

## LIFE CONDITIONS OF PERSONS WITH AND WITHOUT LOW-BACK PAIN

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**ABSTRACT.** A comparison of life conditions (such as dwelling, health, leisure-time activities, education, occupation, and work characteristics) was made between age- and sex-stratified groups of persons with and without low-back pain (BP). The primary data were collected from a random, geographically standardized 1:1 000 sample of the Swedish population including 2 872 citizens aged 30-59 years. There were no differences with respect to dwelling, height, weight, habits of physical exercise, other non-occupational activities, and frequency of unemployment. In the group of 50-59 year old persons, the males with BP smoked more than those without. In the same age-group of females, and in the younger male groups there were no differences in smoking habits. Physically heavy, monotonous, and repetitive work was more frequent among the subjects with BP. The relative number of highschool-educated was lower among males—in the youngest age group—with BP. The back-healthy persons evaluated their state of health as better and their need of medical care as less than the persons with BP.

*Key words:* education, life conditions, low-back pain, physical exercise, smoking, work characteristics

"Low-back pain" is a symptom occurring in various diseases. In the majority of cases back pain is idiopathic and, consequently, the etiology unknown. The life-time incidence of low-back pain has been reported to be as high as 60-70% (2, 15). Idiopathic low-back pain, therefore, can be considered as a condition existing within the range of normal variation. We have studied whether there are certain characteristics common to individuals without low-back pain and, if so, whether these characteristics may be of prophylactic importance.

In a pilot study on possible specific characteristics of persons quite free from low-back troubles, Hultman (7) demonstrated that work independence and satisfaction scored high among 23 back-healthy men aged 50-59 years. The material was too small to allow conclusions on other life condition variables.

To yield background population data, a comparison of certain life conditions was made between persons with low-back pain and persons without.

### SUBJECTS AND METHODS

The data were collected in a cross-sectional investigation made in 1980 by the Swedish Central Bureau of Statistics (SCBS) during personal interviews, using a prevalidated questionnaire, with a random, geographically standardized 1:1 000 sample of the Swedish population. The present study comprises a total of 2 872 Swedish citizens (inborn, naturalized, or second-generation immigrants) aged 30-59 years. Foreign citizens were excluded in order to minimize culture-dependent factors influencing subjective health evaluation. The age limits were chosen to obtain a representative sample of the working population, thus excluding students and pensioners. Three age groups of each sex were selected: 30-39, 40-49, and 50-59 years.

The group without low-back pain consisted of persons who had negated the following questions:

1. "Do you have, or have had, any long-lasting disease or illness, trouble after an accident, some disability or handicap, or any other weakness related to low-back pain?" This question also included subquestions on etiology, time of onset, frequency and intensity, possible restriction of working capacity, and the degree of the restriction.

2. "I have already asked about diseases. However, I would like you to pay special attention to the question whether you have suffered from either low-back pain, pain in the hip region, or sciatica."

The other group consisted of those individuals who had given a positive answer to these two questions, i.e. persons with a history of low-back pain.

#### *Questions included in the present study*

The questions and variables analysed in the SCBS material are presented in Table I.

#### *Statistical analysis*

The statistical significance of distribution differences was determined with chi-square analysis.

### RESULTS

In the age group 30-39 years, the proportion of persons without low-back pain (72%) was higher than in other groups (40-49 years, 62%; 50-59, 55%). There were no differences between males and females in any group (Table II).

For age- and sex-stratified groups, no statistically

Table I. Questions and answer alternatives chosen for analysis

*Dwelling*

1. In what type of house do you live? (one-family house; smaller or larger apartment house)
2. What is your resident status? (owner; tenant-owner; renter; lodger)

*Subjective evaluation health status*

3. How do you evaluate your state of health? (good; bad; something in-between)
4. How do you judge your state of health compared with that of other persons of your age? (better; about the same; worse)
5. Do you have, or have you had, any long-lasting disease, trouble after an accident, some disability or handicap, or any other weakness *not* related to low-back pain? (yes; no)
6. During the past three months, have you considered yourself in need of medical care, however without having actually consulted a doctor? (no; yes, once; yes, several times)
7. Height, in cm (10 categories)
8. Weight, in kg (10 categories)
9. "Body mass index" (10 categories)
10. Do you smoke? (yes; no, but smoked earlier; no)
11. Relative number of years of smoking (in proportion to age)
12. Do you use snuff? (yes; no)

*Physical exercise and training*

13. How much exercise do you take during your leisure-time? (practically none at all; occasionally; regularly once a week; regularly twice a week; regularly more than twice a week)

*Other non-occupational activities*

14. During the past twelve months, how often did you
    - a. make an excursion by car?
    - b. spend a day in the country?
    - c. go for a long walk?
    - d. go to the cinema?
    - e. go to the theatre?
    - f. go to a restaurant?
    - g. read a book?
    - h. read a magazine?
    - i. attend classes of some kind?
- (not at all; occasionally; once a month; once a week; several times weekly)

*Education*

15. Education level (pre-highschool; highschool; post-highschool)

*Occupational status*

16. Blue-collar worker, with or without vocational training; office employee (lower, medium, or high-level); farmer; employer; student; house-wife; retiree or sick-pensioner
17. Duration of unemployment during the past five years, in weeks?

*Work characteristics*

18.
  - a. Is your work busy or hectic?
  - b. Is your work monotonous?
  - c. Is your work mentally straining?
  - d. Does your work involve a lot of monotonous and/or repetitive movements?
  - e. Do you have to work in bended, twisted, or otherwise uncomfortable postures?
  - f. Do you perspire daily because of physically heavy work?
  - g. Are you exposed to shaking or vibration in your work?
  - h. Do you have the opportunity to learn new things in your work?
  - i. Does your work involve a lot of contact with clients?
  - j. Does your work involve exposure to heavy noise? (always; sometimes; no)
19. Does your work involve heavy lifting (daily; sometimes weekly; occasionally; no)

significant differences were observed between persons with low-back pain and those without concerning the questions on dwelling, height, weight, body mass index, habits of physical exercise, other non-occupational activities, and frequency of unemployment (Table I, Nos. 1, 2, 7-9, 11-13, 14a-i, and 17).

Table III presents the distributions of answer alternatives to those questions which showed statistically significant differences between persons with low-back pain and those without in at least one of the age groups studied. For some questions, only the data concerning the extreme answer alternatives are given

Table II. Age and sex distribution

C = persons without back pain, BP = persons with history of back pain

	Age in years						Total number
	30-39		40-49		50-59		
	C	BP	C	BP	C	BP	
Number of men	414	166	267	149	245	202	1 443
Number of women	400	147	257	166	256	203	1 429
Total number	814	313	524	315	501	405	2 872

(for instance, "yes, always", and "no"), although there were sometimes several intermediate alternatives, however without statistically significant differences.

Females with and without low-back pain showed no differences in smoking habits in any age group. Males with low-back pain smoked more often than males without low-back pain in the age group 50-59 years (43%, as compared with 32%).

The education level did not differ between female groups in any age, but there were small differences among the males. In the age group 30-39 years, the frequency of post-highschool educated men was lower among persons with low-back pain than among those without.

For the same age group of males, there were relatively more office employees among the back-healthy persons. This was not true in the older age groups of men.

Also among women the only statistically significant difference with respect to occupation/education level concerned office employees, who had a higher frequency in the back-healthy age group of 40-49 years.

The frequency of retirees or persons with sick-pension, and housewives did not differ in any of the group comparisons.

The analysis of work characteristics showed no statistically significant differences with respect to mentally straining work, opportunity to learn new things, contact with clients, and exposure to heavy noise. In other variables describing work characteristics there were, however, small differences between persons with and without low-back pain. Table III shows that the persons with low-back pain more frequently had occupations with physically heavy, monotonous, and/or repetitive work.

The back-healthy persons evaluated their state of

health as better and their need of medical care as less than persons with low-back pain.

## DISCUSSION

The reliability (repeatability and consistency) of the methods used in the SCBS investigation has been found good (2, 11, 20). Because of the selection method used, the sample is representative of the Swedish population in the age group studied. The large total number of persons studied made the sizes of the subgroups satisfactory for statistical analysis. The SCBS questionnaire was not primarily intended to map the incidence of low-back pain, which should diminish the number of falsely positive answers.

The proportion of the population with low-back pain was seen to increase with age, being about 50% in the age group 50-59 years. In earlier studies, prevalence and life-time incidence figures of up to 80% have been reported (3, 5, 6, 12, 15). If persons with very occasional back trouble are excluded from these studies, the incidence figures become about the same as the ones presented here. No critical age period for the increase of low-back pain occurrence was observed.

The analyses were made for each sex separately. The two groups showed no difference correlated to the sex variable.

The role of anthropometric characteristics in the pathogenesis of low-back pain has been discussed in earlier studies, and a positive correlation has been postulated (4, 8, 9). The group comparisons in the present study did not confirm a previously observed correlation between the occurrence of low-back pain and the physical parameters of height and weight.

The present material allowed a large-scale analysis of leisure-time physical exercise and other activities. Statistically significant differences were not found for any variable concerning leisure-time activities.

Table III. Occurrence (in per cent) of answers to questions which showed statistically significant differences between persons with (BP) and without (C) low-back pain

Variable	Sex	30-39 years			40-49 years			50-59 years		
		C	BP	Two-tailed probability	C	BP	Two-tailed probability	C	BP	Two-tailed probability
Smoking										
"yes"	M	40	49	-	37	35	-	32	43	*
	F	42	41	-	29	34	-	21	27	-
Education: post-highschool	M	30	19	*	24	13	-	17	11	-
	F	27	22	-	19	15	-	12	10	-
Occupation: office employees	M	51	30	***	48	37	-	42	34	-
	F	45	37	-	48	35	*	33	28	-
Work characteristics										
Busy or hectic										
"yes, always"	M	17	23	-	21	18	-	24	25	-
	F	13	18	-	15	23	-	13	23	*
Monotonous										
"yes, always"	M	4	11	**	7	6	-	5	6	-
"no"		86	77	**			-			-
"yes, always"	F	7	17	**	5	7	-	5	9	-
"no"		84	71	**			-			-
A lot of monotonous or repetitive movements										
"yes, always"	M	10	24	***	15	21	-	14	21	*
"no"		72	54	***			-	77	60	*
"yes, always"	F	17	36	***	26	30	-	18	33	**
"no"		66	50	***			-	65	44	**
Work in bent, twisted or uncomfortable positions										
"yes, always"	M	9	18	**	8	17	**	10	18	*
"no"		66	45	**	72	54	**	68	50	*
"yes, always"	F	7	25	***	8	18	**	9	20	**
"no"		72	55	**	72	53	**	69	53	**
Perspiration because of physically heavy work										
"yes, always"	M	7	12	-	7	8	-	3	15	***
"no"				-			-	81	62	***
"yes, always"	F	4	11	*	3	3	-	3	7	-
Shaking or vibration										
"yes, always"	M	4	5	-	2	13	***	3	5	-
"no"				-	87	72	**			-
"yes, always"	F	0	1	-	1	0	-	1	0	-
Heavy lifting										
"daily"	M	17	31	***	15	22	-	11	25	***
	F	15	23	**	12	20	-	16	25	-
Health state evaluated as "good"	M	92	80	**	91	67	***	77	53	***
	F	92	76	***	89	59	***	73	54	***
Health state evaluated as "better" in comparison with others	M	22	11	**	26	16	*	27	19	*
	F	14	8	-	21	12	*	27	19	*
Occurrence of chronic illness, trouble, disability, weakness										
"no"	M	81	54	***	76	49	***	62	36	***
	F	78	63	***	74	41	***	54	34	***
Need of medical care without having visited a doctor										
"no"	M	97	90	**	95	91	-	93	83	**
	F	95	91	-	95	82	***	94	85	**

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

Higher frequency of smoking has been reported among low-back pain patients than in a normal population (15). In the present study there was also a slightly higher frequency of smokers among the persons with low-back pain, though statistically significant only in the male group of 50–59 years.

The occupational parameters showed differences between persons with low-back pain and those without. The latter had a higher level of education (in the youngest age group), and a lower frequency of physically heavy, monotonous and/or repetitive work. These factors may co-vary.

The correlation of personality factors to the occurrence of low-back pain has been studied earlier (1, 13–14, 16–18), however without conclusive results concerning their primary or secondary importance. According to Liljeqvist and Wallertz-Nilsson (10), a person's attitude to health is important for sick-leave frequency. In the present study, persons without low-back pain considered their health status to be good, and to be better than that of other persons in the same age group. In all age groups the back-healthy individuals also experienced less chronic health trouble other than low-back pain, and less need of medical treatment than the persons with low-back pain. Although purely descriptive results from retrospective studies on prevalence and incidence cannot reveal causal connections, the results suggest that personality factors such as self-observance and the threshold for being aware of symptoms (increased bodily awareness) are primary and important for the occurrence of low-back troubles. A strong connection of this kind was also found by Waddell et al. (17) with a different study approach. To identify risk indicators more in detail, and to study their primary and secondary character, prospective studies must be carried out.

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