Increased prevalence of chronic physical health disorders in Australians with diagnosed mental illness

David Scott, Karena Burke, Susan Williams, Brenda Happell, Doreen Canoy, Kevin Ronan
Institute for Health and Social Science Research, CQUniversity, Queensland

More than seven million Australian adults have experienced a mental disorder, and one in five reports a disorder in the previous 12 months. Worldwide, cross-sectional studies indicate at least a two-fold increased prevalence of chronic disorders such as obesity, metabolic syndrome, diabetes mellitus, cardiovascular disease and respiratory disease, in populations with mental illness compared to the general population. This likely explains the similarly increased risk of mortality due to natural causes for persons with mental illness. Few studies, however, have examined this disparity in Australia.

Compared to general population samples, clients attending mental health services in New South Wales were two to three times more likely to be diagnosed with obesity and metabolic syndrome, and those in Victoria were almost eight times more likely to be obese. Population-based record linkage in Western Australia indicates that the prevalence of metabolic syndrome and mortality rates due to ischaemic heart disease in mental health consumers are twice that of the general population. However, population-based studies are required to examine mental and physical co-morbidity in the community as opposed to psychiatric out-patient populations. The aim of this study was to compare the prevalence of specific chronic physical health disorders amongst persons with and without mental illness in an Australian population sample.

Method

Study design and participants

This study examined data from the Australian Health and Social Science (AHSS) panel survey conducted by the Population Research Laboratory (PRL) at CQUniversity. This national panel (n=3035), recruited via computer assisted telephone interviewing (CATI), included a random sample of Australian adults living in each Australian state and territory. The online survey conducted in May 2010 included 1716 respondents (response rate 64%). The mean age of respondents was significantly higher than that of the national panel (52 ± 13 vs 49 ± 13 years, respectively; p<0.01). More females than males were included in both the national panel and this study (both 58%; p=0.945).

The online survey was administered using SSI Web V6.6 (Sawtooth Software). Each participant received an email containing survey information and a unique password (enabling participants to re-start the survey). Ethical approval was obtained (April 2010) from the Human Research Ethics Committee at CQUniversity. Participants provided demographic characteristics including age, sex, education level, and marital, employment and income status, and completed a physical and mental health checklist within the AHSS. Questions regarding chronic disease and lifestyle behaviours are consistent with those monitored by the Australian Institute of Health and Welfare.

Results

A significantly higher proportion of participants with mental illness were obese (BMI ≥ 30; 31 vs 24%, p=0.005). Adjusted odds ratios (OR) for coronary heart disease, diabetes, chronic bronchitis or emphysema, asthma, irritable bowel syndrome, and food allergies or intolerances (OR range: 1.54-3.19) demonstrated that chronic physical disorders were significantly more common in participants with a mental illness.

Conclusion: Australian adults with a diagnosis for mental illness have a significantly increased likelihood of demonstrating chronic physical health disorders compared to persons without mental illness.

Implications: Health professionals must be alert to the increased likelihood of comorbid chronic physical disorders in persons with a mental illness and should consider the adoption of holistic approaches when treating those with either a mental or physical illness.

Key words: mental disorders, chronic disease, obesity, comorbidity

Abstract

Objective: To compare chronic physical health disorder prevalence amongst Australian adults with and without mental illness.

Method: Total n=1,716 participants (58% female) with a mean age of 52 ± 13 years (range: 18 to 89 years) completed an online survey of Australian adults in 2010. Outcome measures including prevalence of chronic physical conditions and self-reported body mass index (BMI) in n=387 (23%) with a self-reported mental illness diagnosis were compared to respondents without mental illness.

Results: A significantly higher proportion of participants with mental illness were obese (BMI ≥ 30; 31 vs 24%, p=0.005). Adjusted odds ratios (OR) for coronary heart disease, diabetes, chronic bronchitis or emphysema, asthma, irritable bowel syndrome, and food allergies or intolerances (OR range: 1.54-3.19) demonstrated that chronic physical disorders were significantly more common in participants with a mental illness.

Conclusion: Australian adults with a diagnosis for mental illness have a significantly increased likelihood of demonstrating chronic physical health disorders compared to persons without mental illness.

Implications: Health professionals must be alert to the increased likelihood of comorbid chronic physical disorders in persons with a mental illness and should consider the adoption of holistic approaches when treating those with either a mental or physical illness.

Key words: mental disorders, chronic disease, obesity, comorbidity
**Measures**

Participants self-reported body weight and height from which body mass index (BMI; kg/m²) was calculated. Self-reported time spent in formal physical activity per week was measured by a single item which asked “Over the course of an average week, how much time would you spend engaged in formal aerobic exercise such as brisk walking, jogging, swimming, aerobics, football, netball, etc?” Response options were “less than 30 minutes; 30-60 minutes; 1-2 hours; 2-4 hours; more than 4 hours”. Usual serves per day of fruits and vegetables were assessed by two separate items, which each provided typical examples of one serve.

To identify prevalence of selected chronic physical and psychological conditions, participants were asked to respond “yes” or “no” to the question “Have you ever been diagnosed with any of the following conditions?” for coronary heart disease (including angina, stroke, peripheral vascular disease and heart attack), any form of cancer, asthma, chronic bronchitis or emphysema, osteoporosis, diabetes, food allergy or intolerance, Coeliac disease, irritable bowel syndrome, depression, anxiety, schizophrenia and bipolar (affective) disorder. Participants were classified as having a mental illness if they reported a previous diagnosis of depression, anxiety, schizophrenia or bipolar disorder.

**Statistical analyses**

We examined differences in demographics, lifestyle behaviours and anthropometrics, between participants with and without mental illness using independent samples t-tests with unequal variances and Mann-Whitney U tests (continuous variables) and chi-square tests (dichotomous variables). We next examined prevalence of chronic disorders amongst the entire cohort and compared differences between groups using chi-square tests. All chronic disorder variables were examined in the form they were included in the questionnaire, except for a variable named ‘food allergy or intolerance’ for which a positive diagnosis was recorded if the respondent reported a food allergy, intolerance or Coeliac disease. Chronic disorder prevalence in participants with mental illness was compared to those with no mental illness using logistic regression analyses from which unadjusted odds ratios (OR) with 95% confidence intervals (CI) were obtained. A further comparison (Model 2) adjusted for age, sex and BMI, and a final comparison (Model 3) included all covariates in Model 2 with the addition of marital status, level of education, employment status, annual household income, formal physical activity, and fruit and vegetable intake.

For all statistical analyses, a p-value of less than 0.05 (2-tailed) or a 95% confidence interval not including the null point was considered statistically significant. All statistical tests were performed using PASW Statistics 18 for Windows (SPSS Inc., Chicago, USA).

**Results**

**Descriptive characteristics**

Participants reported n=322 diagnoses of depression, n=184 diagnoses of anxiety and n=11 diagnoses of schizophrenia or bipolar disorder. A single disorder was reported by n=263 (15%) participants but n=124 (7%) reported more than one disorder. Consequently, n=387 (23%) participants were classified as having a mental illness.

Table 1 compares descriptive characteristics between participants with and without a mental illness. Participants with a mental illness were more likely to be male, single and have an annual household income less than $50,000. Significantly higher proportions of participants with a mental illness reported achieving less than 120 mins/week of physical activity and less than two serves of fruit per day.

**Table 1: Demographic characteristics of respondents with and without a previous diagnosis of a mental illness in the AHSS Panel Study.**

<table>
<thead>
<tr>
<th></th>
<th>No mental illness diagnosis (n=1,329)</th>
<th>Mental illness diagnosis (n=387)</th>
<th>p-value**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (y) ± SD</td>
<td>53.1 ± 13.3</td>
<td>51.0 ± 12.4</td>
<td>0.004</td>
</tr>
<tr>
<td>Female (%)</td>
<td>45.0</td>
<td>32.6</td>
<td>&lt;0.001*</td>
</tr>
<tr>
<td>Married or de facto (%)</td>
<td>82.4</td>
<td>75.4</td>
<td>0.002*</td>
</tr>
<tr>
<td>Educated beyond secondary school level (%)</td>
<td>78.6</td>
<td>79.3</td>
<td>0.770*</td>
</tr>
<tr>
<td>Currently employed (%)</td>
<td>63.3</td>
<td>60.4</td>
<td>0.286*</td>
</tr>
<tr>
<td>Annual household income</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤ $50,000 (%)</td>
<td>31.3</td>
<td>39.1</td>
<td>0.006*</td>
</tr>
<tr>
<td>≤ 120 mins/week PA (%)</td>
<td>48.1</td>
<td>56.1</td>
<td>0.006*</td>
</tr>
<tr>
<td>&lt; 2 serves/day fruit (%)</td>
<td>39.5</td>
<td>47.0</td>
<td>0.008*</td>
</tr>
<tr>
<td>&lt; 5 serves/day vegetables (%)</td>
<td>87.4</td>
<td>81.7</td>
<td>0.005*</td>
</tr>
<tr>
<td>BMI (kg/m²) ± SD</td>
<td>27.2 ± 6.1</td>
<td>28.5 ± 7.5</td>
<td>0.002</td>
</tr>
<tr>
<td>Obese (BMI ≥ 30; %)</td>
<td>23.6</td>
<td>30.7</td>
<td>0.005</td>
</tr>
</tbody>
</table>

* Chi-square tests; all others independent samples t-tests.
** Bolded p-values are statistically significant (p< 0.05).
Abbreviations: PA (physical activity), BMI (body mass index).
per day, but lower proportions reported consuming less than five serves of vegetables per day. Participants with a mental illness were significantly younger and had significantly higher mean BMI (the actual differences in means for age and BMI were not substantial and group means had overlapping standard deviations suggesting large sample sizes explained the statistically significant differences, which were supported by Mann-Whitney U tests [data not shown]). A significantly greater proportion of the group with mental illness was obese; in fact, compared to those with no mental illness people with a mental illness were 30% more likely to be classified as obese.

**Chronic health disorders**

Table 2 reports the prevalence of chronic disorders observed amongst the total cohort and for those with and without a mental illness. n=1,271 (66%) participants reported diagnosis with at least one chronic disorder. Compared to those without a mental illness, the prevalence of coronary heart disease, diabetes, chronic bronchitis or emphysema, asthma, irritable bowel syndrome and food allergies or intolerances were all significantly greater in these participants.

Table 3 reports unadjusted and adjusted ORs for those with a mental illness to report a physical disorder compared to those without mental illness. All previously significant associations remained significant after adjustment for age, sex and BMI in Model 2. Following further adjustment in Model 3 for socioeconomic and lifestyle behaviours, the increased adjusted odds for coronary heart disease, diabetes, chronic bronchitis or emphysema, asthma, irritable bowel syndrome and food allergies or intolerances in persons with mental illness compared to those without mental illness ranged from around 50% to over 300%.

**Discussion**

The results from this cross-sectional survey demonstrate that adults with a mental illness are at significantly increased risk of chronic physical health disorders. This is the first known study to report these findings within a sample of Australian adults. Our adjusted analyses demonstrated that persons with a previous mental health disorders and mental illness
illness diagnosis were one-and-a-half to more than three times more likely than persons without a mental illness to report a diagnosis for coronary heart disease, diabetes, chronic bronchitis or emphysema, asthma, irritable bowel syndrome and food allergies or intolerances. Small associations have been described previously in international research. Longitudinal studies have demonstrated that consumers with depression have up to four-and-a-half times increased risk of developing coronary artery disease compared to non-depressed persons. Separate US studies of mental health consumers have also reported that prevalence of chronic bronchitis and emphysema is three to four times greater than that of nationally representative samples and that bronchitis is one of the most commonly observed disorders in this population. International studies also generally report a two-fold increased prevalence of diabetes in populations with mental illness.

A recent community-based telephone survey in Hong Kong demonstrated that irritable bowel syndrome was over six times more likely in adults with anxiety disorder, and Coeliac disease has been associated with the exception of respiratory cancers. We also did not find an increased prevalence of osteoporosis in persons with a mental illness in our cohort. Previous research suggests that osteoporosis prevalence may be increased in populations with schizophrenia as a result of anti-psychotic use; however, the fact that our cohort had low numbers of schizophrenia diagnoses may explain why no differences were observed.

The findings of this study are subject to limitations. Results may be influenced by recall bias due to the self-reported nature of the study. Several factors may limit representativeness of our study population; first, the use of CATI and requirement for internet access for participation, although 72% of Australian households had internet access in 2008-9. Second, the mean age of participants (52 years) was slightly higher than that of the national panel and of Australian adult population norms, although included participants represented a wide age range (18 to 89 years). There was also a higher proportion of female respondents overall (58%) than expected. Finally, gender disparities between groups may explain some of the increased disease prevalence in those with mental illness; the proportion of men reporting a mental illness exceeded population norms (67 vs 48%), suggesting that selection bias may have occurred despite higher rates of mental illness in males being expected. The most important limitation of this study is the cross-sectional design which prevents comments on causation and we are unable to ascertain whether mental illness preceded physical disorders.

Indeed, it is likely that the morbidity associated with chronic disorders leads in many cases to the development of mental illness, and further studies are required to elucidate the actual time-course of these associations in Australian adults. Nevertheless, the findings from the present study indicate that professionals both in primary care and mental health services need to be acutely aware that consumers of mental health services are at increased risk of also demonstrating a chronic physical disorder, and that the presence of a physical health problem brings with it an increased mental health risk. Thus, mental health professionals need to increase awareness and use of holistic interventions that stress both good physical and mental health practices.

References