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Different risk factors for musculoskeletal complaints and musculoskeletal sickness absence

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Key terms: low-back pain; musculoskeletal complaint; musculoskeletal sickness absence; occupational risk factor; physical risk factor; psychosocial risk factor; risk factor; sick leave; sickness absence; upper-extremity complaint; work-related musculoskeletal complaint; work-related risk factor; work-related sickness absence

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Original article

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Different risk factors for musculoskeletal complaints and musculoskeletal sickness absence

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Objectives The aim of this study was to investigate whether individual, work-related physical and psychosocial risk factors involved in the occurrence of musculoskeletal complaints also determine musculoskeletal sickness absence.

Methods This cross-sectional study used a self-administered questionnaire to collect data on individual and work-related risk factors and the occurrence of musculoskeletal complaints and musculoskeletal sickness absence among 373 employees of laundry-works and dry-cleaning establishments (response rate 87%). Logistic regression models were used to determine associations between risk factors and the occurrence of musculoskeletal complaints and sickness absence due to these complaints.

Results Both work-related physical and psychosocial factors showed strong associations with low-back pain and upper-extremity complaints. Work-related physical factors did not influence sickness absence, whereas psychosocial factors showed some associations with sickness absence. Sickness absence was associated with The Netherlands as the country of birth [odds ratio (OR) 0.3, 95% confidence interval (95% CI) 0.2–0.6], and female workers had an episode of sickness absence due to low-back pain less often (OR 0.5, 95% CI 0.3–0.9), but more often due to upper-extremity complaints (OR 2.2, 95% CI 1.1–4.5).

Conclusions Work-related physical and psychosocial factors largely determine the occurrence of low-back pain and upper-extremity complaints, whereas individual factors predominantly determine whether persons with these musculoskeletal complaints take sick leave.

Key terms low-back pain, occupational, physical and psychosocial risk factors, sick leave, upper-extremity complaints, work-related.

Musculoskeletal disorders of the low back and upper extremities represent a considerable health problem among populations in Western industrialized countries. In the past decade many studies have been initiated that have been aimed at identifying the essential risk factors for work-related musculoskeletal disorders (1, 2). Well-known work-related physical risk factors for low-back pain are manual materials handling, awkward back postures, and physically heavy work (3, 4). There are also indications that work-related psychosocial factors such as low job satisfaction, poor social support at work, and high job demands are determinants for the onset of low-back pain (3, 5). Several reviews have presented evidence that exposure to work-related physical and psychosocial exposures, such as repetitive tasks and high job demands, contribute to the occurrence of neck or upper-extremity musculoskeletal complaints (6–9).

Most of the population will face an episode of musculoskeletal complaints at some time during their lives, and, in most cases, the complaints abate spontaneously (10–12). Since only a small minority of workers with musculoskeletal pain become disabled or have to go on sick leave for these complaints (11, 13–16), it has been argued that prevention should focus on sickness absence resulting from disability rather than on preventing the onset of pain (17, 18). In recent years a growing number of studies has used sickness absence as an outcome, but our knowledge about risk factors for sickness absence is still scarce (19, 20).

Circumstantial evidence has been presented to hypothesize that risk factors for musculoskeletal complaints may differ from those for sickness absence attributed to these complaints. It has been suggested that individual and psychosocial factors at the workplace

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contribute to the onset of low-back pain but have even more impact on the decision to go on sick leave (19, 21). However, Hoogendoorn et al (22–24) and Ariëns et al (25–27) reported that work-related physical factors were more strongly associated with sickness absence than the occurrence of low-back pain and neck pain were.

Risk factors for the occurrence of and sickness absence due to musculoskeletal complaints have seldom been assessed simultaneously. However, the results of such an assessment may provide essential insight into the nature of these concepts. The aim of our study was to investigate whether individual, work-related physical and psychosocial risk factors involved in the occurrence of musculoskeletal complaints also determine musculoskeletal sickness absence.

Participants and methods

Study population

Between October 2001 and March 2002, 431 employees of 9 laundry works and 3 dry-cleaning establishments located throughout The Netherlands were asked to participate in the study, of which 398 (90%) responded. All the employees worked in the shop and floor production process. Questionnaires were filled out during work-time. One of the researchers was present to explain the purpose of the research and answer questions when respondents were filling out the questionnaires. All the participants completed the questions pertaining to potential indicators for sickness absence and musculoskeletal complaints in the following domains: individual factors, work-related physical load, and psychosocial factors. Sixteen participants were excluded from the analyses because of incomplete data. Analyses were done for the remaining 373 participants, yielding a response rate of 87%. Nonresponse and incomplete data were largely due to the inability of the workers in this sector to read and write in Dutch.

Of the 373 workers included in the analysis, 66% were women. The mean age of the study population was 36.7 (SD 9.8) years. The mean duration of employment in the current job was 8.5 (SD 7.8) years. For 63% of the workers, the educational level was low. Altogether, 32% of the employees were born outside The Netherlands, the majority of this group being born outside Europe. Among this last group approximately one-third was born in Turkey, and another one-third came from West and North African countries.

Of the total population, 67% of the workers rated their physical workload as high. A total of 92% reported high exposure to static work postures, 80% used strenuous arm movements, and 68% worked in awkward back postures, whereas 65% reported low job satisfaction.

Explanatory variables

Individual variables. The questionnaire contained questions on individual data including age, gender, height, weight, level of education, The Netherlands as the country of birth, involvement in sports, and information about the family situation, such as marital status or whether a person was living alone. Body mass index was calculated (weight/height^2), and the participants with a value of 30 or more were considered obese.

Work-related variables. Work-related characteristics, such as details on years of employment, and full-time work, were obtained, as well as physical load and psychosocial load at the worksite. The questions on physical workload concerned manual materials handling, such as lifting and carrying heavy loads, static work postures, awkward back postures, and strenuous arm movements (eg, working with hands above shoulder level and repetitive movements of arms and hands). A four-point scale was used with the ratings "seldom or never", "now and then", "often", and "always" during a normal workday. The answers "often" and "always" were classified as high exposure (28). The subjects also rated their perceived physical load on a numerical scale ranging from 0 (very light) to 10 (very heavy), with a score of 5 or higher regarded as high perceived physical load (29).

Psychosocial work characteristics were assessed by means of a Dutch version of Karasek's job content questionnaire (30), which includes dimensions on quantitative job demands, decision authority, and skill discretion. According to the model, the combination of high job demands and low job control is considered to be a job-strain situation and a potential risk factor. Job demands were measured by 11 questions with a 4-point scale, yielding a sum score for high work demands. The questions on work demands were related to working fast, working hard, excessive work, insufficient time to complete work, and conflicting demands. Low job control was measured by 6 questions on skills and 11 questions on authority to make decisions. These questions pertained to aspects such as required skills, task variety, learning new things, and amount of repetitive work. Workers at risk (high demands and low control) were classified using the median score from the job demands and the job control sum scores. In order to obtain insight into the effect of social support at the worksite on the occurrence of musculoskeletal complaints and related sickness absence, we also included dimensions on supervisory support and co-worker support. The participants were asked to rank perceived support at work both from co-workers and supervisors on a numerical rating scale ranging from 0 (no support at all) to 10 (full support), with a score of 5 or lower regarded as low

support at work. Finally, a question was added that addressed job satisfaction.

Musculoskeletal complaints and sickness absence

The questions on musculoskeletal complaints were derived from the standardized Nordic questionnaire that has proved to be a valid instrument for collecting information on the nature, duration, and frequency of symptoms (31). Musculoskeletal pain was defined as "pain in the past 12 months" (yes;no), which referred to at least one episode of pain in the past 12 months for at least 1 day. Since the neck, shoulders, and arms operate as a functional unit, we considered risk factors of these regions together. Hence we grouped musculoskeletal pain in the neck, shoulder, elbow, wrist, and hand into the category "upper-extremity complaints".

The question used to measure the occurrence of sickness absence was a modified question derived from a study in which the reliability of questions on the prevalence, frequency, and duration of sickness absence due to back pain was studied (32). The questionnaire on sickness absence from back pain showed a high specificity (97%) and sensitivity (88%) and good agreement for back pain absence (Cohen's κ 0.65). The question used to measure the occurrence of sickness absence due to low-back pain was phrased "Have you been absent from work during the past 12 months due to back pain?" (yes;no). Similar questions were included for the occurrence of sickness absence related to the neck region, shoulder region, and elbow, wrist and hand region. We grouped absenteeism for musculoskeletal pain in the neck, shoulder, elbow, wrist, and hand into the category "sickness absence due to upper-extremity complaints".

Statistical methods

Logistic regression models were used to determine associations between individual factors and work-related physical and psychosocial factors and the occurrence of musculoskeletal complaints and sickness absence attributed to these complaints. The regression analysis was executed using Proc Logist. All the analyses were carried out with the statistical package SAS version 8.2 (33). Odds ratios (OR) were estimated as a measure of association. In the analyses, age was considered to be a potential confounder or effect modifier. Age strongly influences the probability of back pain; therefore, it was categorized into three groups and included in each logistic regression model, regardless of the level of significance. All other factors were dichotomized before being entered into the logistic models. The combination of low job control and high job demands was entered into the model as an interaction term.

For the initial selection of variables into the multivariate models, a significance level of $P<0.10$ was used. Variables were retained in the final model when reaching the level of significance of $P<0.05$. The variables influencing the outcome variable by more than 10% or variables strongly interacting with significant variables in the model were also retained.

Table 1. The 12-month prevalence of musculoskeletal complaints and the related sickness absence of the personnel of the laundry works and dry-cleaning establishments (N=373).

	N	%
Low-back pain	185	50
Related sickness absence	53	14
Upper-extremity complaints	216	58
Neck complaints	115	31
Shoulder complaints	166	45
Elbow, wrist, hand complaints	86	24
Related sickness absence	54	14

Results

Musculoskeletal complaints and sickness absence

The 12-month prevalence of musculoskeletal complaints in the back or upper extremities and sickness absence due to these complaints are shown in table 1. A total of 185 (50%) workers reported low-back pain in the past 12 months, and approximately one-third went on sick leave at least once for their back complaints. A total of 216 workers reported upper-extremity pain. One-third of the workers with upper-extremity complaints went on sick leave at least once for these complaints. All those on sick leave because of a particular musculoskeletal complaint also reported pain in this body region. Absenteeism for a particular complaint was associated with duration of pain for more than 3 months in the previous year in this body region. For the association of sickness absence the odds ratio was 4.64 (95% CI 2.34–9.22) for chronic low-back pain, 10.49 (95% CI 4.19–26.30) for chronic neck pain, 7.88 (95% CI 3.68–16.86) for chronic shoulder pain, and 15.86 (95% CI 6.23–40.36) for chronic elbow-hand-wrist complaints. The participants with chronic complaints also reported longer episodes of sickness absence.

Musculoskeletal co-morbidity was high. Most workers reported symptoms in more than one body region. Among the workers with back pain in the past 12 months, 72 (39%) reported neck complaints in the same period, 106 (58%) reported shoulder complaints, and 51 (28%) had suffered from elbow, wrist, or hand pain. Female workers with low-back pain reported musculoskeletal comorbidities for the upper extremities more often than the male workers, 94 (87%) and 34 (54%), respectively.

Determinants of upper-extremity complaints and musculoskeletal sickness absence

Table 2 presents the effects of individual and work-related physical and psychosocial variables on the occurrence of upper-extremity complaints and on sickness absence due to these complaints. The individual factors gender, The Netherlands as the country of birth, and involvement in sports showed associations with both the occurrence of upper-extremity complaints and musculoskeletal sickness absence. Female workers reported pain in the upper limbs and musculoskeletal sickness absence twice as often than their male co-workers (OR 2.2). Workers who reported to be actively involved in sports had a statistically significantly decreased risk for developing symptoms in the upper extremities (OR 0.6), and they also seemed to be on sick leave due to these complaints less often (OR 0.6).

Several work-related physical factors were associated with the occurrence of upper-extremity complaints, but no association was found for sickness absence due to these complaints. Low job satisfaction (OR 1.5) was associated with symptoms in the upper extremities, whereas there was no effect on sickness absence. Low social support of co-workers (OR 2.2) was statistically significantly related to sickness absence due to upper-extremity complaints, but not to the occurrence of these complaints.

The results of the multivariate analyses for upper-extremity complaints and musculoskeletal sickness absence are shown in table 3. The most important determinants for the occurrence of upper-extremity complaints and musculoskeletal sickness absence were gender and The Netherlands as the country of birth, and for the occurrence of complaints also involvement in sports. Low job satisfaction (OR 1.6) showed an association with the occurrence of upper-extremity complaints, but not with sickness absence attributed to these complaints. Low social support of co-workers (OR 1.7) and involvement in sports (OR 0.6) were not statistically significantly associated with sickness absence for upper-extremity complaints. Strenuous arm positions strongly interacted with gender and hence remained in both models.

Table 2. Age-adjusted odds ratios (OR) of the association between the individual, work-related physical and psychosocial factors and the occurrence of pain in the upper extremities and sickness absence due to these complaints in the past 12 months among the personnel from the laundry works and dry-cleaning establishments (N=373).

Factor	Workers		Pain in upper extremities(N=216)		Related sickness absence (N=54)	
	N	%	OR	95% CI	OR	95% CI
Individual						
Body mass index >30 (kg/m^2)	34	9	0.9	0.4–1.8	1.3	0.5–3.3
Age						
17–34 years	173	47	1.0	–	1.0	–
35–44 years	120	32	1.2	0.8–2.0	1.5	0.8–2.8
45–65 years	80	21	1.3	0.8–2.2	0.8	0.4–1.9
Female gender	245	66	2.1	1.4–3.3	2.2	1.1–4.5
Living alone	80	22	1.0	0.6–1.7	0.9	0.4–1.8
The Netherlands as the country of birth	253	68	0.6	0.4–0.9	0.3	0.2–0.6
Lower level education	228	63	0.8	0.5–1.3	0.6	0.3–1.1
Active in sports	145	39	0.6	0.4–0.9	0.6	0.3–1.0
Work-related						
Working > 36 hours	257	69	0.7	0.4–1.1	1.1	0.6–2.0
Physical workload						
Manual materials handling	100	27	1.0	0.6–1.6	0.6	0.3–1.2
Awkward back posture	256	68	1.6	1.0–2.4	1.0	0.5–1.8
Static back posture	342	92	1.0	0.5–2.2	0.7	0.3–1.7
Strenuous arm movements	298	80	1.9	1.1–3.1	1.5	0.7–3.4
Perceived physical load	250	67	1.5	0.9–2.2	1.1	0.6–2.0
Psychosocial workload						
Low job control	177	47	1.2	0.8–1.8	0.8	0.4–1.4
High job demands	201	54	1.4	0.9–2.1	1.4	0.8–2.6
Job strain	109	29	1.3	0.8–2.0	0.8	0.4–1.6
Low social support						
Co-workers	48	13	1.2	0.7–2.3	2.2	1.1–4.7
Supervisors	68	18	1.0	0.6–1.7	1.2	0.6–2.4
Low job satisfaction	244	65	1.5	1.0–2.3	1.1	0.6–2.0

Table 3. Results of the multivariate analyses on the associations between the risk factors and the occurrence of pain in the neck or upper extremities and the related sickness absence in the past 12 months among the personnel from the laundry works and dry-cleaning establishments (N=373).

Factor	Workers		Pain in upper extremities (N=216)		Related sickness absence (N=54)	
	N	%	OR	95% CI	OR	95% CI
Age						
17–34 years	173	47	1.0	–	1.0	–
35–44 years	120	32	1.2	0.7–2.0	1.5	0.8–3.0
45–65 years	80	21	1.4	0.8–2.4	0.9	0.4–2.2
Female gender	245	66	2.0	1.3–3.2	2.2	1.1–4.5
The Netherlands as the country of birth	253	68	0.5	0.3–0.9	0.3	0.2–0.6
Active in sports	145	39	0.6	0.4–0.9	.	.
Strenuous arm movements	298	80	1.6	0.9–2.8	1.6	0.7–3.6
Low job satisfaction	244	65	1.6	1.0–2.6	.	.

Determinants of low-back pain and musculoskeletal sickness absence

Table 4 presents the effects of the individual and work-related physical and psychosocial variables on low-back pain and on sickness absence due to low-back pain. None of the individual factors were associated with low-back pain, whereas age, gender, and The Netherlands as the country of birth were strongly associated with sickness absence due to low-back pain. The male workers reported an episode of sick leave due to low-back pain twice as often as the female workers. Sickness absence was associated with The Netherlands as the country of birth (OR 0.3), those born in The Netherlands being on sick leave less often due to low-back pain.

Work-related physical factors (ie, awkward back postures, strenuous arm movements, and high perceived physical load) were strongly associated with the occurrence of low-back pain. When sickness absence was used as an outcome measure, there was no effect of any of the physical factors. All the work-related psychosocial factors were associated with the occurrence of low-back pain, whereas these factors were not statistically significantly associated with sickness absence attributed to low-back pain. The odds ratios for low job control (OR 1.6), high job demands (OR 1.5), low social support of co-workers (OR 1.8), and low job satisfaction (OR 1.7) were clearly increased.

The results of the multivariate analyses for low-back pain are shown in table 5. The most important

Table 4. Age-adjusted odds ratios (OR) of the association between the individual, work-related physical and psychosocial factors and the occurrence of low back pain and related sickness absence in the past 12 months among the personnel from the laundry works and dry-cleaning establishments (N=373).

Factor	Workers		Low-back pain (N=185)		Related sickness absence (N=53)	
	N	%	OR	95% CI	OR	95% CI
Individual						
Body mass index >30 (kg/m^2)	34	9	1.1	0.6–2.3	1.2	0.4–3.2
Age						
17–34 years	173	47	1.0	–	1.0	–
35–44 years	120	32	0.9	0.5–1.4	1.1	0.6–2.0
45–65 years	80	21	0.7	0.4–1.1	0.4	0.2–1.1
Female gender	245	66	1.0	0.6–1.5	0.5	0.3–0.9
Living alone	80	22	0.8	0.5–1.3	1.4	0.7–2.8
The Netherlands as the country of birth	253	68	0.8	0.5–1.3	0.3	0.2–0.6
Lower level education	228	63	1.3	0.8–2.0	1.1	0.6–2.0
Active in sports	145	39	0.8	0.5–1.1	0.7	0.4–1.4
Work-related						
Working >36 hours	257	69	1.2	0.8–1.9	1.8	0.9–3.6
Physical workload						
Manual materials handling	100	27	1.3	0.8–2.1	1.1	0.6–2.1
Awkward back posture	256	68	2.0	1.3–3.1	0.9	0.5–1.8
Static back posture	342	92	1.6	0.7–3.4	0.8	0.3–2.2
Strenuous arm movements	298	80	1.6	0.9–2.7	0.7	0.3–1.3
Perceived physical load	250	67	1.6	1.0–2.5	1.3	0.7–2.4
Psychosocial workload						
Low job control	177	47	1.6	1.0–2.4	1.6	0.9–2.9
High job demands	201	54	1.7	1.1–2.6	1.5	0.8–2.7
Job strain	109	29	1.6	1.0–2.5	1.3	0.7–2.4
Low social support co-workers	48	13	1.7	0.9–3.3	1.8	0.8–3.8
Low social support supervisor	68	18	1.6	0.9–2.7	1.2	0.6–2.5
Low job satisfaction	244	65	1.5	0.9– 2.3	1.7	0.9–3.3

determinants for the occurrence of low-back pain were awkward back postures (OR 1.8) and high job demands (OR 1.6). For sickness absence due to low-back pain, female gender (OR 0.5) and The Netherlands as the country of birth (OR=0.3) were the most important determinants.

Discussion

Data on simultaneously assessed individual and work-related determinants of musculoskeletal disorders and musculoskeletal sickness absence in one study population is scarce. The work-related physical and psychosocial factors largely determined the occurrence of low-back pain and upper-extremity complaints, whereas individual factors predominantly determined whether those with these musculoskeletal complaints took sick leave.

Methodology

Some limitations of the study need to be considered in the interpretation of the results. First, sickness absence was self-reported and may have been underreported to make the responses socially desirable (32, 34). Using sick leave data collected in a standardized way from the employers' registration system may have yielded different sickness absence data, but, in this branch of industry, absence registers are often incomplete, especially for short-term absence.

Second, since our data on workload relied on self-reports, the results may be biased on account of "reversed causality". However, on the basis of two arguments, we assume that such bias did not substantially affect our results. Toomingas and his colleagues (35) found no support for the idea of such bias in rating behavior in studies in which the participants rated both exposure and outcome variables, such as physical exposure and pain. Furthermore, observations at the workplace on workload in the four different departments complied well with the self-reported data on workload at the group level.

A third point of discussion is whether the physical and psychosocial factors have equal accuracy. Both the physical and psychosocial factors were self-reports based on a four-point scale, and in the univariate analyses comparable confidence intervals were observed for associations between physical and psychosocial factors and sickness absence. Since no repeated measurements were taken we have no means with which to establish the differences in accuracy among the risk factors and with which to estimate the potential effects of a lack of accuracy on the observed risk estimates.

Table 5. Results of the multivariate analyses on the associations between the risk factors and the occurrence of low-back pain and related sickness absence in the past 12 months among the personnel from the laundry works and dry-cleaning establishments (N=373).

Factor	Workers		Low back pain (N=185)		Related sickness absence (N=53)	
	N	%	OR	95% CI	OR	95% CI
Age						
17–34 years	173	47	1.0	–	1.0	–
35–44 years	120	32	0.9	0.6–1.4	1.0	0.5–1.9
45–65 years	80	21	0.7	0.4–1.2	0.5	0.2–1.3
Gender female	245	66	0.9	0.6–1.4	0.5	0.3–0.9
The Netherlands as the country of birth	253	68	.	.	0.3	0.2–0.6
Awkward back postures	256	69	1.8	1.2–2.9	.	.
High job demands	201	54	1.6	1.0–2.4	.	.

Fourth, the correlation among the work-related physical variables was high; thus, in the multivariate analyses, it was somewhat arbitrary which variable was included in the model. The same applies for the work-related psychosocial variables. In the final multivariate model only the most important factor of each domain was included. This process should be kept in mind when the multivariate models are interpreted.

Finally, it must be taken into account that, due to the small sample size for sickness absence, not all the elevated odds ratios reached conventional levels of significance ($P<0.05$). Hence some risk factors could have been relevant had a larger sample size been used.

Musculoskeletal disorders and sickness absence

The prevalence of musculoskeletal complaints was within the range of prevalences reported for occupational groups of blue-collar workers (36). In accordance with previous findings, we observed that a substantial proportion of workers continued their regular work while experiencing an episode of pain (11, 14–16).

Individual factors

In our study, we found that the odds ratios for the occurrence of low-back pain were similar for the different age groups; however, there was a decreased risk for sickness absence in the older age group that could not be explained by individual and work-related variables. This finding may suggest that older workers who remain in their jobs cope better with their complaints in relation to the tasks imposed by their work. However, this effect was not observed for sickness absence due to upper-extremity complaints.

Male workers went on sick leave because of low-back pain twice as often as their female co-workers did, even though the odds ratios for the occurrence of low-back pain were similar for both genders. Even when individual or work-related factors were corrected for in the multivariate analyses, this effect of gender on sickness absence due to low-back pain remained. A possible explanation for this finding is the higher report of musculoskeletal co-morbidities in upper extremities by female workers with low-back pain. It could be hypothesized that upper-extremity complaints were harder to deal with in relation to the tasks women had to perform and hence made them go on sick leave for these complaints instead of for their back trouble. Female workers indeed reported both upper-extremity complaints and sickness absence twice as often as their male co-workers. These results comply well with findings of previous studies, which reported that female workers are more susceptible to overload in the upper extremities (37). The Netherlands as the country of birth showed strong associations with sickness absence due to musculoskeletal complaints. A relationship between Swedish immigrants and sickness absence due to musculoskeletal pain has been reported by other authors, who also found that immigrants experienced a deeper impact of pain (38). Our study does not permit a further explanation of the social and cultural factors underlying these observations. It has been suggested that language and intercultural communication problems may cause disparity in the use and accessibility of health care for ethnic minorities (39). Ensuring adequate care at the right moment is a necessary requirement for recovery and the avoidance of sick leave due to musculoskeletal complaints.

We found a decreased risk for upper-extremity complaints, as well as musculoskeletal sickness absence in relation to involvement in sports; this finding is in agreement with the results reported in former longitudinal studies on the relation between physical activities in leisure time and musculoskeletal disorders (20, 40, 41).

Work-related factors

Recently, two authors (22–27) reported on work-related psychosocial and physical risk factors for the occurrence of low-back pain and neck pain, as well as sickness absence due to these complaints. In accordance with these studies, we found that work-related psychosocial factors play a role in sickness absence due to musculoskeletal disorders. However, due to the small sample size of our study, not all the associations were significant. The results in these studies also showed that physical factors were more strongly associated with sickness absence than with the occurrence of low-back pain or neck complaints. Contrary to these reports, we found an opposite effect, work-related physical factors being associated with musculoskeletal disorders and not with sickness absence due to these complaints. The subjects included in the aforementioned studies worked in various occupations and were exposed to a much broader range of physical load compared with the workers in our study. Therefore, a possible explanation for this contradictory result may be the lack of sufficient contrast in exposure to physical load among the participants of our study, who were all highly exposed to physical load.

Concluding remarks

In this study among personnel of laundry works and dry-cleaning establishments with high levels of physical and psychosocial workload, these work-related factors were associated with musculoskeletal complaints but did not seem to influence sickness absence due to these complaints. The results of our study imply that primary prevention strategies, aimed at minimizing the risks of the occurrence of symptoms of work-related musculoskeletal complaints, and secondary prevention strategies, aimed at reducing the impact of existing musculoskeletal complaints, may need to address different sets of risk factors. A better understanding of the differences in musculoskeletal complaints and musculoskeletal sickness absence is imperative and will contribute to the effectiveness of intervention programs.

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