

RETURN TO WORK AFTER REHABILITATION

The Significance of the Patient's Own Prediction

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ABSTRACT. A prospective study of patients with chronic low-back pain was made to determine the significance of the patient's own prediction of the outcome of a vocational rehabilitation program. Fifty-two patients were screened, and their work situation determined one and 4 years after the rehabilitation program was started. The patients predicted the outcome correctly in 69 %, with a sensitivity of 68 % and a specificity of 71 %. A statistically significant correlation was found between the patient's prediction and the recommendations given by the rehabilitation unit.

Key words: low-back pain, attitude, prediction, sick-listing, temporary disability pension, rehabilitation, return to work

There are 15 departments of rehabilitation medicine in Sweden. These units care for several groups of patients. The largest group consists of patients with functional disability caused by disease or injury, for example after stroke, myocardial infarction, or traffic accidents. Another group consists of patients with diffuse symptoms of uncertain etiology, not least with chronic pain, referred to the units for psychological and social evaluation and vocational rehabilitation. A frequent diagnosis in this group is low-back pain (LBP).

About one-third of all patients who took part in 1973 in the vocational rehabilitation program at the Department of Rehabilitation Medicine in Göteborg, returned to work (3). It is obviously important to find a prognostic instrument by which vocational rehabilitation can be guided, so that optimal allocation of resources is possible.

The purposes of this study of a group of patients with chronic low-back pain were: (1) to analyse the patient's own prediction as to whether he/she would, or would not, return to work after vocational rehabilitation; (2) to analyse to what degree recommendations given by the rehabilitation unit concerning work ability were in agreement with the patient's own prediction.

The study is part of a research program from which other data have been published elsewhere (1, 2, 7, 8).

PATIENTS AND METHODS

The study took place in Göteborg, Sweden, an industrial city of about 425 000 inhabitants. A consecutive group of 52 outpatients with non-specific LBP was selected from patients referred to the Departments of Orthopaedic Surgery, Göteborg, Sweden, based on the following criteria:

- 1) sick-listing because of chronic LBP for at least 3 months,
- 2) age less than 50 years,
- 3) absence of neurological disturbances,
- 4) good linguistic comprehension of Swedish.

The group consisted of 35 men and 17 women. The mean age of the men was 41 years (range 27-49), and of the women, 38 years (range 29-49). Almost all patients were, or had been, blue-collar workers. Twelve men and 6 women were unemployed at the start of the study. The mean duration of sick-listing because of low-back pain was 8.5 months (range 3-24).

A general outline of the design of the study is given in Fig. 1. All patients were first interviewed according to a specific questionnaire, and an orthopaedic examination was performed of the back and the lower extremities. Patients admitted to the study were then referred to the rehabilitation unit. An extensive physical and psychological investigation was performed before admission, again using standardized methods. The psychological tests required good linguistic comprehension of Swedish.

The treatment program in the rehabilitation unit was based on an investigation by the members of the rehabilitation team and was individually adjusted. Thirty-eight of the 52 patients were screened by an occupational therapist in simulated industrial and/or office work. The aim of the screening was to assess various aspects concerning the patient's work capacity and make a recommendation at the end of the assessment period on the different alternatives, work, further education or disability pension. Fourteen patients were not evaluated in this manner, 6 because they declined, the other 8 because the rehabilitation team did not recommend occupational therapy. Fifty of the patients were evaluated by a physiotherapist in the reha-

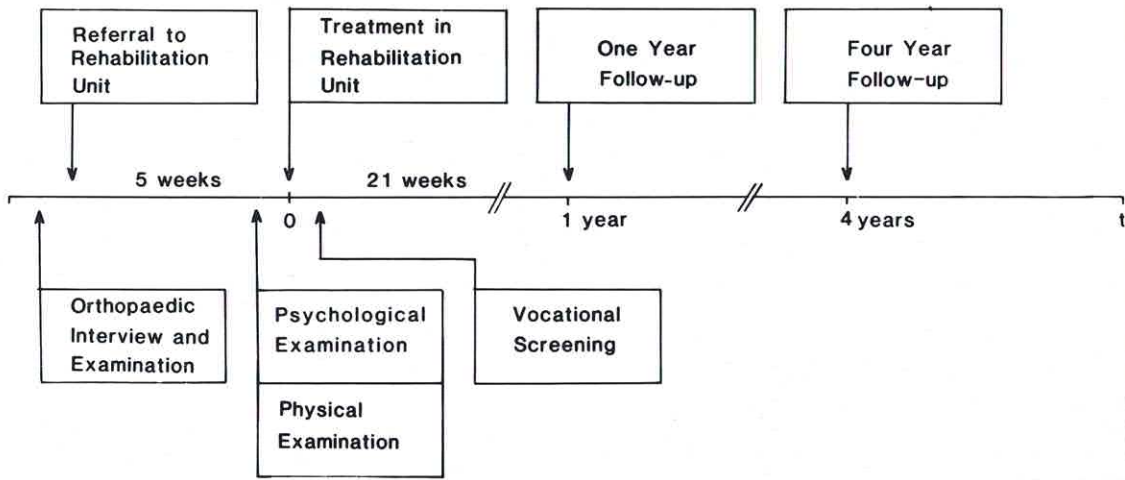


Fig. 1. Design of the project.

bilitation unit. Thirty-eight of these patients received physical therapy, on average 14.5 times. The average period of rehabilitation was 20.7 weeks.

A follow-up study was performed 1 year after the initial investigation when the patients were evaluated regarding—among other things—their work situation. Individuals who had then returned to some kind of work or had begun vocational education, were all considered to belong to the working-group. The remainders were classified as the sick-listed group. The same definition was used by Esbjörnsson (1).

About 4 years after the start of the study the work situation was again assessed, this time through insurance statistics, obtained from the National Health Insurance Register.

The work situation was evaluated in two ways. One, in which the patients were divided into those who during the fourth year had been sicklisted either for 25 days or less—or for more than 25 days (in this group were also included those who had received a disability pension). Twenty-five days were chosen because the mean sick-listing period for people living in Göteborg was 25 days in 1982, and 24.4 days in 1983. The second evaluation was based on whether the patients during the fourth year had been sicklisted for 6 months or less—or more than 6 months (including those with a disability pension). These studies will be referred to as the 25-day study (I) and the 6-month study (II).

Three variables were chosen from one of the psychological questionnaires to be studied regarding the patients attitudes concerning their possibility to return to work. These were:

"I am afraid to start working again, because I don't think I will be able to manage".

"My closest relatives feel that I am too ill even to think about returning to work".

"My closest relatives worry that my condition will deteriorate if I start working".

These questions were answered using a 7-grade Likert

scale. In addition, three factors—the patient's age, sex, and the duration of sick-listing—were also statistically evaluated regarding the significance for return to work or not.

A correlation analysis was also made between the recommendation by the team members at the end of the rehabilitation period, and the patient's own prediction.

In the statistical analysis, Fisher's permutation test was used to test differences between groups, and Pitman's permutation test to perform correlation analyses. A stepwise logistic regression model was used to analyse the relative ability of each of the tested variables to predict return to work (6).

RESULTS

In the 1-year follow-up study there were 31 subjects in the working-group. Twelve of these, all men, were in full-time employment, while the remainder were either in part-time employment or in an educational program.

In the 4-year follow-up study there were 26 subjects who during the year of observation had been off work less than 6 months, eleven of these less than 25 days. Nineteen subjects had been sick-listed during the observation year for more than 6 months, and 7 had already received disability pension. Movements of patients between groups from 1- to 4-year follow-up are illustrated in Fig. 2.

Only one of the tested variables was found to differentiate between working-group and sick-listed group in the 1-year follow-up study. This was the question of the patient's own attitude as to whether he thought he would return to work or not ($p < 0.001$). The same item was also statistically sig-

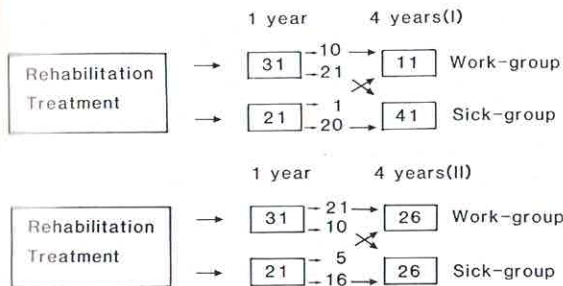


Fig. 2. Outcome of the patients in work-group (W) and sick-group in the 1-year follow-up study (W = all patients in work/education) and the 4-year follow-up study, calculated on two different criteria of work-group. I: W = patients sick-listed for 25 days or less during the observation year. II: W = patients sick-listed for 6 months or less during the observation year.

nificant in discriminating between those sick-listed for less and more than 6 months during the fourth year ($p < 0.001$). A statistically significant difference was also found between the working-group and

sick-listed group in the 6-month study (II), based on the period of sick-listing before rehabilitation ($p < 0.001$). A long period of earlier sick-listing correlated with greater risk for absence from work for 6 months, or more, during the fourth year. When the 4-year study material was divided by sick-listing for less, or more, than 25 days, we found that the two questions in which the patient was asked about the opinion of his closest relatives regarding his ability to return to work differentiated between the groups (Table I).

In the logistic regression analysis the patient's own attitude was the only variable of prognostic value concerning return to work after 1 year. The outcome was correctly predicted in 69.2% of the patients, with a sensitivity of 67.7% and a specificity of 71.4%. The predictive power was 77.7% for those who returned to work and 60% for those who, at the 1-year follow-up study, did not return to work.

In the 4-year study I (division by 25 days of sick-

Table I. Differences between working-group (W) and sick-listed group (S)

Item	1-year follow-up		4-years study I		4-years study II	
	W n=31	S n=21	W n=11	S n=41	W n=26	S n=26
1. Age (years)						
Mean value	40.0	38.7	39.1	39.6	39.0	39.9
SD	5.7	6.1	5.1	6.1	6.3	5.5
2. Sex						
Male	24	11	9	26	22	13*
Female	7	10	2	15	4	13
3. Sick-listing period						
Mean value	7.3	10.2	6.1	9.1	6.2	10.8***
SD	4.1	7.0	2.9	6.0	2.8	6.7
4. I am afraid to start working again, because I don't think I will be able to manage						
Mean value	4.9	3.2***	5.3	3.9	5.1	3.4***
SD	2.0	1.7	2.2	1.9	1.9	1.8
5. My closest relatives feel that I am too ill even to think about returning to work						
Mean value	4.2	3.1	5.2	3.4*	4.5	3.0*
SD	2.3	2.2	2.6	2.1	2.3	2.2
6. My closest relatives worry that my condition will deteriorate if I start working						
Mean value	3.7	2.7	4.9	2.8**	4.0	2.5*
SD	2.1	1.8	2.4	1.7	2.2	1.6

1-year study I: The working-group defined as patients who during the year of observation had been off work 25 days or less.

4-year study II: The working-group defined as patients who during the year of observation had been off work 6 months or less.

Level of significance: *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

Table II. Recommendations made by the rehabilitation team after treatment compared with actual work situation after one year

Recommendation	1-year follow-up		Totals
	Return to work	No return to work	
Work	23	7	30
Retirement	0	8	8
Totals	23	15	38

listing) the item about the patient's opinion of the attitudes of his or her relatives was found to have the highest predictive power. Additional variables did not increase the predictive power of the instrument.

The item allowed correct classification in 80.8% with a sensitivity of 36.4% and a specificity of 92.7%. The predictive value for the working-group was 57% and for the sick-listed group 84.4%.

In the 4-year study, II (division by 6 months of sick-listing), the patient's own prediction was the most important factor. When combined with the sickness absence period before the initial investigation, 69.2% of the patients classified themselves correctly according to outcome. The predictive power was 69.2% for the working group as well as for the sick-listed group. The sensitivity and specificity were both 69.2%.

The recommendations of the rehabilitation team members, with respect to return to work or not, correlated positively in a significant manner to the patient's attitude ($p < 0.001$). The recommendation to return to work was significantly more often given to men (25 of 27) than to women (5 of 11), ($p < 0.01$). Seven subjects, to whom work was recommended, were still sick-listed in the 1-year follow-up study (Table II).

DISCUSSION

It is difficult to compare the present study with other studies because of differences in definitions, patient selection and methods. The definition of return to work at the 1-year follow-up was chosen according to the practice presently used at the rehabilitation unit in Göteborg. It reflects the principle philosophy of the unit that patients, if possible, should return to some kind of work.

We initially chose 1 year as the time to determine whether the patient had returned to work or not using the accepted criteria of the rehabilitation unit. This is the same method previously used, for example, by Åberg (10). In contrast, White (9) used a different definition—work during at least 80% of the regular working period during the first 3-month period after the rehabilitation program. In our 4 year study we used an approach more similar to White's. This was done to more accurately reflect the patient's work situation in the long-term perspective.

Analysing the importance of different factors by the logistic regression analysis means that the variable with the highest predictive power will be first identified. When this has been done it is investigated whether additional variables increase the predictive power, or not. Of all tested variables, the patient's own evaluation of his prognosis for returning to work had the highest predictive value at the follow-up after 1 year. The addition of further variables did not improve the predictive power, which was 69%. Since the patients have been studied from other aspects, the figures can be compared with the psychological variables studied by Esbjörnsson (1). When using factors well established in the patient's personality, such as

- 1) pessimistic view of life (inclined to give up, attitude: cannot manage to think of work any more. "I am ill"—adopts the sick-role),
- 2) task rigidity (rigidity in accomplishing task of work-a-day life),
- 3) sociability (a general tendency to be sociable, to do things with friends rather than alone, i.e. to be dependent),
- 4) negative self-image (feelings of insufficiency, lack of self-confidence)

87% of the patients could be predicted as to the correct outcome at the 1-year follow-up. Patients with this personality structure should thus be considered subjects for a more thorough problem-oriented holistic analysis and counselling.

The patient's own attitude towards a return to work correlated with task rigidity ($r = 0.32$), in the sense that patients with a more rigid personality had a more negative attitude. A rigid person has a strong resistance towards change and a strongly instrumental attitude towards his environment (5). One explanation for the fact that many of the patients in the sick-listed group initially thought they

were going to be able to return to work could be that the patients in that group actually had a more rigid personality than those of the working-group (I). According to Parsons (4), a person who has accepted a certain sick-role must show a positive acceptance of the treatment he is offered in order to make his environment accept his sick-role. This may influence the answer to the item about returning to work.

The period of sick-listing before the start of the rehabilitation program was a useful predictive factor only in the 4-year study, part II. A long period of sick leave does not appear to influence the result of rehabilitation in the short-term perspective, but to increase the risk of prolonged sick-listing later on.

It is obvious from the study that the patient's own attitude towards work is fundamental to the question of whether he or she will return to work or not. In a rehabilitation unit the team is often concerned about the problems involved in the patient's motivation or lack of motivation to work. One can usually find one group, where the patient is eager to go back to work, even in spite of a sometimes severe disability. The ability to earn money is sometimes felt as a challenge. Another group of patients, who have totally given up, with regard to work, have firmly decided to stay at home. They have adopted the sick-role. Many of these have severe handicaps, but some rather moderate. Finally, there remain patients between these two antipodes, where the decision with regard to work is unsettled. The motivation forces are not static. The patients in this study, with persistent LBP, have been very carefully evaluated—physical, psychological and social factors have been thoroughly scrutinized. During this procedure it is likely that those who had had an unsettled motivation with regard to work had had the time and also stimulation to make up their minds—compared with what is found in our patients in a rehabilitation unit during a short visit to the out-patient department. It is probably possible to influence some patients in their decision and increase their self-confidence enough to go back to work. It appears from this study, however, that the rehabilitation process has a marginal influence on the outcome in patients who had clearly expressed negative attitude. We therefore suggest that the patient's attitude towards work should be carefully evaluated before a rehabilitation program is started.

CONCLUSIONS

The attitude of the patient concerning his or her possibility to return to work or not is of prognostic value for the rehabilitation outcome.

The patient's attitude should therefore be carefully evaluated before a rehabilitation program is started.

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