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Journal article

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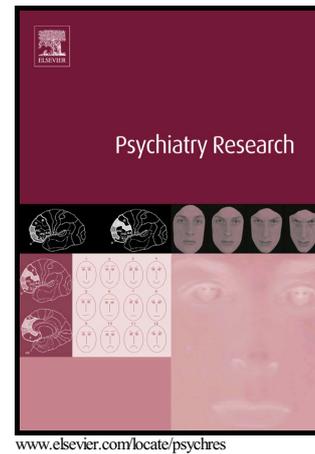
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Personality disorder is an excess risk factor for physical multimorbidity among women with mental state disorders

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Abstract

We examined whether mental state disorders (lifetime mood, anxiety, eating, substance misuse) with comorbid personality disorder are associated with physical multimorbidity in a population-based sample of women. Mental state and personality disorders were assessed using semi-structured diagnostic interviews. Clinical measures were performed and medical conditions, medication use and lifestyle factors were documented by questionnaire. Mental state disorders were associated with higher odds of physical multimorbidity; risk was especially high for those with comorbid personality disorder. These findings suggest that mental state and physical comorbidity might be worsened by the additional comorbidity of personality disorder.

Keywords

Mental state disorder; personality disorder; comorbidity

1. Introduction

The relationship between mental state disorders (i.e. mental disorders other than personality disorders) and physical illness is well established. It is generally understood that adverse consequences, such as increased physical disability and healthcare service costs (Greenberg and Birnbaum 2005, Greenberg et al. 2015) are substantially increased by comorbid mental state disorders. Although often ignored, personality disorder is a potentially influential moderator of the connection between mental and physical ill health (Tyrer et al. 2015). The presence of a personality disorder has recently been shown to be associated with increased physical disability (Jackson and Burgess 2002, Jackson and Burgess 2004) and morbidity (Quirk et al. 2016b). There is also evidence from the United Kingdom suggesting the interaction between personality disorder and comorbid mental state disorders so that the presence of both of these disorders increases total societal costs more than either alone among primary care attenders (Rendu et al. 2002). Less attention has

been paid to the influence of personality disorder in the relationship between mental state disorders and physical multimorbidity. People with personality disorder have poorer health in general (Fok et al. 2014), have been frequently shown to have an increased risk for specific physical health conditions (El-Gabalawy et al. 2010, Lee et al. 2010, Moran et al. 2007, Quirk et al. 2015), and are at increased risk for premature mortality (Fok et al. 2012). It is thus plausible that, among people with mental state disorders, having a co-existing personality disorder further increases the risk for physical multimorbidity. Therefore, we aimed to determine whether mental state disorders and comorbid personality disorder is associated with physical multimorbidity in a population-based sample of women.

2. Methods

2.1 Participants

This study included women who returned for the most recent follow-up phase of the Geelong Osteoporosis Study (GOS; 2011-2014) – an on-going, population-based cohort study located in South Eastern Australia. Briefly, the cohort was established via an age-stratified random sampling method, with 1,494 women (≥ 20 years; 77% participation) selected from Commonwealth electoral rolls for the Barwon Statistical Division (Pasco et al. 2012). Complete details of the GOS cohort and participation are published elsewhere (Pasco et al. 2012, Quirk et al. 2016a, Williams et al. 2010). Participants were excluded from this analysis if they did not complete psychiatric assessments ($n=81$), were identified as having a personality disorder with no mental state comorbidity ($n=41$), or did not provide information regarding physical health conditions ($n=4$), resulting a final sample of $n=724$ women aged 28-95 years. This study was approved by the Barwon Health Human Research Ethics Committee and Deakin University Human Research Ethics Committee. Written informed consent was obtained by all participants.

2.2 Assessments

In the current study, mental state disorders were defined as lifetime mood, anxiety, eating, substance misuse disorders and identified using the Structured Clinical Interview for Diagnostic and Statistical Manual of Mental Disorders (DSM) Axis I Disorders, non-patient edition (SCID-I/NP) (First et al. 2002), and personality disorders with the Structured Clinical

Interview for DSM-IV Axis II personality disorders (SCID-II) (First et al. 1997). Participants were classified into three groups: mental state disorders without personality disorder, mental state disorders with personality disorder and no history of any mental state or personality disorder as assessed by SCID-I/NP and SCID-II (controls).

The following physical health disorders (lifetime) were determined by self-report, clinical assessments, and medical and/or medications records, where available: arthritis, cardiovascular disease, thyroid disorders, metabolic disorders, gastrointestinal disease, gastro-oesophageal reflux disease, syncope and seizures, recurrent headaches, pulmonary diseases, psoriasis, liver diseases, cancers (Quirk et al. 2016b). Physical multimorbidity was defined as the presence of ≥ 5 lifetime physical health disorders (Lukkala et al. 2016, Quirk et al. 2016b).

Weight and height were measured to the nearest 0.1kg and 0.1cm, respectively and body mass index (BMI) was calculated as $\text{weight}/\text{height}^2$ (kg/m^2). Self-reported physical activity status (active) was dichotomised (yes/no) if undertaking light to vigorous activity on a regular basis. Cigarette smoking (ever- yes/no) and marital status (single/never married, living with partner/married, separated/divorced, widowed) was collected by self-report. Alcohol consumption (average grams consumed daily over a 12 month period) was determined from a validated food frequency questionnaire (Giles and Ireland 1996). Socioeconomic status (SES) was determined using the Index of Relative Socio-economic Advantage and Disadvantage (IRSAD), which was calculated from the Socio-Economic Index for Areas (SEIFA) scores to determine the relative socioeconomic status (SES) at the area-level. A lower score (Quintile 1) indicated greater disadvantage, and a higher score indicated greater advantage (Quintile 5).

2.3 Statistical analyses

Differences in characteristics between those with mental state disorders with and without personality disorder and controls were examined using Kruskal-Wallis, and chi-square analyses, where appropriate. Odds ratios (OR, with 95% confidence intervals, CI) were

determined using logistic regression models to examine the association between the three groups and physical multimorbidity. Covariates included age, cigarette smoking (ever), physical activity status (active), SES, alcohol consumption and marital status. These were tested sequentially and only included in the final models if significant. All interactions were tested.

3. Results

Two hundred and thirty-eight (32.9%) women were classified as having a lifetime history of a mental state disorder with no comorbid personality disorder. There were 115 (15.9%) women who had a lifetime history of a mental state disorder with comorbid personality disorder: 34 (29.6%) cluster A, 20 (17.4%) cluster B and 88 (76.5%) cluster C. Finally, 371 (51.2%) never met criteria for any lifetime mental state or personality disorder. The groups differed in age, marital status, BMI and smoking status; otherwise the groups were similar (Table I).

Individuals with mental state disorder had higher odds of physical multimorbidity than controls (age adjusted OR 2.3, 95% CI 1.4-3.8, $p < 0.001$); the risk was especially high for individuals with comorbid personality disorder (age adjusted OR 4.0, 95% CI 2.2-7.3, $p < 0.001$). Associations remained following adjustment for other known risk factors including cigarette smoking, physical activity, alcohol consumption, SES and marital status.

4. Discussion

This cross sectional, population-based study found that women with mental state disorders were at increased risk for physical multimorbidity, which is concordant with the extant literature. The novel finding of this study is that, among women who also had a comorbid personality disorder, this risk was even more elevated. This finding suggests that personality disorder might influence the course and severity of mental state disorders, which in turn adversely affects the trajectory and cumulative burden of physical illness.

There are several possible mechanisms for the excess risk for physical multimorbidity among women with mental state disorders and personality disorder. This morbidity might arise

directly from personality disorder features, such as impulsivity and reckless and self-destructive behaviours, including self-harm and substance use and adverse lifestyle choices. Also, personality disorders are first and foremost disorders of interpersonal functioning. It is possible that individuals with personality disorder might be less likely to trust or engage constructively with health professionals, or might avoid social interaction, including with clinicians and health services. This might lead to worse access to services or poorer adherence to treatment. Indeed, individuals with personality disorder are less likely to receive appropriate physical healthcare interventions, compared to other clinical subgroups of the population (Sanatinia et al. 2015). There is evidence that they also experience greater difficulty accessing appropriate care for severe mental state disorders and receive relatively different treatment, including different pharmacotherapy (Francey et al., 2017). Others have highlighted that, historically, personality disorder diagnoses have been met with stigma in the healthcare setting and wider community (Tyrer et al. 2015). In addition, health literacy may also be implicated, with research showing its importance in the management of a number of chronic health conditions. Currently, there are no guidelines for health screening or monitoring health risk factors and behaviours, despite personality difficulties appearing to be a potential driver of the connection between mental and physical comorbidity outcomes. Equally, clinicians and services might lack the skills and/or expertise to effectively meet the needs of individuals with personality disorder.

Notable strengths of this study are the use of gold standard research diagnostic assessments, identifying both psychiatric and physical comorbidities, and the random, age-stratified, population-based sample. This study also needs to be interpreted in the light of the following methodological considerations: only women were investigated; personality disorder was a categorical not a dimensional variable; other disorders including psychotic disorders and associated symptoms, sleep disorders, and other externalizing disorders were not assessed; the course of personality disorder was not investigated; a combination of self-reported measures were used in conjunction with clinical assessments to assess physical health conditions; cross-sectional study design meant causal investigation was not possible; possible residual or unrecognised confounding and cohort attrition likely reducing the sample representativeness.

In conclusion, these findings suggest that mental state and physical comorbidity might be worsened by the additional comorbidity of personality disorder. Further research examining causal pathways are needed.

Authors' contributions

SEQ, ALS, MB, JAP, SLB-O and LJW conceived and designed the study. SEQ, ALS, and LJW performed analyses. All authors contributed to interpretation of the data, drafting of the article, provided critical revisions to the article and approved the final version to be published.

Conflict of interest

None of the authors have any relevant conflicts of interest related to the work under consideration for publication.

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Table I: Characteristics of all women, those with mental state disorders (\pm personality disorder) and controls. Values are given as median (interquartile range) or n (%).

| All | Mental state disorder | Mental state disorder with | Controls | <i>p</i> |
|-----|-----------------------|----------------------------|----------|----------|
|-----|-----------------------|----------------------------|----------|----------|

| | without PD | | PD | | |
|--------------------------------|-------------------------|------------------|----------------------|-------------------------|--------|
| | n=724 | n=238 | n=115 | n=371 | |
| Age (yr) | 56.9 (42.8- 69.0) | 55.4 (40.3-64.7) | 52.8 (38.0- 62.4) | 60.3 (46.5- 73.1) | <0.001 |
| Marital status | | | | | <0.001 |
| Single/never married | 56 (7.7%) | 21 (8.8%) | 14 (12.2%) | 21 (5.7%) | |
| Living with partner/married | 509 (70.3%) | 169 (71.0%) | 70 (60.9%) | 270 (72.8%) | |
| Separated/divorced | 82 (11.3%) | 29 (12.2%) | 24 (20.9%) | 29 (7.8%) | |
| Widowed | 77 (10.6%) | 19 (8.0%) | 7 (6.1%) | 51 (13.8%) | |
| BMI (kg/m ²) | 27.0 (24.0- 32.0) | 27.0 (24.0-32.0) | 29.0 (24.0- 34.0) | 27.0 (24.0- 32.0) | 0.05 |
| Physical activity (active) | 524 (73.5%) | 182 (76.5%) | 77 (67.5%) | 265 (73.4%) | 0.21 |
| Cigarette smoker (ever) | 276 (38.3%) | 103 (43.3%) | 51 (44.4%) | 122 (33.2%) | 0.02 |
| Alcohol intake (g/d) | 2.0 (0.3- 11.4) | 1.9 (0.1-11.4) | 1.7 (0.4-7.6) | 2.3 (0.26- 13.1) | 0.58 |
| Socioeconomic status | | | | | 0.08 |
| Quintile 1 (lowest) | 109 (15.1%) | 42 (17.7%) | 22 (19.1%) | 45 (12.1%) | |
| Quintile 2 | 80 (11.1%) | 31 (13.0%) | 13 (11.3%) | 36 (9.7%) | |
| Quintile 3 | 279 (38.5%) | 86 (36.1%) | 40 (34.8%) | 153 (41.2%) | |
| Quintile 4 | 135 | 50 (21.0%) | 22 (19.1%) | 63 (17.0%) | |

| | | | | | |
|-------------------------|---------|------------|------------|------------|------|
| | (18.7%) | | | | |
| Quintile 5 | 121 | 29 (12.2%) | 18 (15.7%) | 74 (20.0%) | |
| | (16.7%) | | | | |
| Physical multimorbidity | 126 | 44 (18.5%) | 27 (23.5%) | 55 (14.8%) | 0.09 |
| | (17.4%) | | | | |

Mental state disorder = any mood, anxiety, eating and substance misuse disorder

Highlights

- People with personality disorder have poorer health in general and have been shown to at increased risk for specific physical health conditions
- It is thus plausible that, among people with mental state disorders, having a co-existing personality disorder further increases the risk for physical multimorbidity
- Mental state disorders were associated with higher odds of multiple physical multimorbidity; risk was greater among individuals with mental state disorders and comorbid personality disorder