One-year trajectories of depression and anxiety symptoms in older patients presenting in general practice with musculoskeletal pain: A latent class growth analysis

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ABSTRACT

Objective: Distinguishing transient from persistent anxiety and depression symptoms in older people presenting to general practice with musculoskeletal pain is potentially important for effective management. This study sought to identify distinct post-consultation depression and anxiety symptom trajectories in adults aged over 50 years consulting general practice for non-inflammatory musculoskeletal pain.
Methods: Self-completion questionnaires, containing measures of anxiety and depressive symptoms, age, gender, pain status, coping and social status were mailed within 1 week of the consultation and at 3, 6 and 12 months. Latent class growth analysis was used to identify anxiety and depression symptoms trajectories, which were ascertained with cut-off score ≥8 on Hospital Anxiety and Depression Scale subscales. Associations between baseline characteristics and cluster membership were examined using multivariate multinomial logistic regression analysis (the 3-step approach).
Results: Latent class growth analyses determined a 3-cluster anxiety model ($n = 499$) and a 3-cluster depression model ($n = 501$). Clusters identified were: no anxiety problem (44.1%), persistent anxiety problem (33.9%) and transient anxiety symptoms (22.2%); no depression problem (74.1%), persistent depression problem (22.0%) and gradual depression symptom recovery (4.0%). Widespread pain, interference with valued activities, coping by increased behavioral activities, catastrophizing, perceived lack of instrumental support, age ≥70 years, being female, and performing manual/routine work were associated with anxiety and/or depression clusters.
Conclusions: Older people with non-inflammatory musculoskeletal pain are at high risk of persistent anxiety and/or depression problems. Biopsychosocial factors, such as pain status, coping strategies, instrumental support, performing manual/routine work, being female and age ≥70 years, may help identify patients with persistent anxiety and/or depression.

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Introduction

Persons with arthritis or other musculoskeletal pain are approximately two to three times more likely to suffer from depressive [25,53] or anxiety disorders [25,27] than the general adult population. The risk of having an anxiety or depressive disorder increases four times in persons with multi-site musculoskeletal pain compared to people without pain [25]. Except for major depression, formal diagnoses of depression and specific anxiety disorders are relatively uncommon in this group [27]. Instead it is mild to severe symptoms of depression (20–30% [35,63]) and anxiety (45–50% [29,63]) which are common,

and yet can still have a significant impact on pain [5] and function [28, 45,53,64] and response to conservative treatments aimed at pain relief [10,15].

There have been several calls for the better recognition of concurrent depression through screening [20,42,52] in primary care for those at higher risk of mental health problems, and specifically for individuals with chronic pain [20,42,52,56]. Despite robust evidence showing that anxiety symptoms are common and have a significant impact on the functioning of individuals with chronic pain, to date research on primary care screening has focused on depression. The recently developed ultra-brief anxiety instrument (the two-item Generalized Anxiety Disorder scale [36]) has opened up the possibility of anxiety screening in primary care.

Management guidance for depression in primary care typically focuses on identifying individuals whose depressive symptoms meet diagnostic criteria of symptoms count, frequency of episodes, duration

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and impairment indicating depressive disorders [20,42,52]. However, previous research has demonstrated that contemporary diagnostic systems fail to cover depressive and anxiety states among those who do not meet duration or impairment criteria yet exhibit recurrence, subjective distress and have a history of treatment [2,3]. The importance of this limitation is further reinforced by general population evidence on the potential impact and stability over time of subthreshold-level depression and anxiety [3,31,50,69]. As a result, general practitioners in the UK and US are now advised to also recognize persistent subthreshold forms of depression [20,52,56], for which primary care management may be effective [14,33]. However, as the course and significance of depression and anxiety symptoms are heterogeneous [55], distinguishing transient from persistent symptoms can be problematic. This may be particularly true in older people and in those with a long-term illness [8,70], and may partly explain why adults with physical symptoms and pain are at increased risk of non-detection of depression [49].

One way to meaningfully differentiate between heterogeneous symptom course and significance is by using latent growth modeling approaches to identify groups with different patterns of change over time ('trajectories'). These approaches have been applied to depression and anxiety in adult general population studies [55] which identified meaningful subtypes of depression/anxiety symptom course with distinct health characteristics that may inform more targeted detection and management strategies. This has not been done for primary care patients at higher risk of depression/anxiety, such as those with musculoskeletal pain. This paper reports a study that aimed to identify and characterize distinct post-consultation trajectories of anxiety and depression symptoms in older patients presenting to general practice with musculoskeletal pain.

Methods

The study sample and data collection have been detailed elsewhere [46], and are briefly summarized here. Ethical approval was received for this study from the Central Cheshire Local Ethics Committee (06/Q1503/60) [46].

Study sample

The PROG-RES (PROGnostic Research) study is a prospective cohort of consecutive, older people consulting their general practitioners for musculoskeletal pain [46]. Adults aged 50 years and over consulting their general practitioner with a new or on-going episode of musculoskeletal pain were eligible for inclusion. Patients were excluded on the basis of: a recent traumatic injury; an acute swollen, red or hot joint; inflammatory arthropathy; being considered by their general practitioner to be vulnerable due to cognitive impairments or severe physical health problems. Between September 2006 and March 2007, patients were recruited from five Central Cheshire General Practices with a generally high quality of care (as determined by Quality and Outcomes Framework scores – part of the UK general practice contract) [44].

Data collection procedures

Eligible participants triggered a specially designed electronic pop-up template by entering a predefined Read code (i.e. a coded standard clinical term used in the UK General Practice) [46]. The pop-up template consisted of seven brief questions on pain and depression.

Within 1 week of their consultation, all eligible participants were sent a study pack including a letter from the general practice, an information sheet, a postal questionnaire and written consent for further contact and medical record examination. Non-respondents were sent a reminder postcard 2 weeks after receiving the study pack.

Follow-up questionnaires were sent to all baseline respondents who consented for follow-up. Questionnaires were sent at 3, 6 and 12 months from the initial consultation date. Throughout the mailing process, weekly checks for patient deaths and departures from the general practices were conducted by the Research Network team. Data entry, coding, cleaning and storage are fully detailed in the study protocol [46].

Depression and anxiety measurement

Depression and anxiety were ascertained using the anxiety and depression subscales of the Hospital Anxiety and Depression Scale (HADS) [75]. These self-assessment scales were developed to detect states of depression (HADS-D) and anxiety (HADS-A) in clinical settings [75], have been widely used in primary care settings [71,74] and in adults with arthritis and joint pain [29,60], and have been suggested for use in rheumatologic populations [32,66]. Both subscales have acceptable test–retest reliability [1], internal consistency [12,13,62] and responsiveness to changes over time [1,13], in primary care, and in patients with chronic pain and musculoskeletal disorders. While the presence of distinct anxiety and depression subscales has not been a consistent finding across all populations (suggesting the HADS may be better viewed as a measure of general distress [16,57]), the two-factor solution has been supported in previous studies in elderly outpatients and people with musculoskeletal pain [51,62] and the scales may relate differently to functional outcome in these populations [45]. For these reasons, we separately analyzed the HADS-A and HADS-D subscales while accepting the possibility that they may show similar trajectories and risk factor associations.

Depressive and anxiety symptoms were measured at four time points: baseline, 3, 6 and 12 months. Latent growth modeling approaches, such as latent class growth analysis, rely on the assumption of normally distributed variables of measurements [9]. Log transformation of the repeated HADS scores did not reduce the skewness of the data. We attempted to use ordinal grouping of HADS scores, but this approach was unsuccessful in distinguishing between persistent and transient symptoms. Therefore, we decided to dichotomize HADS-D scores and for consistency also HADS-A scores, according to a cut-off score of 8, which is widely used in primary care as suggestive of clinically significant symptoms [11], and indicates mild to severe symptoms [33]. At each data collection point, individuals were grouped into two categories, indicative of the absence (scores 0–7) or the presence (scores 8–21) of anxiety and depression symptoms, and these repeated scores comprised individual patient's depression and anxiety trajectory.

Baseline covariates

Baseline variables were selected to investigate their associations with cluster membership. In addition to age (50–59, 60–69, 70+ years) and gender, variables summarized by Lee and Mercurio-Riley [38] in their conceptual framework of factors previously found to be associated with psychosocial adjustment to chronic pain (mainly originating in musculoskeletal pain), were selected according to availability, parsimony and interpretability. Selected groups of factors included: *pain condition* (number of pain sites recorded on a full body manikin (range 0–44) [37]), *functional dependence* (pain interference with social, daily and work activities (average score, range 0–10 each) [67]) and *stress processing factors* (coping by catastrophizing, increased behavioral activities, self-statements, and ignoring pain (highest tertile vs. lowest tertile (range 0–6) [30]). Finally, the following *socio-ecological* factors were included: living arrangements (living alone vs. not living alone); marital status (married/cohabiting vs. single/divorced/widowed); availability of emotional and instrumental support (yes/no need vs. no each) and current or previous occupation grouped into socioeconomic classes based on the National Statistics Socio-Economic Classification (NS-SEC; manual/routine vs. managerial or professional/intermediate/other [61]).