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Differential associations of specific depressive and anxiety disorders with somatic symptoms

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ABSTRACT

Objective: Previous studies have shown that depressive and anxiety disorders are strongly related to somatic symptoms, but much is unclear about the specificity of this association. This study examines the associations of specific depressive and anxiety disorders with somatic symptoms, and whether these associations are independent of comorbid depressive and anxiety disorders.

Methods: Cross-sectional data were derived from The Netherlands Study of Depression and Anxiety (NESDA). A total of 2008 persons (mean age: 41.6 years, 64.9% women) were included, consisting of 1367 patients with a past-month DSM-diagnosis (established with the Composite International Diagnostic Interview [CIDI]) of depressive disorder (major depressive disorder, dysthymic disorder) and/or anxiety disorder (generalized anxiety disorder, social phobia, panic disorder, agoraphobia), and 641 controls. Somatic symptoms were assessed with the somatization scale of the Four-Dimensional Symptom Questionnaire (4DSQ), and included cardiopulmonary, musculoskeletal, gastrointestinal, and general symptoms. Analyses were adjusted for covariates such as chronic somatic diseases, sociodemographics, and lifestyle factors.

Results: All clusters of somatic symptoms were more prevalent in patients with depressive and/or anxiety disorders than in controls (all $p < .001$). Multivariable logistic regression analyses showed that all types of depressive and anxiety disorders were independently related to somatic symptoms, except for dysthymic disorder. Major depressive disorder showed the strongest associations. Associations remained similar after adjustment for covariates.

Conclusion: This study demonstrated that depressive and anxiety disorders show strong and partly differential associations with somatic symptoms. Future research should investigate whether an adequate consideration and treatment of somatic symptoms in depressed and/or anxious patients improve treatment outcomes.

Introduction

Depressive and anxiety disorders are among the most common mental disorders in the general population [1,2], with 12-month prevalence rates ranging from 1.8% for panic disorder to 6.9% for major depressive disorder [3]. The burden of disease is high, as the disorders affect social, personal, and occupational functioning [4–6], and constitute a considerable economic burden on society [6,7].

Extensive evidence suggests that depressive and anxiety disorders are strongly related to somatic symptoms [8–12]. Two pediatric studies, for example, showed that nearly all somatic symptoms were more prevalent in patients with a depressive and/or anxiety disorder than in controls [9,11]. In addition, somatic symptoms have been shown to be associated with at least a twofold increased risk of having a depressive and/or anxiety disorder [8,12,13]. The co-occurrence of depressive and anxiety disorders with somatic symptoms is associated with more functional disability, higher medical care utilization, and higher costs than the pathologies apart [14,15]. Both for clinical and scientific reasons, it is important to improve our understanding of this association.

Three mechanisms have been hypothesized to explain the association of depressive and anxiety disorders with somatic symptoms. First, in the antecedent hypothesis, depressive and anxiety disorders cause the onset of somatic symptoms [16–19] via, for example, an increased awareness and an altered perception of physical sensations [20,21]. Second, according to the consequence hypothesis, somatic symptoms predict the onset of depressive and anxiety disorders [18,22–25], as, for example, the bodily inconvenience and physical limitations of somatic symptoms might cause symptoms of depression and anxiety [26,27]. Third, in the common etiology hypothesis, shared etiological factors (e.g., environmental, psychological, and biological factors) independently cause the onset of depressive and anxiety disorders as well as somatic symptoms [18,27,28].

Although the co-occurrence of depressive and anxiety disorders with somatic symptoms has often been reported, little is known about the specificity of this association. For example, it is unclear whether

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the association is conditional on the type of depressive or anxiety disorder. In addition, previous studies have speculated that depressive disorders may be more strongly associated with pain symptoms such as musculoskeletal symptoms [29,30], whereas anxiety disorders might show stronger associations with cardiopulmonary symptoms [12,31]. Developing a better understanding of the specificity of the association may provide important insights into its etiology, and could be of help in developing therapies for patients with depressive and/or anxiety disorders as well as somatic symptoms.

Previous studies examining the specificity of associations have an important limitation, as they have often not considered the comorbidity of different depressive and anxiety disorders [13,32]. This is problematic, since depressive and anxiety disorders often co-occur [33,34], and, as a consequence of the confounding effects of comorbid disorders, previous studies could incorrectly have reported similar associations across specific depressive and anxiety disorders. In addition, it would be important to take into account the effects of covariates [13,29,35]. As depressive and anxiety disorders are associated with somatic diseases [36], and somatic symptoms are often consequences of somatic diseases [13], it is essential to get insight into the effects of these diseases by adjusting for their presence. Similarly, it would be important to take into account the effects of sociodemographics and lifestyle factors, as these factors have shown associations with the presence of depressive and anxiety disorders [37] and somatic symptoms [13,38,39].

The present study focuses on the associations of specific depressive and anxiety disorders with somatic symptoms by using a large dataset of patients with DSM-IV depressive and/or anxiety disorders (N = 1367) as well as healthy controls (N = 641). The aims of this study are:

a. To examine the associations of specific depressive disorders (i.e., major depressive disorder and dysthymic disorder) and anxiety disorders (i.e., generalized anxiety disorder, social phobia, panic disorder, and agoraphobia) with different clusters of somatic symptoms;
b. To determine whether these associations are independent of comorbid depressive and anxiety disorders;
c. To determine whether these associations can be explained by the potentially confounding effects of chronic somatic diseases, sociodemographics, and lifestyle factors.

Methods

Study sample

Data were derived from the baseline measurements of The Netherlands Study of Depression and Anxiety (NESDA), an ongoing cohort study aimed at examining the development and long-term prognosis of depressive and anxiety disorders among adults (18–65 years). For the baseline assessment, 2981 persons were included, consisting of healthy controls (N = 625, 22%), persons with a current (past-month) depressive and/or anxiety disorder (N = 1411, 47%), and persons with a prior history of a depressive and/or anxiety disorder (N = 918, 31%). To represent various settings and developmental stages of psychopathology, recruitment took place in the community (19%), primary care (54%), and specialized mental health care (27%). Exclusion criteria were a primary clinical diagnosis of psychotic disorder, obsessive–compulsive disorder, bipolar disorder or severe substance use disorder, and insufficient command of the Dutch language. The baseline assessment consisted of an extended face-to-face interview, including a standardized diagnostic psychiatric interview, as well as paper-and-pencil questionnaires. The research protocol was approved by the Ethical Committee of the three participating universities, and all participants gave written informed consent. A detailed description of the NESDA study design can be found elsewhere [40].

For the present study, we selected both healthy controls without a lifetime depressive or anxiety disorder (N = 652), and patients with a current (past-month) depressive and/or anxiety disorder (N = 1411). Participants with missing data on somatic symptoms (N = 55, 2.7%) were excluded, resulting in a total sample of 2008 persons. Persons with valid data on somatic symptoms were less likely to have an anxiety disorder (p = .04) compared to non-responders, whereas age (p = .75), gender (p = .67), education (p = .60), and depressive disorder (p = .17) were not associated with non-response.

Depressive and anxiety disorders

Lifetime and current diagnoses of depressive and anxiety disorders were established with the Composite International Diagnostic Interview (CIDI) [41], version 2.1. The CIDI is a reliable instrument, which classifies diagnoses according to the DSM-IV criteria [42], and was administered by specially trained research staff. The following types of disorders were distinguished: major depressive disorder, dysthymic disorder, generalized anxiety disorder, social phobia, panic disorder, and agoraphobia.

Somatic symptoms

The presence of somatic symptoms was measured with the somatization scale of the Four-Dimensional Symptom Questionnaire (4DSQ) [43]. This scale assesses the frequency of experiencing 16 somatic symptoms in the past week (scores ranging from 1 = never to 5 = very often or constantly). Based on previous studies [30,44], four clusters of somatic symptoms were distinguished: cardiopulmonary symptoms (i.e., excessive perspiration, pain in chest, palpitations, pressure or tight feeling in chest, shortness of breath), musculoskeletal symptoms (i.e., back pain, neck pain, muscle pain, tingling in fingers), gastrointestinal symptoms (i.e., bloated feeling in abdomen, nausea or upset stomach, pain in abdomen or stomach area), and general symptoms (i.e., dizziness or feeling lightheaded, fainting, headache). The symptom 'blurred vision or spots in front of your eyes' was excluded, since it did not fit the clusters of somatic symptoms [44]. A specific cluster of somatic symptoms was considered present when at least one of its symptoms was experienced regularly or more often (score 3 or higher).

Covariates

Analyses were adjusted for the potential effects of chronic somatic diseases, sociodemographics and lifestyle factors. First of all, the number of self-reported chronic diseases for which persons received treatment was considered. For the assessment, participants were asked whether they had specific diseases (i.e., lung disease, heart disease, diabetes mellitus, CVA, arthritis, osteoarthritis, rheumatic complaints, tumor, hypertension, gastrointestinal ulcer or disorder, liver disease, epilepsy, chronic fatigue syndrome, allergy, thyroid gland disease, injury) or potential additional chronic somatic diseases that were not explicitly asked, and whether they received treatment for the reported diseases. Sociodemographics included age (in years), gender, education (in years), partner status (partner versus no partner), and working status (employed versus unemployed). Lifestyle factors included smoking status (never, former, current; assessed by self-report), alcohol use (defined as the total score on the Alcohol Use Disorders Identification Test [45]), and physical activity (measured with the International Physical Activity Questionnaire in MET-minutes [ratio of energy expenditure during activity compared with rest times the number of minutes performing the activity] a week [46]).

Statistical analyses

Analyses were conducted using SPSS version 20.0 (SPSS Inc, Chicago, Illinois). Characteristics of the study sample were summarized using descriptive statistics. Subsequently, χ^2 analyses were used to compare the prevalence of all clusters of somatic symptoms in patients with any