

Factors associated with medical care-seeking due to low-back pain in scaffolders

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Abstract

Background: Few studies have demonstrated the consequences of having back pain and the mechanisms underlying decisions to seek medical care. This study aimed to assess the prevalence of back pain and other musculoskeletal complaints and to identify factors that determine specific type of care-seeking due to back pain among scaffolders.

Methods: A cross-sectional study was conducted among 323 scaffolders. A questionnaire was used to collect data on musculoskeletal complaints and type of medical care sought. Logistic regression analysis was performed to study the risk factors for care-seeking for LBP, estimating Prevalence Ratios (PR) as a measure of association.

Results: The prevalence of musculoskeletal complaints was high. Severe back pain was reported by 28% of the scaffolders, LBP with sciatic pain by 23%, LBP with sickness absence by 21%, with disability by 21%, and chronic back pain by 14%. Back pain was often accompanied by complaints of neck, shoulder, or knee. A general practitioner was sought by 44% of the workers with LBP, a physiotherapist by 22%, an occupational physician by 20%, and a specialist by 11%. The nature and severity of back pain seemed to determine the decision to visit the GP. Irradiating pain and sickness absence were the strongest predictors for seeking medical care and being referred to a specialist or physiotherapist.

Conclusion: The particular definition of back pain and the selection process of workers with LBP may partly determine the findings on work-related risk factors and health care utilisation.

Key words: care-seeking, low-back pain, musculoskeletal complaints, comorbidity, irradiating pain, sickness absence, scaffolders.

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Introduction

Low back pain (LBP) constitutes an important cause of morbidity and disability in the general population [Deyo et al., 1991; Frank et al., 1996; Hurwitz and Morgenstern, 1997a]. By middle of life, it is usual to have experienced an episode of LBP. About seventy to eighty percent of the US adult population will experience LBP at least once in their lives [Frymoyer, 1988], and in occupational populations it is an important cause of sickness absence [Frymoyer, 1988; Skovron, 1992; Frank et al., 1996; Hemingway et al., 1997; Burdorf et al., 1998].

Many studies have focused on LBP risk factors [Deyo et al., 1991; Frank et al., 1996; Feyer et al., 2000], few have demonstrated the consequences of having back pain and the mechanisms underlying the decisions to seek medical care. Biering-Sorensen in Denmark found that 60% of the low-back pain patients in the study population sought medical care from their general practitioner (GP), about 25% from a specialist, 15% from a chiropractor, and 52% received physiotherapy as treatment [Biering-Sorensen, 1983]. A study in the US reported that 85% of LBP sufferers had sought care from a health professional. The GP was the most commonly consulted (59%), followed by orthopaedists (37%), and chiropractors (31%). Utilization of these services was generally not different among regions, racial groups, or educational groups although lower educated subjects were much more likely to be hospitalized than college-educated subjects. Subjects with long duration of pain and sciatica-like pain more often used specific treatment than those without [Deyo and Tsui-Wu, 1987]. Carey et al. [1995] found that 73% of chronic back pain sufferers sought health care, of which ninetyone percent saw a medical doctor, twentynine percent saw a physiotherapist, and twentyfive percent saw a chiropractor. A second study showed that 39% of adults with acute severe low-back pain sought health care, of which 24% sought care from a physician, 13% from a chiropractor, and 2% from some other provider (physiotherapist, nurse, or a massage therapist). Gender, income, age and health insurance status did not correlate with care-seeking. A chiropractor was more often sought by younger males with non-job related pain [Carey et al., 1996]. Hurwitz and Morgenstern [1997a] showed that patients who seek care from a chiropractor are different in demographic (more likely to be white, better educated, higher income, and younger) and clinical (less disabled from back pain and fewer medical comorbidities) characteristics from patients who seek care from allopathic physicians. The same authors also reported that back problem sufferers were much more likely to have sought back care when afflicted with nondisabling general health comorbidities [Hurwitz and Morgenstern, 1999]. In a Swedish study, it was observed that among nursing personnel physical load seems to be more significant than psychosocial factors when a worker seeks health care for low-back pain [Josephson and Vingard, 1998].

These studies demonstrate that the decision to seek care for back problems depends on various aspects, such as severity and nature of back pain, education, age, physical load at work, and non-disabling comorbidities. Hence, different health care practitioners will cater for different populations of back pain patients and, consequently, may have different views on the work-relatedness of back problems. The main aim of this study was to assess the prevalence of back pain and comorbidity with other musculoskeletal complaints and to identify factors that determine specific type of care-seeking due to back pain among scaffolders.

Materials and Methods

Subjects

Subjects were selected from a scaffolding company in The Netherlands. After introduction of the proposed study in the occupational health committee all workers were invited by letter from the research team to participate in the study. Subsequently, a member of the research team went to all worksites to inform workers, to obtain informed consents, and to distribute questionnaires. The principal tasks of scaffolders are erecting and taking down large-scale scaffolds. During these tasks manual material handling is one of the most dominant activities due to manual lifting, lowering, and carrying of heavy materials such as scaffolding poles and boards, guard rails, and ladders. The scaffolders work throughout the Netherlands, primarily on large industrial sites. In total, 376 subjects were invited to participate in this study.

Questionnaire

A questionnaire was used to collect personal data, details on the respondent's job and employment history, physical load at work, psychosocial load at work, health status, leisure time, and the presence or absence of musculoskeletal symptoms. The questionnaire was administered in the period June 1998 - September 1998. Since about 20% of the workforce has the Turkish nationality, if necessary, a Turkish questionnaire was administered, either self-administered or by interview.

Information on individual risk factors like age, height, weight, and educational level was derived from the standard Nordic questionnaire [Kuorinka et al., 1987]. Self-reported physical load primarily focused on lifting and carrying heavy loads and working in awkward back postures. A four-point scale was used with ratings 'seldom or never', 'now and then', 'often', and 'always' during a regular workday. The last two ratings were classified as exposed. The questions on psychosocial aspects at work were derived from the Karasek-model [Karasek et al., 1981]. In this model subjects are supposedly at risk when experiencing high job demands and low skill discretion.

In the questionnaire also a measure of fatigue was included, representing short-term effects of a day at work. Fatigue was assessed by 11 questions on need for recovery, addressing aspects such as tiredness after work, fatigue, lack of concentration, putting interest in other people, the ability to recover from work, and the influence on work performance [Sluiter et al., 1999]. In addition, a measure of perceived general health was constructed based upon 13 dichotomised questions about the worker's actual health situation according to the VOEG-scale. This scale has a good internal reliability (Cronbach's $\alpha = 0.86$) and test-retest reliability (Pearson's $r = 0.76$) [Van Sonsbeek, 1990]. Fair/poor general health was defined as the lowest 25%-percentile in the total study population.

The questions on musculoskeletal disorders were derived from the standard Nordic questionnaire which has been proven to be a valid instrument to collect information on the nature, duration (days) and frequency (occurrences) of symptoms [Kuorinka et al., 1987]. LBP was defined as pain, which had continued for at least a few hours during the past 12 months.

Furthermore, pain intensity was rated on a scale according to Von Korff et al. [1992], ranging from 0 to 10. Six end-points of LBP were defined: (1) LBP in the past 12 months, referred to at least one episode of LBP in the last twelve months, (2) Chronic LBP in the past 12 months, referred to LBP which was present almost every day in the preceding 12 months with a minimal presence for at least 3 months, (3) Severe LBP in the past 12 months, defined as those subjects who exceeded the pain intensity score of 50 according to the Von Korff-scheme for grading severity of chronic pain, (4) LBP and perceived disability in the past 12 months, defined as the subjects who exceeded the disability score of 50 according to the Von Korff-scheme for grading disability, (5) LBP in the past 12 months with radiation of the pain to the knee (sciatic pain), and (6) LBP in the past 12 months with a consequent period of sickness absence. For other musculoskeletal disorders, the occurrence of pain of the neck, shoulder, or knee in the past 12 months was ascertained.

Comorbidity was defined as workers with LBP in the past 12 months and one or more complaints of the neck, shoulder, or knee (musculoskeletal comorbidity) or the simultaneous presence of LBP and a fair/poor general health status in the past 12 months (general comorbidity). Respondents were also classified according to the type of medical care provider which they sought care for their back problems in the past 12 months. A distinction was made between care-seeking by the GP, a specialist, a physiotherapist, or the occupational physician (OP). All medical specialists, including orthopaedists, surgeons, and neurologists were grouped under specialty medical care. The category physiotherapists also included physical therapists and chiropractors.

Statistical analysis

In the statistical analyses differences between continuous variables were tested with the unpaired Student *t*-test. The differences between frequencies of categorical variables were tested with the chi-square test (χ^2). The Spearman rank correlation coefficient (θ) was used as measure of association for categorical variables at ordinal level. Logistic regression analysis was performed to study the risk factors for care-seeking for LBP. Prevalence Ratios (PR) were estimated as a measure of association. For the initial selection of significant variables $P < 0.10$ was used. In the multivariate analysis all significant variables in the univariate analyses were tested, as well as important potential confounders, e.g., age, seniority in the job, education, and nationality. In the multivariate model variables were only retained when significant at the level of $P < 0.05$. Confounders were included in the multivariate model if other coefficients in the model were affected by more than 10%. The statistical analysis was executed using the SAS computer package.

Results

The questionnaire was completed by 323 workers, yielding a response rate of 86%. No differential response was observed for age, nationality, and duration of employment. Table 1 shows the personal characteristics and working experience of the 323 scaffolders. The population consisted predominantly of middle aged men, ranging from 21 to 62 years. On an average, workers had 12 years of employment in the current job. The study population included 52 workers of Turkish nationality (16%), seven workers of miscellaneous nationalities (2%), and 264 Dutch workers (82%).

The prevalence of musculoskeletal complaints in the past 12 months among these workers was high (see Table 2). Back pain was the most prevalent musculoskeletal problem, reported by 193 (60%) workers. With regard to the different back pain end-points, severe back pain was reported by 28% of all scaffolders, LBP with radiating pain to the knee by 23%, LBP with a consequent period of sickness absence by 21%, LBP with perceived disability by 21%, and chronic back pain by 14%. Health care among workers with low-back pain in the past 12 months was most often sought through the GP (44%), a physiotherapist (22%), the OP (20%), or the specialist (11%). As shown in Table 2 musculoskeletal complaints of knee, shoulder, and neck were also prevalent. Musculoskeletal comorbidity among workers with back pain was high. Among workers with back pain in the past 12 months, 92 (48%) also reported knee complaints in the same period, 76 (39%) reported shoulder complaints, 72 (37%) had suffered from neck problems. Another 70 (36%) workers rated their general health status as fair/poor.

	Mean	SD
Individual characteristics		
Age (year)	37.0	9.1
Height (cm)	179.1	8.4
Weight (kg)	84.1	13.1
Working History		
Employment in current job (year)	12.4	8.2

Complaints	n	%
Back	193	60
Knee	120	37
Shoulder	109	34
Neck	87	27

Table 3 shows the determinants of comorbidity among scaffolders. Workers with frequent back pain were more likely to have experienced knee or neck pain in the past year. Shoulder pain comorbidity was significantly associated with chronic back pain and need for recovery after a workday. General health comorbidity was strongly determined by need for recovery and less strongly by pain intensity during a back pain episode.

Comorbidity	Determinants	n	PR	95%CI
Back and neck	Frequency of pain (>5 spells)	87	1.71	1.17 - 2.48
Back and shoulder	Chronic pain (>3 months)	44	1.46	1.04 - 2.05
	Need for recovery	119	1.72	1.10 - 2.66
Back and knee	Frequency of pain (>5 spells)	87	1.66	1.23 - 2.24
General health	Pain intensity (Severe pain)	91	1.71	1.16 - 2.54
	Need for recovery	119	4.66	2.23 - 9.76

In the Netherlands workers are free to visit their (GP) or (OP) whenever they want, but a visit to a specialist or a physiotherapist is almost always based on referral by the GP. Table 4 shows the different aspects that prompt workers to seek medical advice. In the case of a GP visit these factors are chronic, severe, and disabling pain, sciatic symptoms, and pain resulting in sickness absence. The determinants of a visit to a specialist demonstrate that a GP is more likely to refer persons with LBP to a specialist if: (a) radiating pain is observed, (b) LBP hampers persons to continue their work, or (c) LBP affects a person's ability to carry out regular activities at home and/or at work. A similar referral pattern, although less strongly associated with the above mentioned determinants, was observed for care-seeking at a physiotherapist. Thus, the pain itself and/or frequency and chronicity were significantly less associated with referral by a GP. General health status is shown to be important in the decision to visit the GP and/or the OP, but does not play a significant role in referral by a GP to a specialist or physiotherapist. Age, seniority in the job, nationality, education, self-reported physical load, psychosocial aspects at work, and need for recovery were not statistically significant in any of the associations.

Table 5 shows the results of the multivariate analysis for the four different types of care-seeking behaviour. The presence of sciatica (irradiating pain) and sickness absence are the strongest predictors for seeking medical care and being referred to a specialist or physiotherapist. Clear signs of pathology (sciatic pain) is the strongest determinant of referral by the GP to a medical specialist. Less severe cases of LBP are more often referred to a physiotherapist. Age, seniority in the job, nationality, education, self-reported physical load, psychosocial aspects at work, need for recovery, musculoskeletal comorbidity, and general comorbidity were not statistically significant in any of the associations. Age appeared to be a very moderate confounder in some associations, but inclusion of age in the multivariate model never changed other regression coefficients for more than 10%.

Table 4 Univariate determinants of care-seeking among scaffolders with low back pain in the past 12 months (n=193), Netherlands			
	N	PR	95% CI
Determinants for visit to GP			
Chronic pain	44	1.69	1.25 - 2.30
Sciatic pain	74	2.14	1.56 - 2.95
Severe pain	91	1.92	1.36 - 2.70
Disabling back pain	69	3.23	2.31 - 4.52
Fair/Poor general health	70	1.52	1.11 - 2.08
Back pain with sickness absence	70	5.27	3.54 - 7.84
Determinants for visit to medical specialist (referral by GP)			
Chronic pain	44	3.39	1.58 - 7.28
Sciatic pain	74	16.08	3.87 - 66.82
Severe pain	91	3.81	1.46 - 9.92
Disabling back pain	69	6.11	2.36 - 15.84
Back pain with sickness absence	70	11.13	3.41 - 36.28
Determinants for visit to physiotherapist or other therapy (referral by GP)			
Chronic pain	44	2.30	1.37 - 3.86
Sciatic pain	74	3.59	2.00 - 6.45
Severe pain	91	3.16	1.69 - 5.91
Disabling back pain	69	4.49	2.46 - 8.20
Back pain with sickness absence	70	6.44	3.28 - 12.67
Determinants for visit to occupational physician			
Chronic pain	44	2.12	1.22 - 3.67
Sciatic pain	74	4.66	2.23 - 9.76
Severe pain	91	3.74	1.88 - 7.44
Disabling back pain	69	4.57	2.43 - 8.61
Fair/Poor General Health	70	2.27	1.30 - 3.98
Back pain with sickness absence	70	9.66	4.26 - 21.92

Discussion

This cross-sectional study among scaffolders showed a high prevalence of musculoskeletal complaints in the past 12 months, especially back, knee, and shoulder pain. This may be due to the type of work in which they are involved, with high physical load [Burdorf and Sorock, 1997; Zwart et al., 1997]. The prevalences of particular musculoskeletal complaints were within the range of reported prevalences in occupational populations with physically demanding jobs such as tank terminal workers, welders and metal workers, and ship maintenance workers [Burdorf and Sorock, 1997; Josephson et al., 1997; Zwart et al., 1997; Burdorf et al., 1998]. Moreover, most of the workers had more than one musculoskeletal complaint and their back pain was often accompanied by another musculoskeletal complaint.

Table 5 Multivariate determinants of care-seeking among scaffolders with low back pain in the past 12 months (n=193), Netherlands			
	n	PR	95%CI
Determinants for visit to GP			
Back pain with sickness absence	70	5.27	3.54 - 7.84
Determinants for visit to medical specialist			
Back pain with sickness absence	70	6.43	1.99 - 20.76
Sciatic pain	74	9.82	2.35 - 40.96
Determinants for visit to physiotherapist or other therapy			
Back pain with sickness absence	70	5.00	2.48 - 10.07
Sciatic pain	74	2.20	1.25 - 3.89
Determinants for visit to occupational physician			
Back pain with sickness absence	70	7.09	3.06 - 16.42
Sciatic pain	74	2.64	1.41 - 4.96

Of all workers with low-back pain in the past 12 months, 44% had sought medical care from a GP. Chronicity, pain intensity, perceived disability, and radiating pain prompted workers to pay a visit to their GP. General comorbidity played a limited role in care-seeking whereas musculoskeletal comorbidity was not associated with care-seeking. Sickness absence was the strongest determinant of care-seeking at the GP which may reflect the worker's need to prove his right to file for a period of work absence. Contradictory results have been published on the effects of age, education, nationality, physical load, and psychosocial load on care-seeking for low-back pain [Carey et al, 1996; Josephson and Vingard, 1998; Hurwitz and Morgenstern, 1999], but in this study these factors did not correlate with the decision to seek medical care from the GP. However, one has to bear in mind that these scaffolders are a very homogeneous population with limited contrast in educational levels and physical and psychosocial load at work. The group of Turkish scaffolders was too small to show significant differences with their Dutch colleagues.

The GP referral to a specialist was strongly influenced by the severity of the back pain, as demonstrated by sciatic pain, disabling back pain, or LBP with sickness absence. Less severe cases were more often referred to the physiotherapist. This referral pattern largely reflects the Dutch guidelines on back pain and lumbosacral radicular syndrome which advise a GP to refer a patient with radiating pain to a medical specialist when the patient reports severe radicular pain or suffers from progressive or severe paresis. These guidelines also promote referral to a physiotherapist in case of continuing back pain. In this study population the proportion of workers utilising physiotherapy were those with primarily chronic back pain. The pattern of health care utilization in this occupational group of scaffolders compares well with a recent survey among primary health care patients in the Netherlands where the most important determinants for care-seeking were sciatica, disability, and pain intensity [Van de Hoogen et al., 1998].

Our results are in agreement with a study in North Carolina on acute severe low back pain in that comparable determinants were found for care-seeking, such as prolonged pain (2 or more weeks), severe pain, and sciatic pain. The reasons for the observed differences in care providers is most likely due to differences in the structure and contents of health-care systems between North Carolina and the Netherlands [Carey et al., 1996].

Even though a high comorbidity was observed in scaffolders, the referral to the specialist or physiotherapist was not influenced by this comorbidity. Our results demonstrated that most of the workers not only had back pain but also another musculoskeletal complaint, which was not taken into account when seeking care by a physician. LBP should not be seen in isolation and the results of this study argue that medical care providers should consider also comorbidity when assessing and treating patients with back pain because comorbidity has been associated with severity, persistency, and recurrence of musculoskeletal complaints [Van der Windt et al., 1996; Cote et al., 2000].

We conclude that different types of patients are attended by different types of health care providers. In our typical situation of scaffolders with back pain in the Dutch healthcare system, nature and severity of back pain and sickness absence determined care-seeking through a GP. This pattern has been confirmed by other studies [Carey et al., 1995, 1996; Hurwitz and Morgenstern, 1997b]. Individuals with low-back pain with severe symptoms and signs are more often referred to a clinical specialist. Thus, the particular definition of back pain and the selection processes among workers with low-back pain and their GPs may partly determine the findings on work-related risk factors and health care utilization.

References

1. Biering-Sorensen F. 1983. A prospective study of low back pain in a general population. III Medical service-Work consequence. *Scand J Rehab Med* 15:89-96.
2. Burdorf A, Sorock G. 1997. Positive and negative evidence of risks factors for back disorders. *Scand J Work Environ Health* 23:243-256.
3. Burdorf A, Naaktgeboren B, Post W. 1998. Prognostic factors for musculoskeletal sickness absence and return to work among welders and metal workers. *Occup Environ Med* 55:490-495.
4. Carey TS, Evans A, Hadler N, Kalsbeek W, McLaughlin C, Fryer J. 1995. Care-seeking among individuals with chronic low back pain. *Spine* 20:312-317.
5. Carey TS, Evans AT, Hadler NM, Lieberman G, Kalsbeek WD, Jackman AM, Fryer JG, McNutt RA. 1996. Acute severe low back pain. A population-based study of prevalence and care-seeking. *Spine* 21:339-344.
6. Cote P, Cassidy JD, Carroll L. 2000. The factors associated with neck pain and its related disability in the Saskatchewan population. *Spine* 25:1109-1117.
7. Deyo RA, Tsui-Wu YJ. 1987. Descriptive epidemiology of low-back pain and its related medical care in the United States. *Spine* 12:264-268.
8. Deyo RA, Cherkin D, Conrad D, Volinn E. 1991. Cost, controversy, crisis: Low back pain and the health of the public. *Ann Rev Public Health* 12:141-156.
9. Feyer AM, Herbison P, Williamson AM, de Silva I, Mandryk J, Hendrie L, Hely MC. 2000. The role of physical and psychological factors in occupational low back pain: a prospective cohort study. *Occup Environ Med* 57:116-120.

10. Frank JW, Kerr MS, Brooker AS, DeMaio SE, Maetzel A, Shannon HS, Sullivan TJ, Norma RW, Wells RP. 1996. Disability resulting from occupational low back pain. Part I: What do we know about primary prevention? A review of the scientific evidence on prevention before disability begins. *Spine* 24:2908-2917.
11. Frymoyer JW. Back pain and sciatica. 1988. *N Engl J Med* 318:291-300.
12. Hemingway H, Shipley MJ, Stansfeld S, Marmot M. 1997. Sickness absence from back pain, psychosocial work characteristics and employment grade among office workers. *Scand J Work Environ Health* 23:121-129.
13. Hurwitz EL, Morgenstern H. 1997a. The effects of comorbidity and other factors on medical versus chiropractic care for back problems. *Spine* 22:2254-2264.
14. Hurwitz EL, Morgenstern H. 1997b. Correlates of back problems and back-related disability in the United States. *J Clin Epidemiol* 50: 669-681.
15. Hurwitz EL, Morgenstern H. 1999. The effect of comorbidity on care seeking for back problems in the United States. *Ann Epidemiol* 9:262-270.
16. Josephson M, Vingard E. 1998. Workplace factors and care seeking for low-back pain among female nursing personnel. MUSIC-Norrtälje Study Group. *Scand J Work Environ Health* 24:465-472.
17. Josephson M, Lagerstrom M, Hagberg M, Wigaeus Hjelm E. 1997. Musculoskeletal symptoms and job strain among nursing personnel: a study over a three year period. *Occup Environ Med* 54:681-685.
18. Karasek RA, Baker D, Marxer F. 1981. Job decision latitude, job demands and cardiovascular disease: a prospective study among Swedish men. *Am J Public Health* 71:694-705.
19. Kuorinka I, Jonsson B, Kilbom A, Biering-Sørensen F, Andersson G, Jørgensen K. 1987. Standard Nordic questionnaires for the analysis of musculoskeletal symptoms. *Appl Ergonom* 18: 233-237.
20. Skovron ML. 1992. Epidemiology of low back pain. *Baillieres Clin Rheumatol*. 6:559-573.
21. Sluiter JK, Van der Beek AJ, Frings-Dresen MHW. 1999. The influence of work characteristics on the need for recovery and experienced health: a study on coach drivers. *Ergonomics* 42:573-583.
22. Van den Hoogen HJ, Koes BW, Van Eijk JT, Bouter LM, Deville W. 1998. On the course of low back pain in general practice: a one year follow up study. *Ann Rheum Dis* 57:13-9.
23. Van der Windt DA, Koes BW, Boeke AJ, Deville W, De Jong BA, Bouter LM. 1996. Shoulder disorders in general practice: prognostic indicators of outcome. *Br J Gen Pract*. 46:519-23.
24. Van Sonsbeek JLA. 1990. Voeg: A list of subjective health complaints. The Hague: SDU/ publishers (Statistical reports M37).
25. Von Korff M, Ormel J, Keefe FJ, Dworkin SF. 1992. Grading the severity of chronic pain. *Pain* 50: 133-149.
26. Zwart BCH, Broersen JPJ, Frings-Dresen MHW, van Dijk FJH. 1997. Musculoskeletal complaints in the Netherlands in relation to age, gender and physically demanding work. *Int Arch Occup Environ Health* 70: 352-360.