

Low-back pain and early retirement among Danish semiskilled construction workers

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DAMLUND M, GØTH S, HASLE P, MUNK K. Low-back pain and early retirement among Danish semiskilled construction workers. *Scand j work environment health* 8 (1982): suppl 1, 100-104. According to new regulations Danish trade union members are able to retire earlier than normal, at the age of 60-65 a. One of the reasons for retirement might be symptoms of wear and tear, eg, low-back pain. Questionnaires were sent to 157 semiskilled construction workers and 210 members of a reference group. Forty percent of the construction workers reported low-back pain as one of the reasons for retirement, whereas the corresponding percentage of referents was 25. Low-back pain occurred in the year before retirement for 68% of the construction workers and 50% of the reference group. The relationship between low-back pain, selection, and semiskilled construction work is discussed.

Key terms: low-back symptoms, selection in older age.

The occupational strain factors that are considered risks for the development of low-back pain are heavy physical work, monotonous work, stooped work postures, sudden maximal physical effort, and vibration (1). An investigation of the work environment of semiskilled Danish construction workers, made concurrently with the present investigation, showed that these workers are exposed to all of these risks (3).

Semiskilled construction work in Denmark consists of form work, concrete reinforcement, concrete pouring, and a variety of other work functions; it is carried out with a low degree of specialization among the workers (3).

A great problem in occupational health investigations is that persons who have left because of health problems are difficult to detect. In this investigation we were able to study a group of people 60-65 a of age who had voluntarily chosen to leave employment before the normal re-

tirement age of 67 a in Denmark due to a special arrangement according to which, since 1 January 1979, it has been possible for organized workers between the ages of 60 and 65 a to retire on a special, high pension. The arrangement is voluntary and is not based on any medical criteria. It has therefore been possible for workers to retire because of diseases that do not often entitle them to disability pensions. Low-back pain and other wear-and-tear diseases of the musculoskeletal system fall into this category.

It has been the purpose of this study to investigate low-back pain as the cause of such early retirement among the older semiskilled construction workers. This study forms a part of a larger investigation on the technology, work environment, and health problems in semiskilled construction work (2, 3, 4).

Material and methods

In the Copenhagen Trade Union of Semi-Skilled Construction Workers 502 members aged 60-65 a with more than 5 a of membership in the Union have had the possibility to retire on a special, early pension; 159 (32%) did so between 1 January 1979 and 31 April 1980.

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The reference group was made up of 212 members of the Copenhagen Trade Union of Warehouse Workers, who had also chosen the special pension during the same period. In all, 546 warehouse workers, who mainly do less physically heavy work than semiskilled construction workers, had this opportunity.

Questionnaires on work experience, cause of application for special early pension, health problems, etc, were sent to these two groups of early retired workers, 157 semiskilled construction workers and 210 warehouse workers. The number of replies was 126 (80 %) and 182 (87 %), respectively, for the two groups, but replies from 24 members of the Construction Trade Union had to be excluded because the men had never done real construction work.

The answers of the semiskilled construction workers have not only been compared to those of the reference group but also to responses of active semiskilled construction workers (60—65 a of age) who participated in other parts of the Semi-Skilled Construction Work Project (2).

The differences in the answers were tested with the chi-square test. The relative risk has been described with the rate ratio, expressing the ratio between the rates of occurrence in the compared groups.

Results

The former semiskilled construction workers were asked about their reasons for

early retirement, but they were not asked to list the reasons according to priority. Seventy percent of these workers, compared with 67 % of the referents, stated at least one health problem as a reason for retirement. Other stated reasons were giving room for younger workers (64 %), getting more spare time (24 %), and unemployment (12 %). The referents' responses were similar.

Table 1 presents the health problems given as a reason for early retirement. Low-back pain was the major problem. Pain in other parts of the musculoskeletal system was second, and cough or dyspnea third. The difference between the two groups concerning low-back pain was significant ($p < 0.01$).

When asked about low-back symptoms during the last year of employment (table 2), 68 % of the semiskilled construction workers complained of low-back pain, whereas only 50 % of the referents did. The difference was significant ($p < 0.01$). The semiskilled construction workers also had more frequent low-back symptoms than the referents ($\chi^2 = 11.6$, $df = 3$, $p < 0.025$). It appears that the difference was due to more statements of daily pain among the former construction workers than among the referents.

There was also a significant difference between the two groups' responses with respect to work absences because of low-back pain ($p < 0.05$) (table 3). The long average period of sickness was due to the fact that a few construction workers had had a long-term period of absence, where-

Table 1. Health problems given as a reason for early retirement.

Problem	Semiskilled construction workers (N = 102) (%)	Referents (N = 182) (%)	Rate ratio
Upper-back pain	14	12	1.2
Low-back pain	40	25	1.6
Pain in the rest of the musculoskeletal system	26	22	1.2
Cough or dyspnea	20	18	1.1
Heart diseases	7	11	0.7
Weak nerves	6	11	0.5
Eczema	4	5	0.8
Poor health in general	13	11	1.2
Other problems	11	13	0.9

as this was not the case in the reference group.

In order to determine whether the difference between the two groups might be

due to a difference in the severity of the symptoms as well, we graded all low-back problems as follows: Reported disk prolapse, daily pain, and sharp pain were

Table 2. Experience of low-back pain 1 a before retirement.

Low-back pain	Semiskilled construction workers (N = 88) (%)	Referents (N = 131) (%)	Rate ratio
One-year occurrence	68	50	1.4
Daily	32	15	
Weekly	8	7	
Monthly or more seldom	28	28	

Table 3. Work absences caused by low-back pain.

	Semiskilled construction workers (N = 88)	Referents (N = 131)	Rate ratio
Absence during the last year before retirement	27 %	16 %	1.7
Days lost through sickness per man in the absence group			
Mean	89 d	39 d	
Median	21 d	21 d	

Table 4. Severity of the low-back pain.

	Semiskilled construction workers (N = 88) (%)	Referents (N = 131) (%)	Rate ratio
No pain	31	46	0.7
Light case (1—7 points)	11	9	1.2
Medium-severe case (8—15 points)	17	20	0.9
Severe case (> 15 points)	41	25	1.6

Table 5. One-year experience of low-back pain among still active workers aged 60—65 a.

Low-back pain	Semiskilled construction workers (N = 34) (%)	Referents (N = 40) (%)	Rate ratio
One-year occurrence	56	53	1.1
Daily	15	13	
Weekly	9	3	
Monthly or more seldom	32	38	

given eight points each; weekly pain, pain with irradiation to the legs, more than 21 d lost from sickness, hospital treatment of symptoms, younger than 30 a of age at first appearance of symptoms, and a physician's diagnosis of sciatica received four points each; and all minor problems, like low-back symptoms monthly, low-back fatigue, and less than 21 d lost from sickness were given one to three points each. From the results of the scale four categories of severity were set up (table 4). The main difference between the two groups occurred in the percentage of severe cases.

Among the construction workers a relationship was found between the length of work experience and the severity of low-back pain in that there were more severe cases among workers with more than 29 a of experience in construction work than among those with less experience (19 of 34 men and 17 of 54 men, respectively, $p < 0.025$).

Among the still active construction workers and referents between the ages of 60 and 65 a, there was virtually no difference in the occurrence of low-back pain (table 5).

A comparison of the answers of still active (table 5) and early retired (table 2) workers shows that, although the occurrence of low-back symptoms was fairly equal among the two reference groups, it was higher among retired semiskilled construction workers than among the still active ones. The difference between the retired and active construction workers between the ages of 60 and 65 a was mainly due to the most frequent symptoms (daily pain). None of the differences were significant however.

Discussion

Some investigations have shown a relationship between low-back pain and the different risk factors found in heavy physical work (6, 9). Other investigations in which this relationship has not been described have indicated that there was no possibility of taking health selection into consideration (10). In the present study however, we have had the opportunity to study low-back pain as a cause of selection

among older people who voluntarily retired at the age of 60–65 a. This health problem was of course only a part of the cause of selection in this age group. It is very important however because people suffering from low-back pain in this age group probably choose to leave work instead of finding another job.

Selection already before entrance into semiskilled construction work (5) and secondary selection at younger ages (7) are also important in a study of the relationship between low-back pain and occupation. The present investigation focuses solely on selection at older ages however.

Relatively more of the retired semiskilled construction workers than the reference group reported low-back pain as one of the reasons for early retirement. Also the occurrence of low-back pain during the last year before early retirement was significantly higher among the construction workers than among the referents.

The frequency of early retirement was however smaller for the semiskilled construction workers than for the reference group; therefore the higher frequency of low-back causes and problems among the construction workers might mainly be due to a larger number of referents taking an early pension because of quite different reasons, the frequency of people choosing early retirement because of low-back problems being similar in the two groups.

The similar frequencies of other stated causes for early retirement and the more severe character of the symptoms occurring among the construction workers indicate, nevertheless, that low-back pain played a greater selective role among the construction workers than among the referents.

The fact that the construction workers who retired early had a higher occurrence of low-back pain than the still active workers 60–65 a of age, a tendency that could not be found among the referents, indicates that low-back problems play an important role in selection at older ages among men doing heavy physical work, like semiskilled construction work. This result also shows that, in many cases, it can be difficult to detect the effects of heavy physical work with respect to diseases of the musculoskeletal system if workers leaving

the job, even at older ages, are not in some way included in the investigation.

The larger role of low-back pain in the selection of the semiskilled construction workers than of the reference group in the present study might be due to at least two factors. One is the great physical demands that make it difficult for older people with low-back pain to stay in semiskilled construction work. This possibility seems evident, but it was neither confirmed nor disproved in the present study.

The other factor is the possibility of greater wear and tear in semiskilled construction work. The results of our study seem to confirm this phenomenon, although they, in no way, provide definite proof that semiskilled construction work leads to accelerated wear and tear on the musculoskeletal system. Other phases of our investigation provided clearer evidence of this phenomenon. A questionnaire investigation directed towards active workers 25 to 65 a of age showed a significant difference in the occurrence of low-back pain of semiskilled construction workers and warehouse workers. In addition an investigation on the assignment of disability pensions because of diagnoses concerning the musculoskeletal system showed a significantly higher occurrence of disability pensioning among semiskilled construction workers than among warehouse workers or a representative section of all semiskilled workers in Copenhagen.

The influence of the work on low-back pain was also shown in the fact that there was a higher occurrence of severe low-back pain among the retired construction workers with more than 29 a of experience than among those with less experience.

The results of the present study support those of investigations showing a correlation between sciatic pain and hard physical work (8, 11).

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