seeking amongst those with any disorder (12 months) by birth cohort

		Young (16-34)		Middle (35-59)		Older (60-85)		Young vs. Older	Middle vs. Older
		%	SE	%	SE	%	SE	OR (95% CI)	OR (95% CI)
Number of family members can confide in	0 family members	9.7	1.4	15.7	1.8	13.3	3.2	Ref	Ref
	1-2 family members	49.0	2.9	53.1	2.5	54.6	4.2	1.19 (0.58-2.49)	0.86 (0.46-1.65)
	3-4 family members	28.0	2.8	18.5	1.8	19.3	3.1	1.89 (0.82-4.35)	0.85 (0.43-1.68)
	5 or more family members	13.1	1.5	11.1	2.0	11.1	3.1	1.34 (0.55-3.39)	0.87 (0.33-2.28)
	No contact with family/No family	0.1	0.0	1.6	0.5	1.7	0.8	-	0.84 (0.22-3.09)
Number of family members can rely on	0 family members	7.9	1.1	11.8	1.9	10.3	3.4	Ref	Ref
	1-2 family members	32.3	2.4	40.3	3.1	44.1	3.9	0.88 (0.34-2.26)	0.82 (0.36-1.87)
	3-4 family members	33.2	2.6	21.9	2.4	25.4	4.1	1.48 (0.53-4.14)	0.76 (0.30-1.96)
	5 or more family members	26.6	1.9	24.4	2.4	18.4	3.8	1.70 (0.57-5.08)	1.19 (0.42-3.39)
	No contact with family/No family	0.1	0.0	1.6	0.5	1.7	0.8	-	0.85 (0.22-3.26)
Number of friends can confide in	0 friends	10.3	1.2	16.3	2.0	15.2	3.2	Ref	Ref
	1-2 friends	43.5	2.7	45.4	3.2	44.9	3.9	1.43 (0.77-2.63)	0.97 (0.51-1.87)
	3-4 friends	27.7	2.6	20.8	2.1	23.4	3.3	1.49 (0.74-3.01)	0.81 (0.42-1.54)
	5 or more friends	17.4	2.2	11.5	1.4	9.1	3.2	2.28 (0.86-6.05)	1.18 (0.44-3.14)
	No contact with friends/No friends	1.1	0.5	6.0	1.7	7.4	2.2	**0.21 (0.05-0.80)**	0.72 (0.21-2.46)
Number of friends can rely on	0 friends	11.0	1.4	16.4	2.0	15.6	3.1	Ref	Ref
	1-2 friends	37.0	2.4	38.2	3.4	42.2	4.6	1.23 (0.63-2.37)	0.89 (0.45-1.74)
	3-4 friends	27.1	2.2	23.6	2.6	21.0	3.3	1.66 (0.87-2.37)	1.08 (0.55-2.13)
	5 or more friends	23.9	2.4	15.8	1.7	13.8	3.1	1.85 (0.90-3.80)	1.07 (0.53-2.17)
	No contact with friends/No friends	1.1	0.5	6.0	1.7	7.4	2.2	**0.19 (0.05-0.79)**	0.74 (0.22-2.45)
Caregiver status	Yes	25.8	2.3	40.2	2.7	43.0	5.3	**0.57 (0.35-0.95)**	0.88 (0.54-1.43)
Mental health consultations	Alternative therapist	3.0	1.0	4.1	1.0	0.7	0.5	5.64 (0.67-47.1)	6.32 (0.92-47.1)

GP	22.9	1.8	29.7	2.7	32.3	4.6	0.80 (0.46-1.36)	0.90 (0.50-1.64)
Mental health nurse	2.5	1.0	2.4	0.7	4.7	2.2	0.52 (0.10-2.69)	0.48 (0.14-1.65)
Specialist doctor or surgeon	0.6	0.3	1.5	0.5	0.0	0.0	-	-
Psychiatrist	6.5	1.4	9.6	2.1	7.7	2.1	0.97 (0.42-2.26)	1.29 (0.61-2.77)
Psychologist	12.9	1.8	17.2	2.4	6.9	2.4	2.50 (0.99-6.27)	**2.89 (1.24-6.77)**
Any above professional	31.0	2.0	42.6	3.2	39.8	4.9	0.88 (0.54-1.44)	1.16 (0.68-1.97)

Note: Bold indicates OR is significantly different from 1.0. Standard errors were calculated using the Jack-knife repeated replication technique. Frequencies were weighted. The "No contact with family" and "No family" categories were merged for all questions to provide sufficient numbers in each cell when conducting the statistical significance tests. GP = general practitioners. ORs were unavailable for "specialist doctor or surgeon" and "No contact with family/no family" due to the presence of very low or zero cases in at least one cell. Odds ratios were adjusted for by type of disorder present (internalising only, externalising only, or both)