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Does Early Intervention With a Light Mobilization Program Reduce Long-Term Sick Leave for Low Back Pain?

Eli Molde Hagen, MD,* Hege R. Eriksen, PhD,† and Holger Ursin, MD, PhD†

Study Design. A controlled randomized clinical trial was performed.

Objective. To investigate the effect of a light mobilization program on the duration of sick leave for patients with subacute low back pain.

Summary of Background Data. Early intervention with information, diagnostics, and light mobilization may be a cost-effective method for returning patients quickly to normal activity. In this experiment, patients were referred to a low back pain clinic and given this simple and systematic program as an outpatient treatment.

Methods. In this study, 457 patients sick-listed 8 to 12 weeks for low back pain, as recorded by the National Insurance Offices, were randomized into two groups: an intervention group (n = 237) and a control group (n = 220). The intervention group was examined at a spine clinic and given information and advice to stay active. The control group was not examined at the clinic, but was treated with conventional primary health care.

Results. At 12-month follow-up assessment, 68.4% in the intervention group had returned to full-duty work, as compared with 56.4% in the control group.

Conclusions. Early intervention with examination, information, and recommendations to stay active showed significant effects in reducing sick leave for patients with low back pain. [Key words: light mobilization, low back pain, randomized controlled study, return to work, sickness compensation] **Spine 2000;25:1973–1976**

For most patients, low back pain (LBP) is a benign and self-limiting condition.[4,18] However, for many years there has been a marked increase in low back disability.[1] Although occupational low back pain may be decreasing in the United States,[12] the condition still is a major source of disability.[4]

There seems to be consensus that LBP is multicausal, particularly chronic LBP.[6,10,19] Psychosocial factors, including insurance benefits, have been shown to be more important than biomechanical workload in the prognosis for both acute and chronic LBP.[13] Treatment programs and management strategies have changed to a more multidisciplinary approach, which may be the most cost-effective treatment for chronic LBP.[5] However, complex and multidisciplinary treatment programs, lasting for weeks, may not be the right treatment for many patients.

In a recent Norwegian randomized controlled clinical study,[7] a 4-week outpatient multimodal cognitive behavioral treatment program had no significant effect on sick leave at 12-month follow-up assessment, but significant improvement was observed in subjective health parameters. The patients with LBP had been sick-listed between 8 weeks and 6 months, and the treatment had included physical treatment, cognitive behavioral modification, education, and workplace-based intervention.

In contrast, a much shorter, restricted, and simple outpatient treatment approach with similar patients showed significant effect on sick leave, lasting several years, in a large controlled study.[8,9] The patients in the treatment group were encouraged to mobilize their back by light activity. Great emphasis was placed on the effort to remove fear about LBP and to avoid focusing on sickness behavior.

In view of the high social costs resulting from long sick leave for LBP and the absence of proof that expensive programs are more effective[15] than simple intervention using a light mobilization program,[8,9] the current study was designed to determine the effect of a similar approach for patients with subacute LBP in an outpatient spine clinic model.

Methods

In collaboration with 22 national insurance offices (NIO) in a Norwegian county (Hedmark), sickness certificates from patients sick-listed more than 8 weeks for LBP were evaluated to determine inclusion of patients in the study. In Norway the NIOs receive a special continuation certificate (sickness certificate II) issued by the general practitioner (GP) when a patient has been sick-listed 8 weeks or longer. Patients with a sickness certificate II for LBP were evaluated for inclusion.

The inclusion criteria required an age of 18 to 60 years and a sick leave of 8 to 12 weeks because of an International Classification of Primary Care diagnosis: L02 (back pain), L03 (low back pain), L14 (leg and thigh pain), L84 (back pain without sciatica), and L86 (sciatica). Exclusion criteria disallowed pregnancy, recent low back trauma, cauda equina symptoms, cancer, osteoporosis, rheumatic low back disease, ongoing low back treatment by another specialist, and patients already included in the study.

Patients accepted into the study were randomized to intervention and control groups according to a list prepared in advance by the Department of Biologic and Medical Psychology, University of Bergen. The randomization list was generated

From the *Spine Clinic, Central Hospital in Hedmark, Ottestad, Norway, and the †Department of Biological and Medical Psychology, University of Bergen, Norway.
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using a table of random numbers, and the randomization results were kept in sealed envelopes, one for each patient. To ensure equal treatment numbers, blocks of 20 patients were used to produce the list.[14] The clinician was not aware of the block size, and therefore could not predict the group assignments. The secretaries performing this work were independent persons responsible for patient registration only, and thus were not involved in the treatment of the patients. All the envelopes were numbered consecutively to avoid rearrangement of the order. The patients in the control group were invited to their local insurance office to answer the same questionnaires completed by patients in the intervention group. The intervention group was invited to the spine clinic.

In all, 510 patients were invited to participate in the study: 254 randomized to the intervention group and 256 to the control group. In the control group, 220 patients (86%) agreed to participate in the study, and in the intervention group 237 patients (93%) volunteered. All the patients were informed about the study according to the Declaration of Helsinki, and informed consent was obtained.

The intervention used in this study was a modification of Indahl's light mobilization program.[9] At the spine clinic, the patients signed the consent form, answered standard questionnaires, and then were interviewed and examined by a treatment team consisting of a physician (specialist in physical medicine and rehabilitation) and a physiotherapist. Special attention was given to the descriptions of daily activities, restrictions caused by LBP, and psychosocial conditions at home and at work. Any somatic findings during the examination were explained to the patient, and information was given about their importance.

Radiographs were shown and explained. The patients were informed that looking for the source of pain on radiographs has limited importance, and that degenerative changes in the spine most often are a normal aging process and not necessarily painful. Unless symptoms and clinical findings indicated some serious spinal disease, the reports of problems were dedramatized.

The patients were informed about the good prognosis and the importance of remaining active to avoid development of muscle dysfunction. They were encouraged to take daily walks. All the patients were advised and instructed individually by the physiotherapist on how to train and stretch at home. They received advice on how to manage the back pain and how to resume normal activities.

The visit at the spine clinic lasted 2½ to 3 hours: ½ hour to sign the consent form and answer questionnaires, 1 hour with the physician, and 1 to 1½ hour with the physiotherapist. According to the protocol, all the patients visited the spine clinic once. However, the patients were encouraged to contact the spine clinic whenever they wished. Reports from the examination were sent to the patients' primary care physician and to the national insurance office, along with diagnoses and recommendations concerning the need for further diagnostic tests, treatment, job, and further sick leave.

Patients in the control group were not examined at the spine clinic, but treated with primary health care. They had at least one visit to a general practitioner because is required to obtain sick leave. In this study the kind of treatments or the number of visits the patients made for primary health care was not registered.

During the first year after inclusion, six patients in the control group were given appointments for examination at the spine clinic because of pressure from their primary care physician. These patients remained in the control group.

Sick leave data (total length of leave, frequency of sick leave periods) were collected from all individuals in both groups 6 and 12 months after the initial sick leave. The mandatory social insurance system in Norway offers full (100%) sickness compensation for a maximum of 1 year. After that, patients still requiring support are offered a vocational rehabilitation program, or they may apply for a disability pension.

The patients in the intervention and control groups answered the same standard questionnaires 3, 6, and 12 months after sick leave. Because this was part of a larger multicenter investigation, the results from the questionnaires will not be divulged in this article.

Table 1. Baseline Characteristics of All Participants (n = 457)

Variable	Intervention (n = 237) No. of Patients (%)	Control (n = 220) No. of Patients (%)
Civil status		
Single	27 (11.4)	27 (12.3)
Married	132 (55.7)	123 (55.9)
Cohabitant	57 (24.1)	40 (17.9)
Widow	2 (0.8)	4 (1.8)
Divorced/separated	19 (8)	26 (11.8)
Education		
No. of years, mean (SD)	10.8 (2.41)	10.6 (2.53)
Public school (9 yr)	74 (31.5)	89 (39.9)
Public school (12 yr)	109 (46.4)	96 (43)
Higher education (above 12 yr)	51 (21.7)	38 (17)
Job security*	215 (90.7)	201 (91.4)
Sick leave previously because of low back pain	171 (72.2)	147 (66.8)

* Do you have a job to return to after sick leave?

Statistics. Relative risk (RR) and 95% confidence interval (95% CI) were used to determine the effect of intervention and control on return to work. The main outcome was 100% return to work (full-duty work). Relative risk was calculated at three different times; 3 months, 6 months, and 12 months after the sickness compensation date used for inclusion in the study. Simple analysis of variance (ANOVA) with SPSS 7.5.1 for Windows was used to test the difference between the intervention group and the control group in the number of days of sickness compensation (full-time and part-time). In the ANOVA analysis, the number of days on disability pension and rehabilitation programs were calculated as sickness compensation. Descriptive statistics are reported with standard deviation when RR or other statistical comparisons are involved, and 95% CI are reported to facilitate comparisons.

Table 2. Diagnoses Given on Sickness Certificate II at the Time of Inclusion

	Intervention (n = 237) No. of Patients (%)	Control (n = 220) No. of Patients (%)
L02	18 (7.6)	24 (11)
L03	8 (3.4)	10 (4.5)
L84	110 (46.4)	99 (45)
L86	101 (42.6)	87 (39.5)

L02 = back pain, L03 = low back pain, L84 = back pain without sciatica, L86 = sciatica.

Table 3. Number of Men and Women Returning to Full-Duty Work at 6-Month and 12-Month Follow-Up Assessments

Variable	6 Mos (%)	Relative Risk (95% CI)	12 Mos (%)	Relative Risk (95% CI)
Men				
Intervention (n = 123)	78 (63.4)	1.40 (1.10–1.79)	86 (69.9)	1.13 (0.94–1.36)
Control (n = 115)	52 (45.2)		71 (61.7)	
Women				
Intervention (n = 114)	67 (58.7)	1.31 (1.01–1.71)	76 (66.6)	1.32 (1.05–1.66)
Control (n = 105)	47 (44.7)		53 (50.4)	

CI = confidence interval.

■ Results

The study included 457 patients: 238 men (52%) and 219 women (48%). The mean age of the participants at entry was 40.9 ± 10 years. The intervention group consisted of 237 patients, 123 men and 114 women, with mean age of 40.8 ± 10.1 years. The control group consisted of 220 patients, 115 men and 105 women, with mean age of 41.1 ± 9.8 years. There were no significant differences between the two groups on other baseline characteristics such as civil status, education, job security, previous lifetime sick leave for LBP (Table 1), or diagnoses given from the primary care physician on sickness certificate II (Table 2).

Of the 237 patients in the intervention group, 58 patients (24.5%) contacted the spine clinic for one or more follow-up evaluations by the physiotherapist, and 13 patients (5.5%) were referred to other specialists (10 patients to an orthopedic surgeon, 2 patients to a rheumatologist, and 1 patient to a neurologist).

At the 3-month follow-up assessment, 51.9% of the patients in the intervention group had returned to full-duty work, as compared with 35.9% in the control group (RR = 1.45; 95% CI = 1.17 to 1.79). At the 6-month follow-up assessment, 61.2% of the patients in the intervention group had returned to full-duty work, as compared with 45% in the control group (RR = 1.36; 95% CI = 1.14 to 1.62). At the 12-month follow-up assessment, 68.4% of the patients in the intervention group had returned to full-duty work, as compared with 56.4% in the control group (RR = 1.21; 95% CI = 1.05 to 1.40). There were no apparent gender differences (Table 3), and no significant differences between the groups in the number of patients attending a rehabilitation program (see Table 4). At 12 months, 14 patients in each group were on disability pension.

The patients in the intervention group had fewer days of sickness compensation (mean = 95.5; 95% CI = 82.2 to 108.8) than the patients in the control group (mean = 133.7; 95% CI = 118.9 to 148.5; $F[1,455] = 14.31$; $P = 0.0002$). The men in the intervention group had significantly fewer days of sickness compensation (mean = 91.1; 95% CI = 73.1 to 109) than the men in the control group (mean = 138; 95% CI = 117.3 to 158.7; $F[1,236] = 11.60$; $P = 0.001$). The women in the intervention group had slightly, but not significantly, fewer days of sickness compensation (mean = 100.3; 95% CI = 80.2 to 120.4) than the women in the control group (mean = 128.9; 95% CI = 107.4 to 150.5; $F[1,217] = 3.73$; $P = 0.055$). Some of the patients in both groups had been granted part-time sickness compensation as follows: intervention group (mean = 36.1 days; 95% CI = 28 to 44.2), control group (mean = 32.7 days; 95% CI = 24.4 to 41). On this parameter there was no significant difference between the groups ($F[1,455] = 0.331$; $P = 0.565$).

■ Discussion

As compared with results from treatment offered by conventional primary health care, patients with subacute LBP return to work sooner if they are referred to a spine clinic offering consultation with examination, information, reassurance, and encouragement to engage in physical activity as normally as possible. It cannot be determined from the data whether all the components of the intervention are necessary, but we believe that the whole integrated "package" is important. The advice is given by experts; the examination is thorough; and the team at the clinic is enthusiastic and optimistic about treatment results. The comfort (placebo) and fear-reducing effects of being taken seriously by an enthusiastic treatment team should not be underestimated, and seem to facilitate resumption of normal activities. Also, it is possible that some of the slower progress in the control group may be caused by the disappointment of not being included in the treatment group.

It was not possible to keep a systematic record of the treatment given to the control group by their GPs. However, it seems that the general GP approach to treatment of LBP is still cautious. General practitioners still tend to recommend bed rest, caution, and reduced activity.[17] This caution is probably related to outmoded assumptions of purely physical and injury-related factors for

Table 4. Number of Patients on Rehabilitation Program at 6-Month and 12-Month Follow-Up Assessments

Variable	6 Mos (%)	12 Mos (%)
Men		
Intervention (n = 123)	3 (0.2)	16 (13)
Control (n = 115)	1 (0.1)	23 (20)
Women		
Intervention (n = 114)	5 (0.4)	21 (18)
Control (n = 105)	4 (0.4)	29 (28)

LBP.[3] The current findings support the alternative position that patients seem to benefit from maintaining activity as normally as possible, as compared with inactivity and bed rest.[2,4,11]

According to a study by Turner et al,[16] patients making primary care visits for back pain seem to have two important goals for their visit: to receive information on how to manage the back pain, and to receive advice on how to resume normal activities. In that study, most patients reported that they did not receive this information.[16] The patients were not recommended to return to normal activity, and not instructed to engage in regular walking for exercise.[16] Patients who had discussed with their GPs how they could return to normal activities as soon as possible were more likely then the others to improve.[16]

We suggest that information and fear reduction also should be offered systematically and consistently by the GP. The attempt to reduce the fear of "doing something wrong" to the back may be even more important. This may prevent unnecessary inactivity and long sick leave. Currently, GP practice may reinforce what we believe to be an erroneous attitude concerning causality and treatment: adhering to the "back pain myths."[4] Therefore, changing this practice requires a change in the attitudes and beliefs of the general population concerning causality and treatment of LBP. This may be difficult to achieve.

■ Key Points

- A randomized controlled clinical study was performed.
- Early intervention with examination, information, and recommendations to remain active was used.
- This approach had a significant effect in reducing sick leave for patients with low back pain.

References

1. Allan DB, Waddell G. An historical perspective on low back pain and disability. Acta Orthop Scand Suppl 1989;234:1–23.
2. Atlas SJ, Volinn E. Classics from the spine literature revisited: A randomized trial of 2 *versus* 7 days of recommended bed rest for acute low back pain. Spine 1997;20:2331–7.
3. Bigos SJ, Battie MC, Spengler DM, et al. A longitudinal, prospective study of industrial back injury reporting. Clin Orthop 1992;279:21–34.
4. Deyo RA. Low back pain. Sci Am 1998;2:29–33.
5. Flor H, Fydrich T, Turk DC. Efficacy of multidisciplinary pain treatment centers: A meta-analytic review. Pain 1992;49:221–30.
6. Hadler NM. Back pain in the work place: What you lift or how you lift matters far less than whether you lift or when. Spine 1997;9:935–40.
7. Haldorsen EMH, Kronholm K, Skouen JS, Ursin H. Predictors for outcome of a multimodal cognitive behavioral treatment program for low back pain patients: A 12-months follow-up study. Eur J Pain 1998;4:293–307.
8. Indahl A, Haldorsen EMH, Holm S, Reikeraas O, Ursin H. Five-year follow-up study of a controlled clinical trial using light mobilization and an informative approach to low back pain. Spine 1998;23:2625–30.
9. Indahl A, Velund L, Reikeraas O. Good prognosis for low back pain when left untampered. Spine 1995;4:473–7.
10. Klenermann L, Slade PD, Stanley IM, et al. The prediction of chronicity in patients with an acute attack of low back pain in a general practice setting. Spine 1995;20:478–84.
11. Malmivaara A, Hakkinen U, Aro T, et al. The treatment of acute low back pain: Bed rest, exercises, or ordinary activity? N Eng J Med 1995;332:352–5.
12. Murphy PL, Volinn E. Is occupational low back pain on the rise? Spine 1999;24:691–7.
13. Nachemson A. Newest knowledge of low back pain: A critical look. Clin Orthop 1992;279:8–20.
14. Pocock SJ. Clinical Trials: A Practical Approach. New York: Wiley, 1983: 76–9.
15. Teasell RW, Harth M. Functional restoration: Returning patients with chronic low back pain to work—revolution or fad? Spine 1996;7:844–7.
16. Turner JA, LeResche L, Von Korff M, Ehrlich K. Back pain in primary care: Patients' characteristics, content of initial visit and short-term outcomes. Spine 1998;4:463–9.
17. Waddell G. The high cost of bed rest. Back Lett 1997;3:32.
18. Waddell G. A new clinical model for the treatment of low back pain. Spine 1987;12:632–44.
19. Waddell G. Keynote address for primary care forum: Low back pain: A twentieth century health care enigma. Spine 1996;24:2820–5.

Address reprint requests to

Eli Molde Hagen, MD
Spine Clinic
Central Hospital in Hedmark
2312 Ottestad
Norway
E-mail: emhagen@online.no