

The prevalence and associated features of chronic widespread pain in the community using the 'Manchester' definition of chronic widespread pain

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Abstract

Objective. We examine the descriptive epidemiology of chronic widespread pain using the 'Manchester' definition [CWP(M)] and assess psychosocial and other features which characterize subjects with such pain according to these more stringent criteria.

Methods. A population postal survey of 3004 subjects was conducted in the Greater Manchester area of the UK.

Results. The point prevalence of Manchester-defined chronic widespread pain was 4.7%. CWP(M) was associated with psychological disturbance [risk ratio (RR) = 2.2, 95% confidence interval (CI) (1.4–3.5)], fatigue [RR = 3.8, 95% CI (2.3–6.1)], low levels of self-care [RR = 2.2, 95% CI (1.4–3.6)] and with the reporting of other somatic symptoms [RR = 2.0, 95% CI (1.3–3.1)]. Hypochondriacal beliefs and a preoccupation with bodily symptoms were also associated with the presence of CWP(M).

Conclusion. This definition of chronic widespread pain is more precise in identifying subjects with truly widespread pain and its associated adverse psychosocial factors. Clear associations with other 'non-pain' somatic symptoms were identified, which further supports the hypothesis that chronic widespread pain is one feature of somatization.

KEY WORDS: Pain, Somatization, Epidemiology.

Chronic widespread pain (CWP) is a common symptom within the community, with an estimated prevalence between 10.7 and 13.2% [1, 2]. It has been related to a number of other physical and affective symptoms such as fatigue, psychological distress and somatic symptoms [3, 4], and is one of the most common conditions seen in rheumatology clinics.

The American College of Rheumatology (ACR) classification criteria for fibromyalgia require the presence of both CWP and multiple tender points. CWP is defined as pain present in at least two contralateral body quadrants and the axial skeleton, which has persisted for at least 3 months. Although the ACR definition of CWP has been used in population studies, it has been criticized for being too inclusive and failing to reflect the concept

of truly diffuse and widespread pain. For example, a subject with pain restricted to the right hand, left foot and back would be classified as having widespread pain [5]. While the ACR definition is useful in clinical settings (as an investigative tool examining aspects of the fibromyalgia syndrome), particularly in enhancing comparability between studies, its use in epidemiological studies of widespread pain in the community is problematic. Whilst we have previously shown associations with these criteria and somatic and affective symptoms [2], we have expressed anxieties on whether it is a distinct entity. Therefore, a more stringent definition of widespread pain, for use in epidemiological studies, has been proposed [6], aiming to identify those whose pain is truly widespread. In a previous population-based study, when compared to the ACR criteria, this alternative classification was shown to display stronger associations with symptoms previously found to be related to CWP, such as fatigue, psychological distress, the number of tender points and sleep disruption [4, 6]. Indeed, the association

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with psychological distress in those subjects satisfying only the ACR definition of CWP was more similar to subjects reporting regional pain [6]. Furthermore, we have suggested that the presence of CWP may be associated with the earlier phases of somatization of distress.

In this study, we aim to examine further the descriptive epidemiology of CWP using the Manchester definition, in a further population sample. Secondly, given the previous observations of an association between psychological distress and CWP, we explore specifically whether CWP is associated with somatization by examining the relationship between pain and reported 'non-pain' somatic symptoms. In addition, we examine the relationship between pain symptoms and concerns and attitudes about illness, and disability.

Methods

Study population

The sampling frame was the registered population of a general practice in a commuting suburb south of Manchester. A postal questionnaire was sent to a random sample of 3004 people aged 18–65 yr. After 2 weeks, a postcard reminder was sent to non-responders and, if necessary, after another 2 weeks a further questionnaire. The survey enquired about any pain symptoms lasting at least 24 h experienced during the previous month, with a manikin provided on which the site of pain was shaded. The information provided by the manikin was coded using a template divided into 26 sections, with each limb consisting of four separately coded sections (Fig. 1). For subjects to satisfy the Manchester definition of chronic widespread pain [CWP(M)], pain must be reported in at least two sections of two contralateral limbs and in the axial skeleton, and have been present for at least 3 months [6]. This is in contrast to the ACR definition of CWP which requires only that pain be present in any part of contralateral body quadrants, in addition to axial pain.

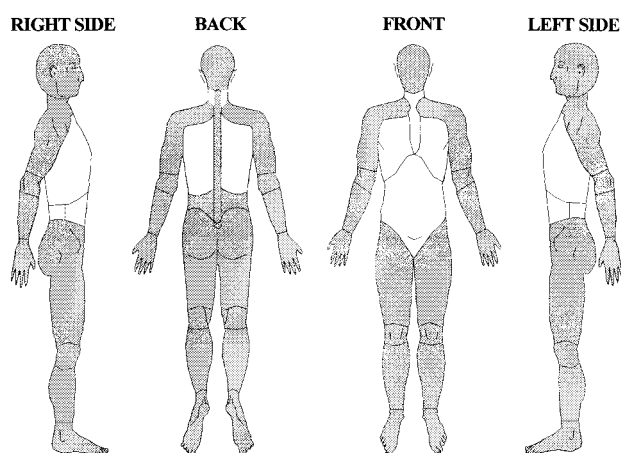


FIG. 1. Axial and limb areas used in the Manchester definition of chronic widespread pain [6].

Additional information was obtained on psychosocial factors by incorporating five validated instruments in the postal questionnaire: the General Health Questionnaire (GHQ) [7], the Fatigue Questionnaire [8], the Self-Care Assessment Schedule [9, 10], Illness Attitude Scales [11], and the somatic symptom checklist modified from Othmer and DeSouza [12].

Questionnaires

The General Health Questionnaire. The 12-item version [7] was developed as a screening instrument for mental disorder in the general population and has been widely used as a measure of psychological distress. Item responses are scored 0 or 1, resulting in a total score of 0–12, with high scores indicating more psychological distress.

The Fatigue Questionnaire. This is an 11-item instrument developed for use in population studies to measure physical and mental aspects of fatigue. Item responses are scored 0 and 1, and summed to provide a total score of 0–11, with high scores corresponding to high levels of fatigue. This assessment has been validated in primary care samples by comparison with a structured clinical assessment [8] and data are available from a large population-based survey [13].

The Illness Attitude Scales These include seven scales which measure concerns and attitudes about illness and health. Each scale consists of three items scored from 0 to 4, with a total score of 0–12. Individual scales assess Worry about Health, Concern about Pain, Hypochondriacal Beliefs, Health Habits, Bodily Preoccupation, Thanatophobia (fear of dying) and Disease Phobia.

The Self-Care Assessment Schedule. This assesses the frequency of self-care-related behaviours during the preceding 2 weeks. There are 10 items, each scored from 0 to 4, resulting in total scores of 0–40, with higher scores indicating greater restriction. It has tentatively been interpreted as an assessment of disability and studies have shown it to be closely related to alternative measures of disability. This assessment has been shown to have good test–retest reliability, and different aspects of validity have been studied extensively [10].

The Somatic Symptom Scale. This was originally validated as a screening test for somatization disorder [12], as defined by the American Psychiatric Association [14]. It enquires, in both males and females, about the lifetime experience of six symptoms. These are: trouble breathing, frequent vomiting (when not pregnant), loss of voice for >30 min, being unable to remember what you have been doing for hours or days (without the influence of alcohol or drugs), difficulty swallowing and frequent pain in the fingers or toes. Less than 0.1% of the general population meet the full World Health Organization (WHO) criteria for somatization disorder, but >4% meet less stringent criteria [15]. The Somatic Symptom Scale was included as a brief measure of the propensity to present somatic complaints. For the purpose of the present study, the number of 'non-pain'

somatic symptoms reported was totalled to provide a score between 0 and 5.

Analysis. The age- and sex-specific prevalence rates of CWP(M) were calculated. Subjects scoring zero on the psychosocial scales were classified as one group (referent group). The scales were then split into thirds of distribution and the risk ratios of having CWP(M) calculated, comparing each third to those subjects scoring zero. These were used to determine the relationship between scale score and reporting CWP(M), and identify a dichotomization best differentiating those with and without CWP(M). Where no significant increase was evident, the median score was taken as the cut-off. The associations between having CWP(M) in those subjects scoring above the scale cut-off compared to those with CWP(M) scoring below the cut-off are reported as prevalence risk ratios (RR) with 95% confidence intervals (CI), adjusted for age and sex.

Finally, any factors significantly associated with CWP(M) were candidates for entry into a forward stepwise Cox regression model in order to identify a small group of variables which, when considered in combination, could reliably characterize those subjects satisfying criteria for CWP(M). To give some indication as to how well the model explained CWP(M), subjects were stratified according to the number of factors which they reported and the prevalence of CWP(M) was then calculated within each stratum.

Statistical analysis was conducted using the STATA computer package [16].

Results

From 3004 subjects mailed a survey questionnaire, 1953 replies were received. On examination of the electoral roll, 402 of the 'non-responding' subjects were not listed at the address given on the general practice register and therefore it was considered that they were very unlikely to have received the questionnaire. The 'adjusted' overall participation rate was therefore 75% with women more likely to participate (79%) than men (71%). The response rate was higher for older persons of both sexes, with 86% of those aged 55–65 yr responding compared to 55% of those aged 18–24 yr. The median age of responders was 42 yr (IQR 32–52 yr).

Pain during the past month, lasting for >24 h, was reported by 1100 subjects, a crude prevalence of 57% (after excluding 28 subjects with missing information). The ACR definition of CWP was satisfied by 252 subjects (12.9%). Of these, 90 satisfied the Manchester criteria for CWP; a prevalence of 4.7%. The primary reason for subjects meeting the ACR definition, but not the Manchester definition, of CWP was that limb pain was localized rather than diffuse. Applying the age- and sex-specific prevalence rates to the adult population of England and Wales in 1991 [17], the estimated prevalence of CWP(M) in the population is 4.3%.

Females were not significantly more likely to report CWP(M) than males (5.3% vs 3.7%; $P = 0.10$). However, the prevalence generally increased with age in

both sexes (Table 1) ($\chi^2_{\text{trend}} P < 0.005$ males; $P < 0.001$ females). Compared to subjects without CWP(M), those with CWP(M) were older (median age 52 vs 39 yr; $P < 0.001$), and less likely to be single (12% vs 23%; $P < 0.05$).

The prevalence of those subjects with CWP(M) scoring above and below the designated cut-off and their associations with psychosocial factors are shown in Table 2. Since the effects observed were similar, the results for males and females have been combined. Reporting high levels of psychological distress and low levels of self-care was associated with an increased risk of ~2-fold of having CWP(M). In addition, subjects reporting high levels of mental and physical fatigue were more likely to have CWP(M) [RR = 3.8 (95% CI 2.3–6.1)], as were those reporting at least one 'non-pain' somatic symptom [RR = 2.0 (95% CI 1.3–3.1)]. One of the subscales within the Illness Attitude Scales, 'Hypochondriacal Beliefs', was also significantly associated with CWP(M), while there was also an increased risk (of marginal significance) associated with high scores on the 'Bodily Preoccupations' subscale.

In order to ascertain whether, when considered together, a small group of factors could reliably characterize those subjects with CWP(M), a further Cox regression was conducted using a forward stepwise model (Table 3). Three factors best identified those subjects who had CWP(M): older age (subjects > 50 yr), reporting at least one 'non-pain' somatic symptom [RR = 1.6 (95% CI 1.0–2.5)] and high levels of fatigue [RR = 3.6 (95% CI 2.2–5.9)]. The prevalence of CWP(M) increased from 1% in those subjects with none of these factors, to 2% in those with one factor, through to 9% in subjects with two factors, and 16% for those with all three factors (over 50 yr, high levels of fatigue and at least one other somatic symptom).

Discussion

Our previous work has shown associations with psychological distress and CWP (using the definition in the ACR classification criteria for fibromyalgia). The current study has taken this forward using more appropriate criteria for population studies in showing stronger associations with psychological distress and fatigue, a relationship with certain Illness Attitudes and Beliefs, and specifically with the reporting of 'non-pain' somatic symptoms.

In summary, we found the prevalence of CWP using the Manchester definition to be 4.7%. Despite the small number of subjects satisfying this more stringent definition, this new classification of CWP has shown clear associations with feelings of fatigue, reporting 'non-pain' somatic symptoms and low levels of self-care. The present findings support previous work which demonstrated that CWP, as defined by the ACR classification criteria for fibromyalgia, was associated with high levels of psychological distress [2]. Subjects were also more likely to report more somatic complaints, affective symptoms and tiredness than those without such pain, sug-

TABLE 1. Age- and sex-specific prevalence rates of chronic widespread pain (Manchester definition)

Age (yr)	Total	Male cases	(%)	Total	Female cases	(%)
18–30	167	1	(0.6)	248	4	(1.6)
31–40	205	7	(3.4)	278	6	(2.2)
41–50	192	5	(2.6)	251	13	(5.2)
51–65	271	18	(6.6)	341	36	(10.6)
Total	835	31	(3.7)	1118	59	(5.3)

TABLE 2. Prevalence risk ratios for chronic widespread pain (Manchester criteria) according to scale scores

Scale (cut-off)	Prevalence of CWP(M) in low scorers		Prevalence of CWP(M) in high scorers		Prevalence risk ratio		
	<i>n</i>	%	<i>n</i>	%	RR ^a	RR ^b	(95% CI)
General Health Questionnaire (4/5+)	63	4.0	27	8.4	2.1	2.2	(1.4–3.5)
Fatigue Questionnaire (0/1+)	23	2.1	67	8.5	4.1	3.8	(2.3–6.1)
Self-Care Assessment Schedule (5/6+)	61	4.2	29	6.6	1.6	2.2	(1.4–3.6)
Somatic Symptoms (0/1+)	38	3.4	52	6.5	1.9	2.0	(1.3–3.1)
<i>Illness Attitude Scales</i>							
Worry about health (5/6+)	51	4.3	39	5.5	1.3	1.2	(0.8–1.8)
Concern about pain (3/4+)	46	5.0	44	4.4	0.9	0.9	(0.6–1.3)
Health habits (6/7+)	35	4.4	55	5.0	1.1	0.9	(0.6–1.4)
Hypochondriacal beliefs (1/2+)	62	4.0	28	7.8	2.0	1.9	(1.2–2.9)
Thanatophobia (3/4+)	60	4.4	30	5.6	1.3	1.2	(0.8–1.9)
Disease phobia (0/1+)	38	4.3	52	5.1	1.2	1.1	(0.7–1.7)
Bodily preoccupation (3/4+)	59	4.2	31	6.3	1.5	1.4	(0.9–2.2)

^aRisk ratio (unadjusted).

^bRisk ratio (adjusted for age and sex).

gesting that the presence of CWP may be one feature of somatization. The present study lends further weight to this hypothesis by identifying two specific illness attitudes associated with CWP (Hypochondriacal Beliefs and Bodily Preoccupation), both of which have been suggested as important features in the subjective reporting of and amplification of pain symptoms [18].

Whilst there are no directly comparable results from other studies using this definition of chronic widespread pain, Macfarlane *et al.* [6] noted in a separate population that persons satisfying the more stringent definition were more likely to have higher levels of psychological distress, be more fatigued, report greater problems with sleep and experience a greater number of tender points, compared to subjects with ACR-defined CWP. Indeed, the present associations found between CWP(M) and psychosocial and physical factors support this previous work, and thus may be viewed as a further validation of the Manchester definition of CWP. Furthermore, this study is unique in that it incorporates additional information such as self-care, illness attitudes and other aspects of somatization. The Manchester criteria are more specific in defining CWP, with a prevalence of 4.7% compared to the ACR criteria of 12.9%, since subjects without 'truly widespread' pain are being excluded.

In interpreting these results, there are a number of methodological issues that need to be considered. Firstly, non-response is a possible source of bias. Of those mailed, 25% were estimated not to have responded and,

TABLE 3. Stepwise regression model of significant factors associated with chronic widespread pain (Manchester definition)

Associated factors	Association with CWP(M)	
	RR	(95% CI)
Age (yr)		
18–30	Reference	–
31–40	2.3	(0.8–6.4)
41–50	3.1	(1.2–8.5)
51–65	7.1	(2.8–17.7)
Somatic symptoms ≥ 1	1.6	(1.0–2.5)
Fatigue ≥ 1	3.6	(2.2–5.9)

as is common in general population surveys, young males were much less likely to return the questionnaire. Since CWP(M) is more common in older females, we may be overestimating the true prevalence. However, following adjustment of the study prevalence to that of the UK population, the prevalence was relatively unaltered. More pertinently, it is unlikely that associations between CWP(M) and the various psychosocial features would differ in those who did not respond. Secondly, there may be a degree of misclassification of pain status. However, the coder of the manikins was blind to a subject's psychosocial status and therefore any misclassification of a subject's pain status is likely to be random and therefore artificially reduce the level of association observed. Thirdly, the study is cross-sectional. Since both pain state and psychosocial status

were measured at the same time, the temporal relationship of these associations is unclear. Whether pain precedes, for example, fatigue and somatic symptoms, or these psychosocial factors lead to pain, or whether all of these factors have a common aetiology and occur contemporaneously, can only be determined in a prospective study.

This alternative definition is more precise in identifying subjects with truly widespread pain and determining associated psychosocial features. This may have value in a clinical setting where patients could be assessed for psychosocial problems in addition to their physical complaints. Those with CWP have an increased association with those features known to characterize somatization, suggesting that for some people this process may contribute to the experience of CWP.

In conclusion, the Manchester definition of CWP has been shown to describe clear associations with psychological distress and increased risk of mental disorders, tiredness, somatic symptoms, and reduced self-care. In terms of epidemiological studies, it may provide more appropriate criteria for investigating the physical and psychological associations of chronic diffuse pain.

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