The Influence of Work Related Psychosocial Factors and Psychological Distress on Regional Musculoskeletal Pain: a Study of Newly Employed Workers

ELIZABETH S. NAHIT, CHRISTINA M. PRITCHARD, NICOLA M. CHERRY, ALAN J. SILMAN, and GARY J. MACFARLANE

ABSTRACT. ***Objective.*** To determine the influence of short term work related psychosocial factors (work demands, job control, and social support) and psychological distress on regional pain syndromes.

Methods. Newly employed workers were recruited from 12 occupational groups and information collected by questionnaire. Subjects indicated on a blank body manikin any low back, shoulder, wrist/forearm, or knee pain that had occurred during the past month and lasted more than one day. Data were also collected on work related psychosocial factors and on levels of psychological distress [using the General Health Questionnaire (GHQ)]. The relationships between psychosocial factors and psychological distress and each area of pain were calculated as odds ratios with 95% confidence intervals. Adjustment was made for age, sex, and occupational group.

Results. 1081 subjects (median age 23; interquartile range 20–27) were recruited to the study shortly after commencing employment: 261 (24%) reported low back pain, 221 (20%) reported shoulder pain, 93 (9%) reported wrist/forearm pain, and 222 (21%) reported knee pain. High levels of psychological distress were associated with increased likelihood of pain, with a trend observed between scores on the GHQ and the odds of pain in each of the 4 sites. Those who perceived their work as stressful most of the time were more likely to report back (OR 1.8, 95% CI 1.01–3.1) or shoulder pain (OR 1.9, 95% CI 1.02–3.4) than those who considered their work seldom stressful. Pace of work or job autonomy was less markedly related to pain at individual sites. Strong relationships were observed between psychological distress, job demands (stressful work, hectic work), low job control, and pain at multiple sites.

Conclusion. The study has shown that adverse work related psychosocial factors, in particular aspects of job demand and control, influence the reporting of regional musculoskeletal pain. This occurs even after only short term exposure. The odds of reporting these adverse exposures are increased when pain is reported at multiple sites. (J Rheumatol 2001;28:1378–84)

Key Indexing Terms:
OCCUPATIONAL GROUPS LOW BACK PAIN UPPER LIMB PAIN
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From the Arthritis Research Campaign Epidemiology Unit, School of Epidemiology and Health Sciences; Unit of Chronic Disease Epidemiology, School of Epidemiology and Health Sciences; and Centre for Occupational and Environmental Health, School of Epidemiology and Health Sciences, University of Manchester, Manchester, UK.

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E.S. Nahit, MSc, Research Assistant; C.M. Pritchard, RGN, Research Nurse, Arthritis Research Campaign Epidemiology Unit; N.M. Cherry, FFOM, Professor of Occupational and Environmental Medicine, Centre for Occupational and Environmental Health; A.J. Silman, FFPHM, ARC Professor of Rheumatic Disease Epidemiology, Arthritis Research Campaign Epidemiology Unit; G.J. Macfarlane, PhD, Professor of Epidemiology, Unit of Chronic Disease Epidemiology, School of Epidemiology and Health Sciences.

Address reprint requests to Dr. G. Macfarlane, Chronic Disease Epidemiology Unit, School of Epidemiology and Health Sciences, The Medical School, University of Manchester, Manchester M13 9PT, UK. E-mail address: g.macfarlane@man.ac.uk

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Musculoskeletal (MSK) disorders are very common among the working population but their occurrence can only partly be explained by mechanical factors at work[1]. Over the past few decades there has been a growing interest in factors other than physical work load, in particular work related psychosocial factors. Several studies have reported that factors such as job demands, control over workload, and social support from colleagues are associated with MSK pain and that this relationship exists independently of mechanical factors[2,3].

In an extensive review that considered the relationship between psychosocial factors and MSK pain[4], inconsistent findings between studies were reported. Studies have most commonly been carried out on a single occupational group[5,6] or in the general population[7,8]. Population studies may fail to identify a sufficient number of individuals who are exposed to high levels of adverse psychosocial effects,

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while studies in single occupational groups do not permit comparisons to be made between those who are exposed to different levels of adverse psychosocial factors, nor do they allow generalizability.

MSK pain can affect many parts of the body but the majority of studies focus on a single body region[9,10]. The heterogeneity of studies, in terms of measurement of exposure and outcome, makes it difficult to establish whether any differences with respect to different regional pain syndromes are real or whether they simply reflect different methodologies.

Another major shortfall is that, almost without exception, studies have been conducted among established workforces. Those workers who were exposed to adverse psychosocial factors at work and had developed MSK pain may have left their job, thereby leaving behind a comparatively healthy workforce. Alternatively, psychosocial factors relating to the job may have been modified as a result of the person developing MSK pain. Any relationship between adverse work related psychosocial factors and MSK pain will therefore be attenuated or fail to be detected at all.

Our study attempts to overcome some of these problems by recruiting newly employed workers across a variety of occupations and collecting information pertaining to 4 anatomical regions: low back, shoulder, wrist/forearm, and knee. We aimed to determine both whether adverse psychosocial factors are associated with a short term increased risk in regional pain, and, if present, whether the effect is similar across the 4 anatomical areas.

MATERIALS AND METHODS

The study design was a cross sectional survey of workers recruited around the time of taking up new employment. Details of work related psychosocial factors, psychological distress, MSK pain, and other symptoms were collected by means of a self-completed questionnaire.

Subjects. Subjects were recruited from 12 occupational groups (Table 1). These occupations were selected on the grounds that most workers would be taking up their first full time employment. They represented industries or occupations where high rates of MSK disorders had previously been identified, they expected to have a reasonably stable workforce, and they represented a range of occupations and industries. Only workers who were employed for at least 20 hours per week were eligible for recruitment and, for practical purposes, each workplace had to contribute a minimum of 40 newly employed workers.

The sources for recruitment of subjects were as follows:

1. Companies opening a new branch in the Greater Manchester area, in the northwest of England, and employing an entire new workforce were contacted: 2 met our criteria for inclusion. The first, a supermarket, employed workers in a number of areas including checkouts, service counters, a creche, and in general office, stock management, and shelf stacking duties. The second, a postal distribution center, employed workers who were mainly responsible for loading trolleys of mailbags on and off trains and lorries. Other workers were employed in administrative duties and catering. All workers from both sources who were employed for the required number of hours (at least 20 per week) were invited to participate.
2. Service organizations that regularly recruited cohorts of new workers. There were 3 recruited to the study. All full time paid firefighters from 4 local counties who were in their initial training period were invited to participate. A total of 9 training intakes was included. One police force contributed all trainee police officers belonging to 3 training intakes. Three types of new army recruits were involved in the study: officers, infantry, and clerks. Thirty-four officers were selected at random from each of 3 companies. Fifty infantry soldiers were selected at random from each of 2 battalions and all clerks enrolled on 3 training intakes were included.
3. One established organization, a shipbuilding company, which was recruiting a large group of apprentices. These workers carried out construction and engineering tasks. All apprentices were invited to participate.
4. Students in their final year of a vocational course. All nursing students from one academic institution, all dental students from 2 academic institutions, all podiatry students from a further 2 academic institutions, and all forestry students enrolled in 2 courses at a specialized college were invited to participate.

Community surveys suggest a conservative estimate of one-month period prevalence to be around 20% for each of low back, shoulder, wrist/forearm, and knee pain[11,12]. For an adverse psychosocial factor with a prevalence among pain-free subjects of 10%, it was estimated that 1000 subjects were required to have 80% power of detecting a doubling in risk of pain associated with such a factor (significance level $p = 0.05$).

Methods. Subjects were invited to participate as close as practicable to the beginning of their employment or training but not so near to the start that subjects were not familiar with what the job entailed. Where possible, subjects were gathered together in a large group specifically for the purpose of data collection. Two research workers provided background information about the research project: the specific outcomes of interest were not revealed. The subjects then completed a study questionnaire individually. Anonymity of questionnaires and confidentiality of all responses were stressed. When the circumstances did not allow the workers to meet as one group (retail workers and postal workers), a research worker approached each subject individually, provided the same information to the subject as given in the group sessions, and answered any individual queries regarding completion of the questionnaire.

Exposure data and information on pain were collected by means of a questionnaire for self-completion. This included questions relating to psychosocial factors (work demands, job control, social support from colleagues, job satisfaction) and psychological distress.

The questions relating to work demands had originally been used by the Medical Research Council in the West of Scotland Twenty-07 Study of Health in the Community[13] and have more recently been used in studies of shoulder pain in the workplace[14], and in a population study of low back pain (LBP) [15]. Responses to the questions were categorical: "never," "occasionally," "about half of the time," "always or most of the time." Two questions were used to measure job control: "Are you able to decide how to carry out your work?" and "Do you learn new things at work?" The first question was developed solely for the purposes of the study. The second question was used in a study of back and limb disorders[16]. Responses to these questions were categorical: "very often," "often," "sometimes," "seldom," "very seldom." One question was used to assess social support from colleagues ("How satisfied are you with the support you receive from your workmates?"), which was a modified version of a question used previously[16]. In addition, a question was included to measure general job satisfaction ("How satisfied are you with your current job?"). This question has been used in a population study of LBP[15]. The responses to these 2 questions were categorical: "very satisfied," "satisfied," "neither satisfied nor dissatisfied," "dissatisfied," "very dissatisfied."

The 12 item General Health Questionnaire (GHQ) was included. This instrument has been tested for reliability, validity, and sensitivity as a screening tool for mental disorder and as a measure of short term psychological distress[17]. Subjects score between zero and 12, with high scores indicating high levels of distress. Furthermore the instrument has been used in several studies of MSK symptoms and will therefore enhance comparability of the results.

Subjects were asked to indicate the site of any pain experienced during the past month that had lasted for longer than 24 hours. The site of pain was indicated by shading a blank body manikin. LBP, shoulder pain,

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wrist/forearm and knee pain were subsequently defined for the purposes of this study according to the areas shown in Figure 1, and will subsequently be referred to as "regional pain syndromes." The construct validity of such definitions has been confirmed[18,19]. By requiring the subjects to recall pain that has lasted for a minimum of 24 hours, any trivial episodes will be excluded. Subjects were also asked to indicate whether they had consulted a general practitioner with pain during the same one month period.

Statistical analysis. The associations between categories of exposure and individual regional pain syndrome were calculated using logistic regression. This allows an estimate of the odds ratio (OR) of exposure. The results were adjusted for age, sex, and occupational group. Occupational group was examined as a potential effect modifier of relationships between psychosocial factors/psychological distress and pain using the Mantel-Haenszel test for heterogeneity[20]. In all cases these tests showed chi-square values with $p > 0.05$. For each factor of interest, a chi-squared test for trend was carried out to establish whether a relationship existed between degree of exposure and risk of reporting pain. In examining the role of psychological distress, non-zero scores were dichotomized, with zero as the reference level.

In a further analysis, since individuals may report more than one regional pain syndrome, those who reported a single area of pain in the past month, those with 2 areas of pain and those with 3 or 4 areas of pain were compared to those with no pain for levels of psychological distress and adverse psychosocial factors. The associations were again summarized as OR and 95% confidence intervals were calculated, with adjustments made for age, sex, and occupational group.

RESULTS

Of the 1186 eligible subjects (Table 1), 1081 agreed to participate in the study (a participation rate of 91%). Overall, 32% of the cohort was female. This proportion varied considerably across the different occupational groups from none in the army infantry to 93% among nurses. The median age was 23 years [interquartile range (IQR) 20–27]. This young age reflects the fact that, for more than half the subjects, this was their first full time job. Of the 1081 subjects, 784 (73%) were in vocational training. Of the remaining subjects, the median time in the current employment was: shipbuilders: 1 month (IQR 1–4 mo); postal workers: 4 months (IQR 4–13 mo); and retail workers: 10 months (IQR 9–11 mo).

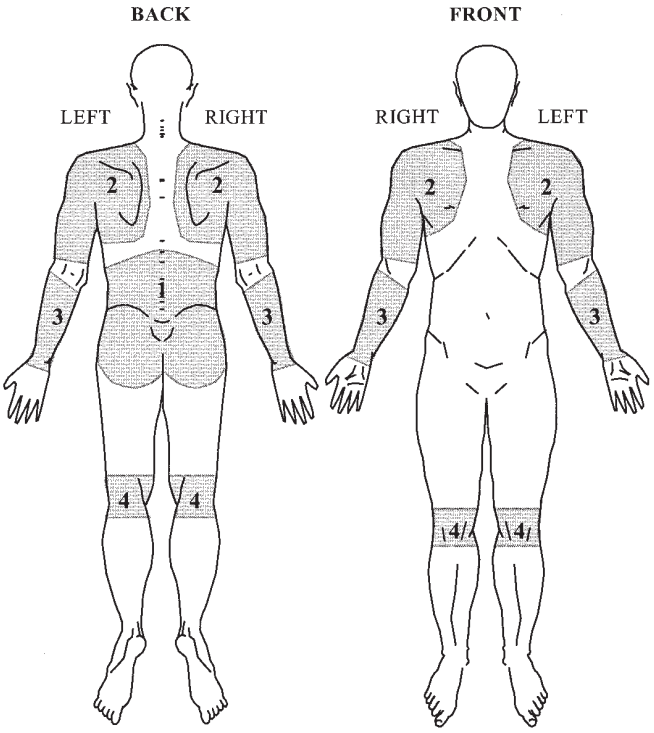

Figure 1. Definition of regional pain syndromes. Key: 1: low back pain, 2: shoulder pain, 3: wrist/forearm pain, 4: knee pain.

Six hundred eighteen (57%) of the study sample reported some pain that had lasted for more than 24 hours during the past month. Of these, 163 (26%) stated that the pain limited their normal activities at either work or home. Among these 618, 261 (24% of the study sample) reported LBP, 221 (20%) shoulder pain, 222 (21%) knee pain, and 93 (9%) wrist and/or forearm pain. About one-quarter (23%) of those who reported MSK pain in any one of the regions of interest also reported consulting a general practitioner during the past month because of this pain.

The prevalence for each region of pain varied between the different occupational groups (Table 2). The army officers reported the highest level of wrist/forearm (17%) and knee pain (44%) and the second highest level of shoulder pain (38%). Army infantry reported the highest level of low back (41%) and shoulder pain (50%) and the second highest level of knee pain (38%). Forestry workers reported a high level of LBP (35%). No single occupational group reported low prevalence of pain for all regions.

For 3 of the psychosocial factors (satisfaction with work, satisfaction with support from colleagues, opportunity to learn new things) the proportion of subjects who reported adverse categories was very small (3%, 2%, and 4%, respectively) and it did not allow us to evaluate their effects.

High levels of psychological distress were associated with increased likelihood of pain. A trend was observed between scores on the GHQ and the odds of pain in each of the 4 regions (Table 3). The OR associated with the highest scores were all significant, and for LBP the odds were nearly trebled. The relationships between regional pain and adverse psychosocial factors are shown in Table 4. Work that was reported to be monotonous or repetitive was not significantly related to pain in any region, although the OR associated with wrist/forearm pain was 2.1. Those who perceived their work as stressful most of the time were more likely to report back or shoulder pain than those who considered their work seldom stressful. Again, although not significant, the highest OR (2.0) was associated with wrist/forearm pain. With each site of regional pain, there was a trend to increasing prevalence of pain with increasing stress, but the trend was significant only for LBP.

Relationships between reporting pain and pace of work or job autonomy were less marked. However, those with the least autonomy and those with the most hectic jobs tended

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Table 1. Characteristics of the cohort.

	No. Surveyed	No. Participated (%)	No. of Females (%)	Age, yrs Median (IQR)
Occupation				
Firefighters	166	163 (98)	1 (1)	25 (23–27)
Retail workers	153	114 (75)	73 (64)	35 (26–43)
Shipbuilders	113	113 (100)	2 (2)	17 (16–18)
Dental students	117	112 (96)	55 (49)	23 (22–24)
Army infantry	100	100 (100)	0 (0)	18 (17–20)
Army officers	102	96 (94)	8 (8)	23 (22–24)
Nursing students	106	87 (82)	81 (93)	24 (22–27)
Podiatry students	84	79 (94)	64 (81)	24 (21–30)
Postal workers	83	70 (84)	6 (9)	34 (31–41)
Army clerks	70	69 (99)	47 (68)	20 (19–23)
Police officers	44	44 (100)	8 (18)	27 (24–29)
Forestry students	48	34 (71)	2 (6)	22 (20–23)
Total	1186	1081 (91)	347 (32)	23 (20–27)

Table 2. Prevalence of pain by occupational group.

	No.	Low Back Pain, N (%)	Shoulder Pain, N (%)	Wrist/Forearm Pain, N (%)	Knee Pain, N (%)
Occupational Group					
Firefighters	163	34 (21)	38 (23)	19 (12)	39 (24)
Retail workers	114	29 (25)	20 (18)	11 (10)	16 (14)
Shipbuilders	113	22 (19)	13 (12)	13 (12)	8 (7)
Dental students	112	26 (23)	17 (15)	7 (6)	14 (13)
Army infantry	100	41 (41)	50 (50)	3 (3)	38 (38)
Army officers	96	32 (33)	36 (38)	16 (17)	42 (44)
Nurses	87	17 (20)	11 (13)	4 (5)	8 (9)
Podiatry students	79	17 (22)	6 (8)	10 (13)	13 (16)
Postal workers	70	14 (20)	14 (20)	1 (1)	13 (19)
Army clerks	69	12 (17)	4 (6)	4 (6)	18 (26)
Police	44	5 (11)	7 (16)	2 (5)	6 (14)
Forestry students	34	12 (35)	5 (15)	3 (9)	7 (21)
Total	1081	261 (24)	221 (20)	93 (9)	222 (21)

to report more pain, and the strongest associations were noted for wrist/forearm pain.

Many subjects experienced pain at multiple sites (Figure 2a and 2b). The number of subjects who would be expected with each combination of symptoms, if these regional pain syndromes were statistically independent, is shown in parentheses. Psychological distress was linked to pain at both single and multiple sites (Table 5), with the OR for an elevated score on the GHQ being higher for those complaining of pain at more than one site. Similarly, stressful work, hectic work, and low job autonomy were all related to pain at multiple sites.

DISCUSSION

The study suggests that psychological distress is associated with regional MSK pain and that aspects of job demands

Table 3. Association between psychological distress and regional musculoskeletal pain.

GHQ Score	No.	Low Back Pain, N (%)	OR (95% CI)*	Shoulder Pain, N (%)	OR (95% CI)*	Wrist/Forearm Pain, N (%)	OR (95% CI)*	Knee Pain, N (%)	OR (95% CI)*
0	578	111 (19)	1.0	105 (18)	1.0	41 (7)	1.0	99 (17)	1.0
1–2	282	74 (26)	1.7 (1.2–2.4)	60 (21)	1.3 (0.9–2.0)	26 (9)	1.3 (0.8–2.2)	64 (23)	1.5 (1.03–2.2)
3+	203	72 (35)	2.8 (1.9–4.1)†	50 (25)	1.8 (1.2–2.8)†	25 (12)	2.0 (1.1–3.5)†	54 (27)	2.2 (1.4–3.3)†

*Adjusted for age, sex, and occupational group. †Significant chi-squared test for trend.

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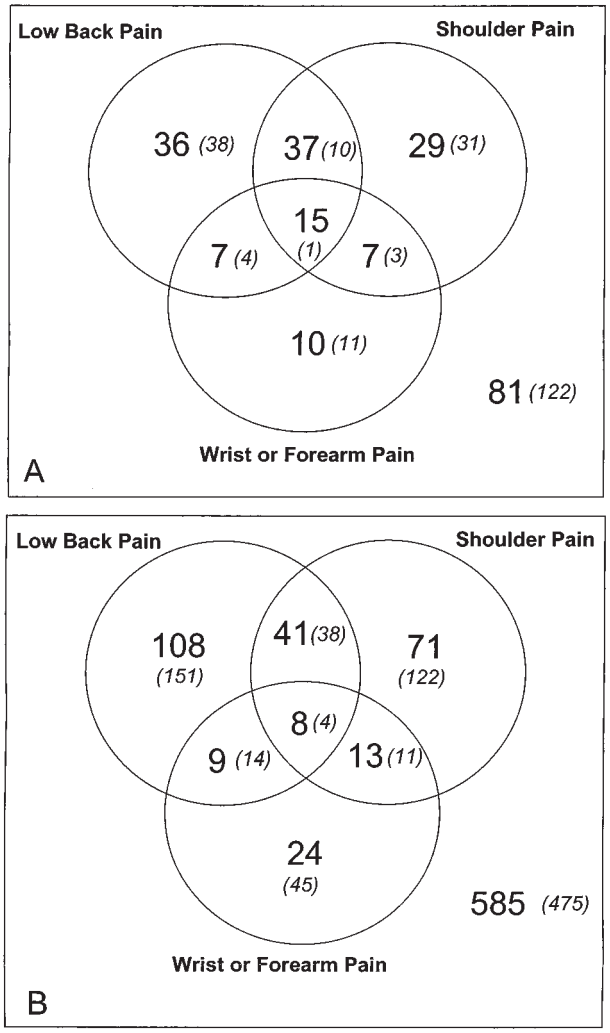

Figure 2. Distribution of regional pain syndromes in subjects (A) with knee pain and (B) without knee pain. Values shown are those observed; values in parentheses are those expected if the occurrence of the pain syndromes were independent.

and control may have an influence even after only short periods of exposure. Further, the odds of reporting these factors increased with multiple sites of pain. Because reported adverse psychosocial factors were generally uncommon, many of the results were not statistically significant.

In the analysis conducted, adjustment has been made for occupational group. It may be argued that insofar as risk factors, including unmeasured psychosocial factors, differ between occupations, such adjustment will tend to minimize the observed relationship between these factors and reported pain. Indeed, it was found that without adjustment for occupational group, relationships were generally similar or stronger. For example, the relationship between hectic work most of the time and shoulder pain (OR 2.2, 95% CI 1.5–3.3) and knee pain (OR 2.1, 95% CI 1.4–3.1) became stronger and statistically significant without adjustment. Further, the relationship between work related psychosocial factors and pain may be confounded by psychological distress. As shown in this study, there is a relationship between psychological distress and pain, and it is likely that psychological distress is associated with adverse psychosocial factors, particularly stress at work: in the present study high scores on the GHQ were found to be highly associated with reports of stress at work (data not shown). It is debatable, however, whether the relationship between psychosocial factors and pain should be adjusted for GHQ score since, for example, high levels of distress may simply be a result of high job demands. In such circumstances adjustment for GHQ would obscure the true relationship between work demands and pain. Although in this study adjustment has not been made for individual mechanical factors, occupational group (for which adjustment has been made) could be considered a proxy for mechanical factors. Previous studies found that the association of mechanical or psychosocial factors could not have been explained by confounding by the other type of factor[2,21].

Unlike other studies, which have shown relationships between work related psychosocial factors and regional pain, our study attempts to overcome one aspect of the healthy worker effect, namely that those who suffer MSK pain are more likely to leave or change aspects of work. Despite this, the associations were modest. There is little consistency regarding the measurement of psychosocial factors between studies and it is difficult to make direct comparisons. In one of the few population based studies that used the same questions to measure job demands a relationship was found between shoulder pain and both stressful work and monotonous work, and these relationships were stronger than identified in the current study[14]. This may reflect that many of the subjects in the current study were undergoing training or starting a new job and therefore exposure to adverse psychosocial factors was uncommon. Indeed, the psychosocial working environment is likely to differ considerably for someone who is new to a workforce compared with someone who has been working for some time for a given employer.

The findings in this study, unlike others[5,6,22], suggest that the relationship between psychosocial factors and MSK pain may be generic rather than localized: there was an increased likelihood of reporting hectic work, stressful work, or low job autonomy among those who reported multiple sites of pain compared with those with single pain, and this was doubled for those exposed to stressful work. Further, psychological distress seems to have a similar relationship with pain. There are several models[4] that attempt to explain associations between psychosocial factors and MSK pain. The first suggests that psychosocial factors, such as

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Table 4. Association of work related psychosocial factors with regional musculoskeletal pain.

	No.	Low Back Pain, N (%)	OR (95% CI)*	Shoulder Pain, N (%)	OR (95% CI)*	Wrist/forearm Pain, N (%)	OR (95% CI)*	Knee Pain, N (%)	OR (95% CI)*
Psychosocial factor									
Monotonous/repetitive work									
Never/occasionally	929	218 (23)	1.0	191 (21)	1.0	77 (8)	1.0	190 (20)	1.0
Half of time	95	28 (29)	1.3 (0.8–2.2)	23 (24)	1.2 (0.7–2.1)	10 (11)	1.5 (0.7–3.2)	24 (25)	1.4 (0.8–2.3)
Always/most of time	44	11 (25)	1.2 (0.6–2.8)	7 (16)	1.0 (0.4–2.5)	5 (11)	2.1 (0.7–6.1)	5 (11)	0.6 (0.2–1.7)
Stressful work									
Never/occasionally	829	188 (23)	1.0	166 (20)	1.0	64 (8)	1.0	165 (20)	1.0
Half of time	159	44 (28)	1.5 (1.00–2.3)	32 (20)	1.2 (0.7–1.9)	18 (11)	1.7 (0.96–3.2)	34 (21)	1.3 (0.8–2.1)
Always/most of time	81	25 (31)	1.8 (1.01–3.1)†	23 (28)	1.9 (1.02–3.4)	10 (12)	2.0 (0.9–4.5)	20 (25)	1.6 (0.9–2.8)
Hectic/fast work									
Never/occasionally	713	160 (22)	1.0	127 (18)	1.0	55 (8)	1.0	123 (17)	1.0
Half of time	211	54 (26)	1.0 (0.7–1.5)	44 (21)	0.9 (0.6–1.4)	21 (10)	1.5 (0.8–2.7)	50 (24)	1.1 (0.8–1.7)
Always/most of time	145	43 (30)	1.2 (0.8–1.9)	50 (34)	1.5 (0.96–2.3)†	16 (11)	1.4 (0.7–2.6)	46 (32)	1.4 (0.9–2.2)†
Can decide how to carry out work									
Very often/often	665	151 (23)	1.0	130 (20)	1.0	52 (8)	1.0	119 (18)	1.0
Sometimes	277	68 (25)	1.0 (0.7–1.4)	46 (17)	0.6 (0.4–0.9)	23 (8)	0.9 (0.5–1.6)	67 (24)	1.1 (0.8–1.6)
Very seldom/seldom	122	35 (29)	1.1 (0.7–1.7)	43 (35)	1.3 (0.8–2.1)	16 (13)	1.7 (0.9–3.2)	33 (27)	1.1 (0.7–1.7)

*Adjusted for age, sex, and occupational group. †Significant chi-squared test for trend.

Table 5. Relationship between work related psychosocial factors, psychological distress, and pain at multiple sites.

	No.	Pain in One Site, N (%)	OR (95% CI)*	Pain in Multiple Sites, N (%)	OR (95% CI)*
Psychological well being					
GHQ score					
0–2	860	216 (25)	1.0	152 (18)	1.0
3+	203	65 (32)	1.4 (1.0–2.0)	55 (27)	2.2 (1.5–3.2)
Psychosocial factor					
Monotonous work					
< ½ of time	929	243 (26)	1.0	179 (19)	1.0
≥ ½ of time	139	39 (28)	1.0 (0.6–1.6)	30 (22)	1.4 (0.8–2.2)
Stressful work					
< ½ of time	829	221 (27)	1.0	149 (18)	1.0
≥ ½ of time	240	61 (25)	0.9 (0.6–1.3)	60 (25)	2.0 (1.3–3.0)
Hectic work					
< ½ of time	713	186 (26)	1.0	114 (16)	1.0
≥ ½ of time	356	96 (27)	0.9 (0.7–1.3)	95 (27)	1.4 (1.01–2.0)
Decide how to carry out work					
At least sometimes	942	251 (27)	1.0	166 (18)	1.0
(Very)/seldom	122	30 (25)	0.9 (0.5–1.4)	41 (34)	1.6 (1.03–2.5)

*Adjusted for age, sex, and occupational group.

increased time pressure, lead to the worker adopting adverse postures or using highly repetitive movements that directly result in increased pain. An alternative hypothesis is that adverse psychosocial factors lead to feelings of stress, which result in tension in the muscles causing pain. A third model suggests that adverse psychosocial factors may increase the perception of pain or reduce the ability to cope with it. At this early, cross sectional phase of the study, it is not possible to conclude which, if any, of these models apply. However, since psychological distress has been shown to be related to pain at multiple sites, the latter 2 models seem to be the most plausible.

In our study both pain and psychosocial exposures were self-reported. It could be argued that some individuals with pain may have a tendency to over-report adverse psychosocial factors and that this might result in a spurious association. Alternatively, those with pain may perceive their psychosocial environment in a different way to those without pain. For example, an individual with low back pain may consequently find their job more hectic than someone

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without pain. One approach to objectivity could be to ask a colleague or line manager to rate the individual's psychosocial work environment. However, it may be argued that it is *perceived* rather than actual job demands that are the most relevant to determine pain.

Our study has observed that short term exposure to adverse psychosocial factors and psychological distress is associated with MSK pain. Subjects had only been exposed to these factors for a short length of time, but it is unknown whether pain occurred before or after exposure. For over half the subjects, however, this was their first full time job. Although the temporal relationship between psychosocial factors and pain cannot be determined from a cross sectional study, nevertheless there is strong evidence from other studies[23,24] that psychological distress predicts the onset of pain and is not merely a consequence of symptoms. Similarly there is some evidence that work related psychosocial factors predict future MSK symptoms[15,21,25]. Although a subject's experience may not have been representative of the usual working environment due to training, this is not important in the current report since the authors wished to consider the short term relationship between pain and psychosocial factors rather than describe particular occupations in terms of their psychosocial characteristics.

Our study suggests that even among workers with only short term psychological distress and adverse work related psychosocial factors, the risk of MSK pain is increased. Although some jobs are by nature very demanding, it may be possible to change the perception of such demands by altering organizational aspects of the workplace such as social support or job control. The longer term effect of such exposures will be examined by following these occupational groups prospectively.

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