The frequency and characteristics of chronic widespread pain in general practice:
a case–control study

Jens Rohrbeck, Kelvin Jordan, and Peter Croft

ABSTRACT

Background
Chronic widespread pain is common in the community but is not often diagnosed in primary care. One explanation may be that widespread pain is presented and treated in primary care as multiple episodes of regional pain.

Aim
To determine whether patients who consult with multiple regional pain syndromes have characteristics consistent with chronic widespread pain.

Design of study
Case–control study.

Setting
One general practice in North Staffordshire, UK.

Method
Participants were 148 cases who consulted regularly with different musculoskeletal pains over 5 years, and 524 controls who had not consulted for musculoskeletal pain during the same period. A postal questionnaire survey and medical record review were undertaken.

Results
Cases with musculoskeletal pain reported more health problems and higher levels of fatigue than controls, and significantly worse general health and greater sleep disturbance (odds ratios 3.3. and 3.1, respectively). They generally reported more severe symptoms and consulted more frequently for a range of problems, but this was not explained by a general propensity to consult.

Conclusion
Patients who consult in primary care with multiple regional pain syndromes have similar characteristics to those associated with chronic widespread pain and fibromyalgia. Recognising the need for general approaches to pain management, rather than treating each syndrome as a regional problem of pain, may improve the outcome in such patients.

Keywords
case–control study; chronic pain; general practice.

INTRODUCTION

In 1977–1978 Smythe and Moldofsky described a syndrome of widespread pain, which they labelled fibrositis.[1] It has since been written about under the term 'fibromyalgia'. Literature on this topic has increased exponentially. The term fibromyalgia is applied to the syndrome of chronic widespread pain and multiple tender points, and is a sub-group of a more common problem of 'widespread pain for which there is no identifiable underlying pathological cause'.[2]

Based on population surveys, chronic widespread pain is estimated to affect 12% of adults in developed countries.[3] It is associated with a range of other symptoms, such as poor sleep and psychological distress. Chronic widespread pain is now recognised to overlap with, and resemble, other syndromes for which there is no discrete or clear pathological cause. These include conditions such as irritable bowel syndrome and chronic fatigue, often grouped together under labels such as 'chronic functional syndromes'[4] or 'medically unexplained symptoms'.[5] This overlap has been described in specialist clinics[6] and in the general population.[7]

Whether chronic widespread pain is commonly referred to in general practice is less clear. No diagnostic code exists for widespread pain in the system of morbidity coding, which is in wide use in UK

*J Rohrbeck, MPhil, DRCOG, GP research fellow; **K Jordan**, PhD, senior lecturer in biostatistics; **P Croft**, MD, professor of primary care epidemiology, Primary Care Musculoskeletal Research Centre, Keele University, Keele.*

Address for correspondence
Kelvin Jordan, Primary Care Musculoskeletal Research Centre, Primary Care Sciences, Keele University, Keele ST5 5BG.
E-mail: k.p.jordan@cphc.keele.ac.uk

How this fits in

Widespread pain, the cardinal symptom of the syndrome of fibromyalgia, is associated with increased healthcare use and poor health outcomes. This case–control study shows that patients regularly presenting to primary care with different regional musculoskeletal pain syndromes exhibit the characteristics of chronic widespread pain sufferers including having other health problems. General pain management approaches, rather than separate treatments for each syndrome, may improve outcome.

general practice. However, fibromyalgia has been ascribed codes (N239 and N248 in the Read Code system), and there is evidence that this label is now being used. The annual prevalence of diagnosed fibromyalgia in the primary care setting is much lower than its estimated frequency in the general population.[8] Therefore, it is likely that this diagnostic label is currently being applied to only a small proportion of all those consulting with widespread pain in general practice.

Consultations for pain in UK general practice are dominated by regional musculoskeletal syndromes, such as back or shoulder pain, which together form the second most common reason for adults consulting a GP after respiratory illnesses.[9] Pains in other regions are often present concurrently in such patients.[10] This presence of pain elsewhere in the body is a potentially important characteristic to identify in these patients because it is associated with a worse prognosis for the regional syndrome[11] and increased use of health care.[10] It is also important to identify additional pain because general pain management interventions may be of more value to such patients than treatments targeted at the regional problem.

The hypothesis that people who consult with multiple regional pain symptoms over time are likely to have chronic widespread pain syndrome was investigated.

METHOD

Case–control selection

The design was a case–control study. Potential cases and controls were identified from computerised medical records in one general practice on the basis of consultation patterns over a 5-year period before the study. The study practice was a member of the Keele GP Research Partnership.[12] It was a group practice with five partners and a registered population of 8000. The practice is situated in an area with a slightly worse deprivation score (based on Index of Multiple Deprivation 2004[13]) than the median for England and Wales.

All consultations in the practice were recorded on a computer and given appropriate morbidity codes, using the Read Code system that is commonly used in the UK.

Case definition. Potential cases were defined as adult patients registered with the study practice in 2000, which was when the research project started, and who, in a period of 5 consecutive years before this (from 1996–2000 inclusive) fulfilled all of the following criteria:

- at least one consultation for a musculoskeletal complaint in the axial skeleton (neck and back);
- at least one consultation for an upper- or lower-limb complaint;
- at least one consultation for a regional musculoskeletal complaint in each of 3 separate years; and
- at least four consultations for regional musculoskeletal complaints in total during the 5-year period.

Patients with systemic inflammatory rheumatological disorders (such as rheumatoid arthritis) were excluded. For the purposes of this article, cases who fulfilled all the above criteria were referred to as having 'consultation-based widespread pain'.

Control definition. Potential controls were patients registered in the year 2000 at the same general practice as cases who had consultation-based widespread pain. Controls had not consulted at any time in the previous 5 years about regional musculoskeletal pain in the axial skeleton or limbs, or about any rheumatological condition. Three or four potential controls per case were selected (depending on matching availability), then frequency matched to cases for sex and age in 5-year age bands.

Final case–control selection. A questionnaire was mailed to all potential participants. A consent form was included requesting permission to use information from participants' medical records to link responses to the questionnaire. The final study population consisted of all responders to the questionnaire who additionally gave consent for their medical records to be viewed.

Measures of 'other complaints'

Two methods were used to measure 'other complaints' (for example, fatigue, anxiety or depression, and headache) in cases and controls: self-reported data from the postal questionnaire and consultation data from their linked general practice records.

The questionnaire. The survey instrument included questions concerning:

- demographic data;
- pain that lasted more than 3 months in the last 12 months;
- current rating of general health; and

- current health compared with that of 12 months previously.

It also included three instruments to measure symptoms, fatigue, and sleep quality. These were the Subjective Health Complaints (SHC) questionnaire,[14] Chalder fatigue scale,[15] and the Pittsburgh Sleep Quality Index respectively.[16]

The SHC questionnaire asked responders to record how different health problems affected them in the previous month. For analysis of severity, a severe problem was graded as having been present for a 'good bit' or 'most' of the time (as opposed to 'none' or 'some of' the time).

The Chalder fatigue scale (score range 0–42) is a measure of the severity of physical and mental fatigue over the previous month.

The Pittsburgh Sleep Quality Index assesses sleep quality over the previous month. A cut-off of seven points or more (out of a total possible score of 18, derived from six of the seven components of the questionnaire) was used to indicate poor sleep quality.

The medical record review. For all participants who returned a questionnaire and gave consent to have their records reviewed, computerised practice medical records for the 5 years before the survey were downloaded and reviewed by a researcher. This researcher was unaware of the case–control status of individual patients.

The review consisted of a search for consultations for gastrointestinal conditions, headache or migraine, dizziness and neurological symptoms, menstrual irregularity, anxiety or depression, and fatigue. These categories were chosen to correspond with some of the self-reported categories of the SHC questionnaire, and to cover syndromes related to fibromyalgia and overlapping syndromes as described in the literature.[6]

Consultations for cough and for excessive ear wax were identified as indicators of a general propensity to consult about common problems because they tend to be minor complaints that would generally not require GP consultation.

Analysis

Associations between consultation-based widespread pain and other functional symptoms were assessed using categories of self-reported symptoms on the SHC questionnaire. Cases and controls were compared with respect to the prevalence of each SCH symptom category: musculoskeletal, gastrointestinal, chest, anxiety or depression, migraine or headache, allergy, or other. Associations were summarised using odds ratios (ORs) with 95% confidence intervals (CIs).

The associations of consultation-based widespread pain with poor sleep quality and general health status (single-item questions) were estimated using ORs and 95% CIs. The association with level of fatigue was assessed by calculating the difference in mean Chalder fatigue scale scores of cases and controls.

The associations of consultation-based widespread pain with consultations for other functional problems were assessed using ORs with 95% CIs. These were adjusted for consultations for minor complaints (cough or ear wax) using unconditional logistic regression.

The final two analyses were restricted to subgroups of cases and controls who had reported the same symptom on the SHC questionnaire, to investigate whether:

- cases reported different symptom severity compared with controls, adjusting for age and sex;
- cases had a different consultation frequency for that symptom, adjusting for age, sex, consultation for cough or ear wax, and self-reported severity of the problem using unconditional logistic regression.

All analyses were performed using SPSS for Windows (version 12.0).

RESULTS

Response

The questionnaire was mailed to 181 potential cases and 687 potential controls. In total, 148 cases and 524 controls responded with consent to view medical records. This gave an an overall response rate of 77% (82% in cases, 76% in controls).

There was no significant difference in sex or age between the cases and controls who responded and

Table 1. Self-reported health symptoms and sleep problems in cases (*n* = 148) and controls (*n* = 524).

	Cases n (%)	Controls n (%)	OR[a] (95% CI)
Chronic pain (pain >3 months)	106 (73)	182 (35)	4.9 (3.3 to 7.4)
Fair or poor general health	62 (42)	95 (18)	3.3 (2.2 to 4.9)
Health worsened over past year	43 (29)	67 (13)	2.8 (1.8 to 4.3)
Subjective Health Complaints questionnaire			
Musculoskeletal	124 (91)	388 (79)	2.7 (1.5 to 5.2)
Gastrointestinal	115 (84)	392 (79)	1.4 (0.9 to 2.3)
Anxiety or depression	91 (67)	263 (53)	1.8 (1.2 to 2.7)
Chest symptoms	65 (50)	186 (38)	1.7 (1.1 to 2.5)
Migraine or headache	88 (70)	276 (57)	1.8 (1.2 to 2.7)
Allergy	29 (22)	112 (23)	1.0 (0.6 to 1.5)
Hot flushes	54 (40)	124 (25)	2.0 (1.4 to 3.1)
Dizziness	57 (43)	166 (33)	1.5 (1.0 to 2.2)
Pittsburgh Sleep Quality Index			
Poor sleep quality[b]	80 (63)	169 (35)	3.1 (2.1 to 4.7)

[a]Controls are reference group. [b]Minimum score of 7. OR = odds ratio.

Table 2. Consultation prevalence by cases (*n* = 148) and controls (*n* = 524) 1996–2000.

	Cases *n* (%)	Controls *n* (%)	OR[a] (95% CI)	OR[b] (95% CI)
Cough	39 (26)	79 (15)	2.0 (1.3 to 3.1)	–
Ear wax	31 (21)	78 (15)	1.5 (1.0 to 2.4)	–
Gastrointestinal	79 (53)	127 (24)	3.6 (2.5 to 5.2)	3.3 (2.2 to 4.8)
Headache	44 (30)	51 (10)	3.9 (2.5 to 6.2)	3.7 (2.3 to 5.8)
Dizziness and neurological symptoms	42 (28)	73 (14)	2.5 (1.6 to 3.8)	2.3 (1.5 to 3.5)
Menstruation disorders (females only)	18 (19)	38 (11)	1.9 (1.1 to 3.6)	1.9 (1.0 to 3.6)
Anxiety or depression	34 (23)	71 (14)	1.9 (1.2 to 3.0)	1.7 (1.1 to 2.7)
Fatigue	31 (21)	34 (6)	3.8 (2.3 to 6.5)	3.5 (2.1 to 6.0)

[a]*Unadjusted, controls are reference group.* [b]*Adjusted for consultation for cough and ear wax, controls are reference group. OR = odds ratio.*

Table 3. Symptom severity[a] in cases and controls reporting the symptom.

	Cases *n* (%)	Controls *n* (%)	OR[b] (95% CI)
Musculoskeletal			
Pain in neck	36 (44)	58 (29)	2.0 (1.2 to 3.4)
Pain in upper back	18 (31)	34 (35)	0.8 (0.4 to 1.6)
Pain in lower back	73 (62)	97 (35)	3.1 (2.0 to 4.8)
Pain in arms	30 (48)	39 (28)	2.4 (1.3 to 4.4)
Pain in shoulders	32 (40)	58 (32)	1.4 (0.8 to 2.4)
Pain in feet during exercise	21 (34)	61 (42)	0.7 (0.4 to 1.3)
Any musculoskeletal symptom[c]	94 (76)	177 (46)	3.8 (2.4 to 6.0)
Gastrointestinal			
Heartburn	22 (37)	34 (18)	2.8 (1.4 to 5.3)
Abdominal pain	12 (26)	22 (16)	1.8 (0.8 to 4.1)
Wind	26 (28)	61 (20)	1.6 (0.9 to 2.7)
Diarrhoea	8 (16)	11 (9)	2.2 (0.8 to 6.0)
Constipation	15 (29)	28 (19)	1.8 (0.9 to 3.7)
Any gastrointestinal symptom[c]	47 (41)	106 (27)	1.9 (1.2 to 2.9)
Anxiety or depression			
Anxiety	24 (30)	60 (25)	1.3 (0.8 to 2.3)
Depression	25 (32)	45 (26)	1.3 (0.7 to 2.4)
Anxiety or depression[c]	34 (37)	74 (28)	1.5 (0.9 to 2.6)
Chest			
Heart palpitations	5 (13)	14 (13)	1.0 (0.3 to 3.0)
Chest pain	9 (28)	7 (12)	3.0 (1.0 to 9.0)
Breathing difficulties	17 (33)	25 (22)	1.6 (0.8 to 3.4)
Any chest symptom[c]	24 (37)	39 (21)	2.1 (1.1 to 3.9)
Migraine/headache			
Migraine	6 (21)	8 (12)	2.4 (0.7 to 8.0)
Headache	16 (17)	39 (13)	1.4 (0.7 to 2.6)
Migraine or headache[c]	17 (19)	39 (14)	1.5 (0.8 to 2.8)
Allergy			
Eczema	4 (25)	10 (19)	1.2 (0.3 to 4.7)
Allergic skin problems	8 (31)	20 (23)	1.4 (0.5 to 3.7)
Other			
Hot flushes	26 (48)	32 (26)	2.8 (1.4 to 5.5)
Dizziness	12 (21)	15 (9)	2.7 (1.2 to 6.2)

[a]*Severe problem defined as having problem 'most' or 'good bit' of time during last month.* [b]*Adjusted for age and sex, controls are reference group.* [c]*At least one symptom rated as severe. OR = odds ratio.*

consented to take part: 94 cases (64%) were women compared with 350 (67%) controls. Mean age of cases was 57.0 years (standard deviation [SD] = 13.1) and of controls was 56.1 years (SD = 13.7)

Symptom prevalence
Cases were more likely than controls to report current chronic pain, poor health, and worsening health during the previous 12 months (Table 1). Furthermore, they were more likely to report symptoms in all categories of the SHC, with the exception of allergies and gastrointestinal disorders.

The proportion of cases with a Pittsburgh Sleep Quality Index score of 7 or more (that is, worse sleep) was higher in cases than controls (OR = 3.1, 95% CI = 2.1 to 4.7).

Cases also had a higher mean overall Chalder fatigue scale score (that is, worse fatigue): difference in means was 3.7 (95% CI = 2.2 to 5.3).

Consultation prevalence
Table 2 compares cases and controls with respect to consultation at least once in the previous 5 years in each of the symptom categories. This consultation prevalence was higher in cases than controls for all categories. Although ORs for consultation were all reduced to some extent by adjustment for a general propensity to consult (for minor ailments of cough or ear wax), strong independent associations persisted between consultation-based widespread pain and consultation in all categories. The strongest associations were with consultation for headache (OR = 3.7, 95% CI = 2.3 to 5.8), fatigue (OR = 3.5, 95% CI = 2.1 to 6.0), and gastrointestinal disorders (OR = 3.3, 95% CI = 2.2 to 4.8).

Symptom severity
Cases with a particular symptom tended to report greater severity than controls with the same symptom, with some exceptions (upper back pain, foot pain, and heart palpitations) (Table 3). Participant numbers for analysis in some subgroups were small and the differences observed were not all statistically significant. The strongest associations with symptom severity were found for low back pain (OR = 3.1, 95% CI = 2.0 to 4.8), heartburn (OR = 2.8, 95% CI = 1.4 to 5.3), dizziness (OR = 2.7, 95% CI = 1.2 to 6.2), hot flushes (OR = 2.8, 95% CI = 1.4 to 5.5), and chest pain (OR = 3.0, 95% CI = 1.0 to 9.0).

Self-reported ill health and consultation for the same problem
Consultation rates related to a symptom category were higher in cases with a self-reported symptom in that category than controls with the same symptom. This was only partially explained by the difference in

Table 4. Consultation prevalence for reporting a symptom in cases and controls.

Consultation category	Cases n (%)	Controls n (%)	OR[a] (95% CI)	OR[b] (95% CI)	OR[c] (95% CI)
Anxiety or depression	30 (33)	57 (22)	1.8 (1.1 to 3.1)	1.6 (0.9 to 2.8)	1.5 (0.8 to 2.6)
Headache	31 (35)	36 (13)	3.8 (2.1 to 6.7)	3.5 (2.0 to 6.2)	3.5 (1.9 to 6.4)
Gastrointestinal	64 (56)	112 (29)	3.1 (2.0 to 4.8)	3.0 (1.9 to 4.6)	2.7 (1.7 to 4.3)
Neurology	21 (37)	39 (24)	1.9 (1.0 to 3.6)	1.9 (1.0 to 3.6)	1.9 (1.0 to 3.7)

[a]*Adjusted for age and sex, controls are reference group.* [b]*Adjusted for consultation for cough and ear wax, age and sex, controls are reference group.* [c]*Adjusted for consultation for cough and ear wax, age, sex and severity of symptom on Subjective Health Complaints questionnaire, controls are reference group. OR = odds ratio.*

symptom severity between cases and controls (Table 4).

DISCUSSION

Summary of main findings

Chronic widespread pain is shown to be associated with other 'non-pain' somatic symptoms.[6,7] The current study demonstrated a similar pattern in patients consulting in primary care with multiple regional musculoskeletal pain syndromes over time. Patients with consultation-defined chronic widespread pain had a significantly higher prevalence of self-reported symptoms, such as sleep disturbance and fatigue, headaches, anxiety or depression, and poorly perceived general health. These patients were also more likely to have consulted about other health problems compared with controls who had no musculoskeletal consultation during the same period. Patients with this pain are likely to represent that part of the spectrum of chronic widespread pain sufferers in the population who consult in primary care.

GPs use the label of fibromyalgia rarely, and not necessarily by applying published criteria.[8] In the practice studied, the annual prevalence of diagnosed fibromyalgia was calculated at 8 per 10 000. This is higher than rates based on national general practice data (4 per 10 000[8]), but lower than its estimated prevalence in the general population (2%). The prevalence of fibromyalgia was also much lower than the population prevalence of chronic widespread pain (12%), for which GPs do not have a separate code. Therefore, most sufferers are either not presenting to general practice with these syndromes or are not being labelled as having them.

Although the case definition in this study was arbitrary in its cut-offs, results suggest that it identifies substantial numbers of patients diagnosed in other settings as having chronic widespread pain or fibromyalgia. Furthermore, the cases studied had to have axial and regional pain, a defining feature of widespread pain, for inclusion, and had a high prevalence of self-reported multiple pains on the survey questionnaire.

Strengths and limitations of the study

This study was based on consulters in primary care who are a group seeking health care and were therefore self-selected. The aim of this study was to identify this consulter group and investigate whether they had similar characteristics to patients with widespread pain in population and specialist studies. A strength of this research was that controls were taken from the same general practice register and would have consulted with that particular practice for any symptoms that they chose to take to primary care.

Response to the questionnaire was high and the self-reported scales of symptom severity, fatigue, and poor sleep had been previously validated.

One possible weakness is that the controls did not represent all 'non-cases', as patients who consulted with a musculoskeletal problem but who did not meet the criteria for consultation-based widespread pain (the 'middle group') were excluded. Therefore, the observed ORs may overestimate differences between the case group and the rest of the population as a whole. However, the controls provided symptom, fatigue and sleep scores, and baseline rates of consultation for non-pain conditions in people who have not consulted about musculoskeletal pain.

A second limitation that could be suggested is that, by excluding the 'middle group' from the case definition, observed differences may not be exclusive to the cases, but may be features of any persons consulting with pain. This does not affect the study, which aimed to investigate characteristics of just those cases who were likely to represent widespread pain sufferers. However, consulters in the 'middle group' were examined as part of a bigger study and it was found that their prevalence of other consultations, symptoms, sleep and fatigue problems, generally were between that of the cases and controls.

A third concern is that the term 'chronic widespread pain' is applied when there is no demonstrable underlying cause of the problem, such as generalised osteoarthritis or polymyalgia. Some cases may have had such specific causes, although inflammatory conditions were excluded. Most patients presenting

with multiple common regional pain studied here will not have had a demonstrable underlying cause.

Comparison with existing literature

One explanation for the current observations is that chronic widespread pain is one of a group of conditions linked to somatisation. Somatisation in this model has two characteristics: medically unexplained physical symptoms and their presentation to health care.[4,5] It is usually assumed that somatisers take note of, and report, symptoms to the doctor more frequently than others, and that the extent and significance of their symptoms are amplified.[4] This may be a psychological characteristic in itself or an expression of psychological distress. One study linked widespread pain with a history of frequent visits to medical practitioners for symptoms that disrupt daily activities,[17] and concluded that somatisation influenced the persistence and bodily spread of pain.

The current study provides evidence for this model, as self-reported symptoms and consultations were more common in cases than controls. Cases with a symptom were more likely to consult about it than controls with the same symptom, and this could not be explained by severity alone. Psychological distress may underlie this. Chronic pain at multiple sites is associated with psychological distress,[18] as is multiple symptom presentation and frequent consulting in primary care. Kroenke *et al* found that psychiatric disorder increases with the number of physical symptoms.[19]

Another explanation is that these patients actually have more somatic illness.[20] Mechanisms such as abnormal neuroendocrine responses[21] may explain higher rates of distress and consultation. Support for this in the current study comes from the findings that a propensity to consult did not explain higher consultation rates in cases, and that cases had generally more severe symptoms than controls with the same symptom.

Implications for clinical practice and future research

Results show that patients who have multiple consultations for different regional musculoskeletal pain have many of the characteristics described and attributed to chronic widespread pain and fibromyalgia. These two labels are rarely applied in practice and the criteria for their clinical use are unclear.[22] Whether there is any virtue in applying the label of fibromyalgia to such patients in primary care has not been established by this study or by others, although there is some evidence that a label helps in managing symptoms.[23]

Patients identified in this study are likely to represent a different part of the spectrum of severity from patients who are diagnosed with fibromyalgia; given their higher rate of consultations for other problems, these are clearly not patients with musculoskeletal pain only. These patients are similar to frequent consulters or patients with overlapping functional syndromes or medically-unexplained symptoms.[5,6]

Use of a physical label by GPs in this study does not imply that GPs were not treating the patient holistically or taking account of social and psychological factors. However, the patients may present with discrete medical problems, and this may inhibit adopting more direct approaches to the problem of somatisation or multiple symptoms. Future work needs to establish whether there is any advantage in identifying these patients in a less 'symptom-specific' way before they consult with multiple problems. This could encourage testing of new interventions for this large group of consulters.

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