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Original articles

The association between arthritis and psychiatric disorders; results from a longitudinal population-based study

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Abstract

Background: To disentangle cross-sectionally and longitudinally the relationship between arthritis and psychiatric disorders, and to examine the relationship between age and incidence of (1) any psychiatric disorder among respondents with and without arthritis and (2) arthritis among respondents with and without any psychiatric disorder. **Methods:** Data are from the Netherlands Mental Health Survey and Incidence Study (NEMESIS), a nationally representative household survey with repeated measurements in 1996, 1997 and 1999. Self-report was used to ascertain arthritis. Psychiatric and substance use disorders were diagnosed with the WHO Composite International Diagnostic Interview. **Results:** Regarding the cross-sectional results, it was found that the strength of the association of arthritis with mood and anxiety disorders was similar [odds ratio (OR)=1.48, 95% confidence interval (CI)=1.09–1.99 and OR=1.42, 95% CI=1.11–1.81, respectively]. The longitudinal results showed that preexisting arthritis elevated the risk of developing any mood disorder (OR=1.94, 95% CI=1.23–3.07), whereas having any mood or any anxiety disorder did not predict new-onset arthritis. The incidence of any psychiatric disorder was significantly higher among younger persons (<45 years) with arthritis, compared to others in the same age category without arthritis. **Conclusions:** Arthritis is associated with psychiatric disorders. The temporal relationship points to one direction: arthritis predicts new onset of psychiatric disorder (mood disorder) instead of the reverse. Especially younger people (<45 years) with arthritis are at risk of developing a psychiatric disorder. Screening and simultaneous treatment of comorbid mood disorder and arthritis are recommended as part of routine in primary care.

Keywords: Arthritis; Psychiatric disorders; Comorbidity; Temporal relationship

Introduction

Arthritis is a common disease. Several types of arthritis can be distinguished, such as rheumatoid arthritis, osteoarthritis and soft-tissue rheumatism. Arthritis affects the musculoskeletal system and in particular the joints. Pain, stiffness, inflammation and tissue damage are arthritis-related problems. The disease leads to joint weakness and instability. More women than men have arthritis, and the prevalence increases with age [1]. The 12-month prevalence of arthritis is estimated to be 6.5% [2]. Arthritis accounts for substantial health care, work disability and economic costs [1,3].

Various psychiatric and physical conditions are known to co-occur frequently with arthritis (depression, back–neck pain, migraine, asthma, cardiovascular disorders and peptic ulcer) [1,4–9]. The association between arthritis and depression has been repeatedly demonstrated in

Abbreviations: NEMESIS, Netherlands Mental Health Survey and Incidence Study; WHO, World Health Organization; CIDI, Composite International Diagnostic Interview.

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cross-sectional studies [10–13]. It should be noted that most of these studies refer to rheumatoid arthritis. There is a paucity of studies on the association between osteoarthritis and psychiatric conditions. Until recently, other psychiatric disorders, such as anxiety and substance use disorders, received little attention. However, studies are appearing to suggest that arthritis is also associated with anxiety disorders [1,14,15]. Recently, the first large-scale population-based assessment of the frequency and association of mood and anxiety disorders with arthritis was published [16]. The key finding of this study was that mood and anxiety disorders have similar associations with arthritis [16].

A weakness of these cross-sectional studies is that the temporal ordering of the onset of arthritis and depressive or anxiety disorders remains unclear. To our knowledge, population-based longitudinal research, necessary to disentangle the temporal ordering of the relationship between arthritis and psychiatric disorders, is lacking. In a review article, based on available literature from 1980 through 2000, the causality of the relationship between chronic pain (a large variety of heterogeneous clinical conditions) and psychopathology was assessed [17]. It was concluded that no single theoretical model can fully explain the causal relationship between the two [17]. In some studies it was found that psychiatric disorders are an antecedent to chronic pain, in other studies a consequence of chronic pain [17].

To understand the causality of the relationship between arthritis and psychiatric disorders, prospective studies are needed that can disentangle longitudinally the causality of the relationship between arthritis and psychiatric disorders. In this article, this information is provided. As it is likely that the incidence of psychiatric disorders declines with age and the incidence of arthritis increases with age, it seems essential to also examine the age-specific curves of (1) arthritis onset rates among persons with and without any psychiatric disorder and (2) psychiatric disorder onset rates among persons with and without arthritis. This information is also provided in this article. The research questions to be answered are:

1) Is there a cross-sectional association of mood and anxiety disorders with arthritis?
2) Does the presence of arthritis predict onset of mood and anxiety disorders over a 3-year follow-up period?

2a) What is the relationship between age and incidence of any psychiatric disorder among respondents with and without arthritis?

3) Does the presence of mood and/or anxiety disorder predict the development of arthritis over a 2-year follow-up period?

3a) What is the relationship between age and incidence of arthritis among respondents with and without any psychiatric disorder?

Materials and methods

Sampling procedure

Data from the Netherlands Mental Health Survey and Incidence Study (NEMESIS) were used [18]. NEMESIS (see Ref. [18], for a detailed description of the objectives of this study) is a population-based study with repeated measurements among the same respondents in 1996 (T_0), 1997 (T_1) and 1999 (T_2). A stratified, random sampling procedure was utilized. First, a sample was drawn from 90 Dutch municipalities, stratified by urbanicity and sufficiently distributed over the 12 provinces of the Netherlands. Post office records were used to draw a sample of private households (addresses). The number of households selected in each municipality was in proportion to its population. One respondent in each household was selected randomly, according to whose birthday was most recent, on the condition that he or she was between 18 and 65 years of age and sufficiently fluent in Dutch. To maximize the response and to compensate for any seasonal influences, the initial data collection phase was spread over the entire period from February to December 1996. At baseline, a total of 7076 people (response rate of 69.7%) were interviewed. All participants in the baseline interview (T_0) were approached for the follow-up waves, 1 year (T_1) and 3 years (T_2) after T_0. Of the 7076 participants at baseline, 5618 respondents (response 79.4%) were available for reinterview at T_1 and 4796 respondents (response of T_1 respondents: 85.4%) at T_2. The sample was representative of the Dutch population with regard to gender, civil status and urbanicity. Only the group aged 18–24 years was significantly underrepresented [19].

Loss of respondents in the second or subsequent waves of longitudinal data collection can be selective. Therefore, it was examined whether nonresponders at T_1 and T_2 differed from responders at T_1 and T_2 on the presence of arthritis or psychiatric disorders at T_0. Results show that any bias resulting from nonresponse was small. After adjustment for demographic variables, a 12-month arthritis at T_0 did not increase the probability of loss to follow-up between T_0 and T_1 nor between T_0 and T_2 [odds ratio (OR)=0.87, confidence interval (CI)=0.70–1.08 and OR=0.92, CI=0.76–1.11, respectively]. After adjustment for demographic variables, any 12-month psychiatric disorder at T_0 only slightly increased the probability of loss to follow-up between T_0 and T_1 as well as between T_0 and T_2 (OR=1.20, CI=1.04–1.38 and OR=1.29, CI=1.15–1.46, respectively) [20].

Instruments

Psychiatric disorders

The *Diagnostic and Statistical Manual of Mental Disorders* Axis I psychiatric disorders were diagnosed with the WHO Composite International Diagnostic Interview (CIDI version 1.1 [20]). A computerized version of