



Research paper

Prevalence, risk factors and multi-group latent class analysis of lifetime anxiety disorders comorbid depressive symptoms



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ARTICLE INFO

Keywords:

Comorbidity
Depression
Anxiety disorder
Epidemiology
Latent class analysis

ABSTRACT

Background: Previous studies about comorbidity have primarily focused on disorders based on diagnostic criteria instead of symptoms. This study aimed to describe the prevalence and risk factors of anxiety comorbid depression based on a population-based sample in Chifeng City Inner Mongolia and explored the gender differences of depressive subtypes in anxiety patients.

Methods: This study was a cross-sectional study conducted among 6376 community residents. Logistics analysis and multiple-group latent class analysis was used in exploring the risk factors and subtypes of anxiety comorbid depressive symptoms.

Results: A total of 4528 respondents were interviewed in this study. The lifetime prevalence estimates for anxiety in the total sample was 5.70%. Among residents who had ever had anxiety, most of them reported having depressive symptoms while 15.79% of them met the criteria of MDD. Logistics analysis showed childhood adversities were associated with anxiety comorbid depressive symptoms. The results of multiple-group latent class analysis showed that the latent class probabilities were different between males and females.

Conclusion: The prevalence rates of comorbidity were similar to the reports of previous regional surveys in China with statistically significant differences of comorbidity occurring between males and females. Precision prevention should therefore be targeted towards different kinds of populations.

1. Introduction

Mental disorders are widely recognized as a major contributor (14%) to the global burden of disease (Prince et al., 2007). Depression and anxiety disorders are the most prevalent mental disorders worldwide, jointly making up 50% of the international disease burden attributable to psychiatric and substance use disorders (Whiteford et al., 2013). Compared with patients having only anxiety, patients with comorbid major depressive disorder (MDD) and anxiety display greater psychiatric symptom severity, poorer psychosocial function and elevations in general distress and suicide risk (Cyranski et al., 2012).

While a large body of research on the epidemiology of comorbid depression and anxiety exists, most studies have focused on diagnostic criteria based disorders. Results of the Netherlands Study of Depression

and Anxiety (NESDA) in 2004–2007 showed that of persons with a current anxiety disorder, 63% had a current and 81% had a lifetime depressive disorder (Lamers et al., 2011). In China, there were also some regional epidemiological studies conducted in Beijing (Rui et al., 2013), Shanghai (Shen et al., 2006), and Kunming (Jian et al., 2010) which described the prevalence of comorbidity. Merely using categorical diagnostic constructs can result in loss of valuable information about comorbidity as those who score just below the diagnostic threshold are regarded as non-cases. Currently, little insight is available on the co-occurrence of subthreshold depression and comorbid anxiety. Previous study showed that comorbidity rates increased considerably for lower thresholds of MDD (van Loo et al., 2016) and subthreshold depressive disorder was one of the best established risk factors for the onset of full-syndrome depressive disorders and frequently ran a

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chronic course or tends to develop in to an episode of MDD (Klein et al., 2009).

Based on the Diagnostic and Statistic Manual of Mental Disorders, 4th edition (DSM-IV) criteria, there are nine kinds of depressive symptoms. Some studies showed that there are specific symptoms of depression in people with different sociodemographic characters. For example, gender differences have been shown as important factors in the study of depression and depressive symptoms in several cases and gender differences in expression of depressive symptoms have also been reported (Marcus et al., 2011). Compared to males, females have a higher prevalence of chronic minor depression, dysthymia and somatic depression (Kessler et al., 1994; Angst and Merikangas, 1997; Silverstein, 1999), and are manifested as more recurrent brief depression episodes. Females reported experiencing significantly more fatigue, hypersomnia, and psychomotor retardation during the most severe major depressive episode, whereas males reported more insomnia and agitation (Khan et al., 2002).

Currently there are very few studies examining the comorbidity of mood and anxiety disorders on symptoms level in China. This study was carried out in Chifeng City of Inner Mongolia, and was the first population-based sample epidemiological study on the prevalence of lifetime depression disorders in residents with anxiety disorders in that region. Chifeng City is one of the major cities in Inner Mongolia which is inhabited by a multi-ethnic population with a relatively low socio-economic status. It is a typical region in a period of economic transition with a large number of residents but relatively weak economy and overall low level of school education. More importantly, this study was also designed to explore the gender differences of depressive subtypes in anxiety patients and to provide theoretical evidence for early diagnosis and prevention strategy of mental disorders.

2. Materials and methods

2.1. Sample

A three-stage selection scheme was used to select the sample for every eligible individual (adults aged 18 years and over, and living in a family household) in the target population in 2010. “Neighborhood committee” (NC, in urban area) and “Village committee” (VC, in rural area) are local community organizations in China. Since all households belong to such committees, the committees were used as the primary sampling units (PSUs). In the first stage of sampling, 108 PSUs were selected based on the strategy of probabilities proportional to size (PPS). Stratification was made on urban and rural areas, with 57 PSUs from urban areas and 51 PSUs from rural areas. The second stage sampling selected a probability sample of households in each PSU. Based on the difference of estimated response rates, 80 households were selected in each VC, and 50 households were selected in each NC. The third stage sampling selected one random respondent in each sample household. Finally, 6376 respondents were selected in the survey.

2.2. Instruments and measures

Composite International Diagnostic Interview (CIDI) was applied in the survey. CIDI is a fully structured lay-administered diagnostic interview (Kessler and Ustun, 2004) which has been widely used in more than 30 countries (Kessler and Ustun, 2004). Clinical reappraisal found generally good concordance with the CIDI diagnoses of mood disorder and anxiety disorders (Qin et al., 2010). Over the last twenty years, CIDI has been used as the primary instrument in regional epidemiological mental health surveys in many cities in China; such as Beijing and Shanghai (Shen et al., 2006), Jiangxi (Chen et al., 2004), Liaoning (Pan et al., 2006), Guangzhou (Zhao et al., 2009) and Kunming (Jian et al., 2010). In this study, anxiety disorders and depression disorders were diagnosed using CIDI-3.0, according to the criteria and definition of the DSM-IV. Additionally, social-demographic information

including sex, age, employment status, education, income, and marital status was also collected from CIDI. Age was divided into the following four categories: 18–34, 35–49, 50–64 and 65 years old and over. Educational level was grouped into two levels based on years of education. The respondents who received less than or equal to nine years were categorized as having a lower education level, while respondents who completed more than nine years of school were categorized as having a higher education level. Marital status included married, cohabitating, divorced, separated, widowed and never married. Urban and rural areas were classified according to the permanent addresses of the respondents.

Depressive symptoms-nine kinds of symptoms could be acquired by CIDI-3.0. Feelings of depression: depressed mood most of the day, nearly every day, as indicated by either subjective report (e.g., feels sad or empty) or observation made by others. Loss of interest: markedly diminished interest or pleasure in all, or almost all, activities most of the day, nearly every day (as indicated by either subjective account or observation made by others). Weight decrease/increase: significant weight loss when not dieting or weight gain (e.g., a change of more than 5% of body weight in a month), or decrease or increase in appetite nearly every day. Insomnia/hypersomnia: insomnia or hypersomnia nearly every day. Psychomotor agitation/retardation: psychomotor agitation or retardation nearly every day (observable by others, not merely subjective feelings of restlessness or being slowed down). Tiredness/lack of energy: fatigue or loss of energy nearly every day. Feelings of guilt or worthlessness: feelings of worthlessness or excessive or inappropriate guilt (which may be delusional) nearly every day (not merely self-reproach or guilt about being sick). Feelings of guilt or worthlessness: diminished ability to think or concentrate, or indecisiveness, nearly every day (either by subjective account or as observed by others). Trouble concentrating: recurrent thoughts of death (not just fear of dying), recurrent suicidal ideation without a specific plan, or a suicide attempt or a specific plan for committing suicide.

2.3. Procedures

62 lay interviewers were trained in a seven day training session at Peking university sixth hospital during November 2010. The detailed training methods can be found elsewhere (Wang et al., 2018). Only those trainees who passed the final test could be selected as interviewers. Face-to-face interviews were conducted by selected interviewers from November 2011 to April 2013. The average interview time was one hour. The study was approved by the ethics review board at Peking University Institute of Mental Health (PKUIMH). Before respondents were interviewed, written informed consent was obtained and declarations of anonymity and confidentiality were signed.

2.4. Statistical analyses

Design weight was computed from the different probabilities of selection, and post-stratification weight was generated based on the age and gender distribution of census population. The consolidated weights were applied to the sample data. The weighted prevalence was calculated and the differences of depressive symptoms between male and female were analyzed by chi-square test. Additionally, logistics analysis was applied to explore the related factors of anxiety disorders comorbid 5 and over depressive symptoms. The dependent variable was anxiety disorders comorbid 5 and over depressive symptoms. The independent variables were social-demographic factors (sex, age, marital status, educational attainment, and employment) and childhood adversities.

Latent Class Analysis (LCA) is a statistical technique that is used in factor, cluster, and regression techniques; it is a subset of structural equation modeling (SEM). LCA is a technique where constructs are identified and created from unobserved or latent subgroups, which are usually based on individual responses from multivariate categorical data. In this study, LCA on the items of depressive symptoms among the

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