

ETHNIC BACKGROUND DOES NOT INFLUENCE OUTCOME FOR RETURN-TO-WORK IN WORK-RELATED INTERDISCIPLINARY REHABILITATION FOR LONG-TERM PAIN: 1- AND 3-YEAR FOLLOW-UP

Jan-Rickard Norrefalk, PhD, Jan Ekholm, MD and Kristian Borg, MD

From the Department of Public Health Sciences, Division of Rehabilitation, Medicine, Karolinska Hospital, Stockholm, Sweden

Background: It is often suggested that immigrants with long-term pain do not benefit from rehabilitation to the same extent as native Swedish patients. In this study, an 8-week rehabilitation programme was evaluated according to its adaptation for immigrants.

Objectives: To establish whether there is a difference between immigrants and native Swedes concerning: (i) return-to-work, the patients' own estimation and their actual ability; (ii) higher level of activity; (iii) reduction in pain and analgesic use.

Patients: A total of 67 patients with persistent non-malignant pain completed the rehabilitation programme. Thirty (45%) of the patients were immigrants.

Methods: A 1- and a 3-year follow-up were made to compare the outcome between the 2 groups.

Results: There was no significant difference in the return-to-work rate between immigrants and native Swedes. However, the patients' prediction of their ability to return to work was higher among the non-immigrants. The level of activity was lower and pain intensity and use of analgesics were higher among the immigrants than the non-immigrants.

Conclusion: Immigrants can benefit from a rehabilitation programme to the same extent as native Swedes concerning return-to-work rate, but seem to have limitations in assimilating the other objectives of the programme.

Key words: long-term non-malignant pain, multidisciplinary rehabilitation programme, prediction, immigrants, return-to-work rate.

J Rehabil Med 2006; 38: 87–92

Correspondence address: Jan-Rickard Norrefalk, 8 Heathfield House, Eliot Vale, Blackheath, London SE3 0QW, UK. E-mail: norrefalk@hotmail.com

Submitted June 28, 2004; accepted May 21, 2005

INTRODUCTION

The population in the area of Huddinge University Hospital in Stockholm, Sweden has a high incidence of socio-economic problems, immigrants and blue-collar workers, as illustrated by the referred patients in this study (1).

Thus, immigrant patients are commonly seen at the Pain Unit at the Department of Rehabilitation Medicine. It has been suggested that immigrant patients suffering from long-term pain do not benefit to the same extent as native Swedish patients from the rehabilitation offered (2–6). One may speculate that there are differences that might influence the extent of work ability, such as religion, ethnic background, upbringing, education,

segregation, alienation, language, pain experience and pain behaviour, among others. Heinz (7) assumed that in the case of rehabilitation of foreigners, it is difficult to set goals because of language and cultural differences. Foreign origin is one of the factors among sick or injured people that increases the probability of disability pension and/or reduces that of return to work (8). This background poses questions as to whether structured, interdisciplinary, work-related rehabilitation programmes based on behavioural medicine can be adapted for immigrants and whether they benefit from such programmes to the same extent as non-immigrant patients.

The aim of this study was to determine whether there is a difference in the back-to-work rate, the patients' own estimation of their ability to return to work, and the level of activity and estimated pain, between immigrants and native Swedes after an 8-week rehabilitation programme.

METHODS

Definition

In this study we define immigrants as people born outside Sweden with a mother tongue other than Swedish, who have settled down in Sweden.

Patients with immigrant background and native Swedes were accepted to the programme if they suffered from long-term pain of a non-malignant character and if they were on long-term sick-leave. They also had to have sufficient knowledge of Swedish to benefit, at least partly, from the theoretical parts of the programme. The patients were able to use an interpreter at the meeting after 3 weeks in the programme, when the teams' evaluation, the Impairment and Disability Evaluation and Analysis (IDEA) (9) and the patients' work ability was presented, as well as at the meeting at the end of the 8-week programme when the rehabilitation meeting was held. The immigrants were advised to use interpreters at any time during the programme. Interpreters were also used individually to explain parts of the pain school for some of the immigrants.

Excluded from the programme were patients who were working. Patients with ongoing drug, narcotics or alcohol abuse were also excluded.

Patients

Seventy-two patients were enrolled in the rehabilitation programme. Sixty-seven completed the programme and were followed up after 1 year. Fifty-nine of the patients were followed up after 3 years (Table I).

Thirty patients (45%) of the 67 completing the 8-week interdisciplinary rehabilitation programme were immigrants. Of these, 17 were from non-European countries, 6 were from Nordic countries other than Sweden (5 from Finland, which has a totally different language from the other Scandinavian countries and 1 from Denmark) and 7 were from other European countries.

Compared with the 37 (65%) native Swedes in the programme, there were no significant differences in gender (80% immigrant women and 82% Swedish women), age (40 years in both groups) and sick-leave

Table I. Patient characteristics

	Total	Immigrants	Native Swedes
Patients (<i>n</i> (%))			
At the start of programme and after 1 year	67	30 (45)	37 (55)
At the 3-year follow-up	59	27 (46)	32 (54)
Drop-outs	12% (8/67)		
Women (%)	81	80	82
Age (years) (mean (SD))	40 (8)	40 (9)	40 (9)
Pain intensity VAS (0–100) (mean (SD))			
At the start of programme.	68 (23)	75 (25)	62 (18)*
At 3-year follow-up	62 (26)	77 (17)	50 (26)
Difference between start and 3-year follow-up		3 (23)	–13 (32)**
Sick leave before entering (months) (mean (SD))	22 (21)	21 (23)	22 (19)
Patients who estimated it to be hard or very hard to return to work after the rehabilitation (<i>n</i> (%))	54 (81)	28 (93)	25 (68)***

* $p = 0.002$, ** $p = 0.016$, *** $p = 0.023$.

before entering the programme (immigrants 21 months, Swedes 22 months).

Outcome measures

Before entering the programme the patients completed questionnaires, among these were: Modified Somatic Perception Questionnaire (MSPQ) (10, 11), Multidimensional Pain Inventory (MPI) (12), Disability Rating Index (DRI) (13), Pain diary and The National Register of Pain (NRS). They also estimated their actual pain intensity on a visual analogue scale (VAS) from “no pain” (0) to “worst possible pain” (100). The patients were also asked to estimate their work ability on a VAS before entering the programme, from “without difficulty” (0) to “very hard/not possible” (100).

The Interdisciplinary Rehabilitation programme

For patients suffering from long-term non-malignant pain, the Pain Unit at the Department of Rehabilitation Medicine at Huddinge University Hospital offers an 8-week medical- and work-related, interdisciplinary programme comprising a combination of information, social training, physical exercise, ergonomics and psychological interventions based on behavioural medicine. For details, see a previous report (9).

The study was conducted in accordance with the Helsinki Declaration and approved by the Ethics Committee of the Karolinska Institute at Huddinge University Hospital.

The objectives were: (i) return to work, the patients' own estimation and the actual ability to return to work; (ii) higher level of activity; (iii) pain reduction and reduction of analgesics.

The intensive 8-week programme ran daily from 08.00 h to 15.30 h and included: Information, Functional tests, Pain school, Psychological pain management, Group counselling, Physical, Functional and Ergonomic training, Medical examination, Pain analysis, Relaxation groups, Family meeting, Visit to the Labor Market Institute. If the patients were still employed, a visit to the patient's workplace was also part of the schedule, to get an idea of the working conditions, and to evaluate whether these conditions were suitable for the individual. Efforts were centred on increasing the patient's level of activity and capacity to as close to normal as possible, disregarding the pain.

The patients met at least 1 of the team members for a minimum of 143 hours during the 8-week programme, individually or in groups.

Each group comprised 8 patients. Every fourth week a new group of 8 patients entered the programme.

The interdisciplinary team comprised 1 physician, who was specialist in rehabilitation medicine and pain management, 1 or 2 physicians in specialist training, 3 physiotherapists, 3 occupational therapists, 1 psychologist, 1 social counsellor, 1 enrolled nurse and 1 medical secretary.

In the first 3 weeks of the programme an IDEA, was completed by the interdisciplinary team members (9). The interdisciplinary team used different tools to measure, observe and evaluate the patients' medical, physical, psychological and social functions, the patients' ability to work and their pain situation.

The result of the IDEA was presented to the patients at the end of the third week in the programme. The team members also presented the team's conclusion about the patients' ability to work. This was the basis for more individual training and work-related rehabilitation for the following weeks in the programme.

If the patients did not agree with the team's evaluation, they could leave the programme.

During the following weeks, the rehabilitation part of the programme, educational steps were implemented to achieve the objectives.

At the end of the 8-week programme a rehabilitation meeting was organized where the patient and persons involved in the patients' rehabilitation were present. The results of the programme were presented and further steps for returning to work were planned in detail. After the meeting a statement was written by the physician.

The original was sent to the social insurance office. Copies were sent to the general practitioner and the referral physician, if different. The patient was given a copy at the follow-up visit 1 month later.

Follow-up

At 1-year follow-up the actual return-to-work rate was recorded in a telephone interview with the patient's local social insurance office. Data from all 67 patients were recorded.

At the 3-year follow-up, the patients were contacted by post to complete a questionnaire about the 3 objectives of the programme: (i) whether they were working, (ii) their activity, and (iii) about their pain and analgesic use. Fifty-nine of the 67 patients could be followed up after 3 years (drop-out rate 12%).

Statistics

Statistics were calculated by means of standard procedures. Descriptive analyses of demographic data for patients were performed using the χ^2 test. To determine whether there was a difference between immigrants and native Swedes in activity, the return-to-work rate, and use of analgesics, the χ^2 test were used. The χ^2 test was also used to evaluate the patients' prediction of returning to work after the rehabilitation programme. To evaluate the differences in pain intensity (VAS), between the 2 groups at the start of the programme compared with the 3-year follow-up, the Mann-Whitney U test was used. Wilcoxon's test was used to determine whether there was a difference in each group. A logistic regression analysis with adjusted and unadjusted odds ratios (OR) and 95% confidence intervals was calculated to find predictors to the dependent return-to-work variable. A value of $p < 0.05$ was considered statistically significant.

RESULTS

Diagnosis

One-third of the patients were referred by general practitioners, one-third by hospitals and one-third by the local social insurance office.

The group was selected among patients with non-malignant long-term pain, referred to the programme after every other intervention of treatment or rehabilitation had failed.

The diagnosis from the referring physician before entering the 8-week programme was recorded for each patient (Table II). Generalized pain and fibromyalgia were the most common (34%). There was no significant difference found between the diagnoses in immigrants and those in native Swedes. Relevant medical and surgical investigations and treatments were completed prior to referral to the programme.

The medical analyses showed that most of the patients had been consulting different specialists and were over-treated (analgesics, physiotherapy, blood samples, X-ray, magnetic resonance tomography (MRT), etc.). Tests showed that they were socially and physically inactive and had bad sleeping habits.

Profession

As shown in Table II, the largest group of patients (24%) was employed or had worked in healthcare (3 immigrants and 13 native Swedes). Twenty-two percent of patients, all of them immigrants, had worked or were employed as cleaners. Fifteen (50%) of the immigrants in the programme were cleaners. In the group of office workers, all except 3 were Swedes (21%).

Some of the immigrants were illiterate, being unable to read or write in any language, except for their name. The level of education was lower among the immigrants than the non-immigrants and even if none of the natives in this study had achieved a higher level of education 19 (51%) of them were white-collar workers and 18 (49%) were blue-collar workers. Among the immigrants there were 5 (17%) white-collar workers and 25 (83%) blue-collar workers. A statistical difference was found between the 2 groups ($p=0.003$).

Return-to-work rate and self-estimated ability to return to work at the 1- and 3-year follow-ups

None of the patients were working at the start of the 8-week programme.

A statistically significant difference ($p=0.023$) between the groups was found regarding their own estimation of their ability to return to work. Twenty-eight (93%) of the immigrants estimated it to be "hard" or "very hard" to return to work after the rehabilitation programme compared with 25 (68%) of the native Swedish patients.

At the 1-year follow-up, 42 (63%) of the immigrants and natives had returned to work half-time (4 hours/day) or more, or they were in active work-related activities, such as studying or at the employability institute (Swedish initials: AMI), an institute to help the patients find, gain and keep a job primarily on the open competitive labour-market. The rest, 25 (37%) were not working and were on sick-leave or receiving disability allowance.

Of the immigrants, 17 (57%) were working 4 hours/day or more and 3 of them were in active work-related activities. Thirteen (43%) were not working. Of the Swedish patients, 25 (68%) were working half-time or more, but 9 of them were in work-related activities. Twelve (32%) were not working.

At the 3-year follow-up, 6 of the immigrants and 7 of the native patients had changed professions. The immigrants changed to interpreter, enrolled nurse, office worker, café-owner, cook and shop assistant. The native Swedes changed to lorry driver, shop assistant, office worker, health club assistant, enrolled nurse and stockbroker. One change was unknown.

At the 3-year follow-up, 29 (49%) were still working or in work-related activities and the rest of the patients were not working.

Table II. Primary diagnosis from referral physician before entering the programme, Profession and return-to-work rate

	Total n (%)	Immigrants n (%)	Native Swedes n (%)
Diagnosis (n)	67	30	37
Generalized pain or fibromyalgia	23 (34)	12 (40)	11 (30)
Generalized neck and back pain	13 (19)	6 (20)	7 (19)
Cervico-brachialgia	13 (19)	7 (23)	6 (16)
Low back pain	9 (13)	2 (7)	7 (19)
Status post whiplash (WAD)	4 (6)	2 (7)	2 (5)
Status post back surgery	3 (5)	1 (3)	2 (5)
Neuropathic pain	2 (3)	0 (0)	2 (5)
Profession (n)	67	30	37
Healthcare workers	16 (24)	3 (10)	13 (35)
Cleaners	15 (22)	15 (50)	0 (0)
Office workers	14 (21)	3 (10)	11 (30)
Factory workers	9 (13)	7 (23)	2 (5)
Other kind of work	6 (9)	0 (0)	6 (16)
Restaurant workers	5 (8)	2 (7)	3 (8)
Computer workers	2 (3)	0 (0)	2 (5)
Blue-collar work	43 (64)	25 (83)	18 (49)
White-collar work	24 (36)	5 (17)	19 (51)
1-year follow-up (n)	67	30	37
Returned to work or in work-related activities	42 (63)	17 (57)	25 (68)
3-year follow-up (n)	59	27	32
Returned to work or in work-related activities	29 (49)	13 (48)	16 (50)

Of the 27 immigrants, 13 (48%) had returned to work, but 5 were in work-related activities. Of those who had not returned to work, 3 received disability pension, 7 received disability allowance and 2 were on sick-leave. Two had a 50% combination of sick-leave and disability compensation.

Half of the native patients were working, but 3 of those patients were in work-related activities. The other half of the natives were not working, 2 received a disability pension, 5 received disability allowance and 5 were on sick-leave. One patient received 50% disability pension and 50% sick-leave. One of the native patients received 50% disability allowance. One did not receive any financial compensation.

There was no statistically significant difference between immigrants and natives regarding the rate of return-to-work at the 1- and 3-year follow-ups (Table II). Another observation made was that a few patients, immigrants and native Swedes, who had not returned to work at the 1-year follow-up, were working at the 3-year follow-up.

Level of activity

In the questionnaire the patients had to complete before the programme they were asked about their level of different daily activities. The same questions were asked at the 3-year follow-up and the results were compared. At the 3-year follow-up, 4 (15%) of the immigrants and 11 (34%) of the native Swedes estimated an increased level of activity compared with before they entered the programme. Eleven (42%) of the immigrants and 18 (56%) of the natives considered it unchanged. A lower level of activity was estimated by 11 (42%) of the immigrants and 3 (9%) of the non-immigrants. The difference between the groups was significant ($p=0.011$).

Pain intensity and reduction in analgesic use

Statistically significant differences were found between the groups in the estimated pain intensity (VAS). Immigrants estimated their actual pain intensity before entering the programme to be 75/100 and native Swedes 62/100. At the 3-year follow-up, the immigrants' VAS was 77/100 and for the natives 50/100 (Table I). This difference between the groups at the start of the programme was significant ($p=0.002$). Within the groups, the difference was significant in the group of native Swedes ($p=0.026$) but not in the group of immigrants.

There was a statistically significant difference between the 2 groups comparing their pain intensity at the start of the programme and at the 3-year follow-up. The estimate of the pain intensity had been reduced for the non-immigrants but was unchanged among the immigrants ($p=0.016$).

An unchanged consumption of analgesics were reported from 23 (88%) of the immigrants and 18 (56%) of the native Swedes. Four (15%) of the immigrants and 14 (44%) of the native Swedes reported that they did not take any painkillers at all. The difference between the 2 groups was significant ($p=0.034$).

No significant difference between the 2 groups of patients was found with respect to age, sex, diagnosis and absence from

work. A logistic regression analysis was made of the 1- and 3-year follow-up data, trying to find prognostic factors to the dependent variable return-to-work. The independent variables that were controlled included gender, white-collar/blue-collar work, immigrants/natives and time out of work. None of these factors could be used as a predictor for return-to-work in this study.

The results of a logistic regression analysis, shown in Table III, gives a description of odds ratios (OR) and 95% confidence intervals for unadjusted and adjusted values of the different factors. Note that no statistical significance was shown.

At the 1-year follow-up and using adjusted values, the odds of return-to-work in patients who had been on sick-leave for only 0–6 months would be 2.8 times the odds of return-to-work in patients on sick-leave for more than 24 months. The odds of return-to-work among those on sick-leave for 13–24 months would be 1.7 times the odds of positive outcome among those sick listed for more than 24 months. At the 3-year follow-up and using adjusted values, the corresponding OR for those on sick-leave for 13–24 months was 3.9.

The odds of return-to-work among native Swedes would be 1.8 times the odds of return-to-work among immigrants 1 year after the rehabilitation, and 3 years after the end of rehabilitation the corresponding figure would be 1.6.

After 1 year, blue-collar and white-collar workers would have approximately the same chances to have returned to work, while at the 3-year follow-up the odds of blue-collar workers having returned to work would be 1.8 times that of white-collar workers.

The odds of return-to-work in men would be 2.5 times the odds of return-to-work in women at the 1-year follow-up and at the 3-year follow-up the chances would be about equal (OR 1.1).

The generalized coefficient of determination (GCD%) at the 1-year follow-up was 7.3% for the adjusted values and the corresponding figure at the 3-year follow-up was 8.8%. How much each variable contributed to these sum percentages can be seen in Table III, where, for example, the duration of sick-leave before rehabilitation contributed with 2.2% (unadjusted) at the 1-year follow-up, and 6.5% (unadjusted) at the 3-year follow-up.

DISCUSSION

According to human rights, medical treatment should be given independent of race and nationality. In order to fulfil this challenge, the physician or therapist has to understand the sick or disabled person.

This study shows that a structured rehabilitation programme makes it possible to assist immigrant patients as well as native patients to return to work, even if immigrants have limitations in finding a job due to restricting factors such as language and education. It also shows that age, sex, time out of work, blue-collar/white-collar work, level of activity, pain intensity, the use of analgesics and the patients' own prediction of returning to

Table III. Logistic regression analysis for the 1- and 3-year follow-up data, trying to find prognostic factors to the dependent variable return-to-work, with a description of odds ratios and confidence intervals for unadjusted and adjusted values of different independent factors

	Unadjusted		GCD (%)	Adjusted		GCD (%)
	Odds ratio	95% CI		Odds ratio	95% CI	
<i>1-year follow-up</i>						7.3
Sick leave before rehabilitation						
0–6 months vs >24 months	2.074	0.397–10.845		2.841	0.497–16.246	
7–12 months vs >24 months	1.778	0.477–6.624	2.2	2.072	0.526–8.158	
13–24 months vs >24 months	1.397	0.364–5.353		1.658	0.404–6.806	
Nationality						
Natives vs immigrants	1.593	0.587–4.320	1.7	1.768	0.566–5.525	
Profession						
BCW vs WCW	1.012	0.361–2.842	0.0	1.120	0.332–3.776	
Gender						
Male vs female	2.292	0.565–9.291	3.0	2.490	0.562–11.026	
<i>3-year follow-up</i>						8.8
Sick leave before rehabilitation						
0–6 months vs >24 months	1.600	0.293–8.735		2.072	0.339–12.673	
7–12 months vs >24 months	2.750	0.673–11.239	6.5	2.854	0.672–12.122	
13–24 months vs >24 months	3.000	0.676–13.309		3.857	0.778–19.126	
Nationality						
Natives vs immigrants	1.077	0.387–3.001	0.0	1.636	0.476–5.619	
Profession						
BCW vs WCW	1.267	0.440–3.650	0.4	1.798	0.499–6.476	
Gender						
Male vs female	0.833	0.224–3.103	0.2	1.084	0.258–4.548	

BCW = blue-collar workers, WCW = white-collar workers. GCD = generalized coefficient of determination. (Model summary, Nagelkerke R square.)

work are not crucial factors for a successful return to work. Other factors, such as motivation and economic benefits, may play a more important role. A restricting factor for returning to work was unsolved insurance matters with the National Social Insurance Office, occupational injury insurance, private insurance companies and the Unemployment Benefit Society, among others.

There might be a bias concerning the selection of patients for inclusion in the study. The limited capacity of multi-professional rehabilitation pain treatments and programmes often results in long waiting lists. This may influence the referral policy in the direction that only the most severely affected patients will be referred. Furthermore, the patients had been undergoing numerous treatments, without lasting improvement, and had reached the end of the medical possibilities before entering the rehabilitation programme. A huge number of treatments are available to patients suffering from long-term non-malignant pain. This can lead to a “treatment hunting” and years of ongoing ineffective, patient-passive and expensive treatments, such as different kinds of physiotherapy, alternative treatments, healing and different kinds of massage; treatments based on often weak scientific evidence (14). This was the case for many of the patients in our programme.

Another limitation of this study is the question of whether or not one may compare patients, as was done in this study. The immigrant group is heterogeneous. However, this also applies to the non-immigrant group, which might be homogenous only regarding culture and language. There might also be another bias, due to the fact that 50% of the immigrants were employed or had been employed as cleaners, but had other professions

that were impossible to practice in Sweden because of language problems or other circumstances. On the other hand, patients had a new opportunity to find other professions. One of the immigrants was working as an interpreter, others started small businesses, or worked in family businesses. Recording the number of years in full-time education, which was not done in the present study, would have given an idea of potential, as the immigrants were probably overqualified but did subsequently find better jobs.

The fact that a higher number of native Swedes than immigrants were not taking any analgesics at the 3-year follow-up might be explained as a failure by the interdisciplinary team to explain when and why analgesics could be of use. Pain is reconceptualized in learning-based behavioural terms. Methods to assess behavioural elements of pain, and to discuss non-medical influences on pain with patients, as well as behaviourally based tactics by long-term management and reactivation, is important (15), but immigrants may have had more difficulties in accepting and making use of this information. Differences in attitudes towards pain and in qualities of pain anxiety, either focusing on the meaning of pain and its consequences or on the immediate experience of pain, might influence rehabilitation (4).

Restricting factors, such as differences that could influence the possibilities of work ability, such as ethnic background, upbringing, religion, education, segregation, alienation, language, pain experience and pain behaviour, among others, would have been further obstacles. Despite that, at the follow-ups, immigrants had found jobs to the same extent as the native Swedes.

In a study by Marhold et al. (16) a cognitive-behavioural return-to-work focused programme, not focusing on immigrants, was evaluated in a randomized controlled design, and the effects were compared between 2 groups of women with musculoskeletal pain. The 2 groups of patients had a history of long- and short-term sick-leave, respectively. The results showed that the programme was more effective than the treatment-as-usual control condition in reducing the number of days on short-term sick-leave for patients, but not for patients on long-term sick-leave. In the present study, the main objective was to compare the 2 groups, immigrants and native Swedes. Thus, there was no control group included in the study. It was also suggested in another study by Marhold et al. (17) that patients' perceptions and beliefs about work and returning to work may be a significant hindrance for actual recovery. This seems not to be the case in this study, since the immigrant group had a low estimation of the ability to return to work but a higher actual rate of return-to-work.

In the study by Lindh et al. (2) the effectiveness of a multidisciplinary rehabilitation programme offered to a general population with 90 days of sick-leave due to non-specific musculoskeletal pain was evaluated. The results concerning return to work and re-sick-listing during a follow-up period of 5 years were evaluated for Swedes and immigrants separately. This was another approach than the one used in the present study. Compared with a control group, the rehabilitation offered, resulted in improved work stability after work return among the Swedes. The immigrants, as a group, did not benefit from the programme compared with the controls in primary care. The more positive outcome of the present study might be explained by the fact that the present study, to our knowledge, is more intense than earlier described programmes (2, 9, 18–25).

In conclusion, this study shows, in contrast with other studies, that immigrants can benefit from a structured, intensive, work-related, interdisciplinary 8-week rehabilitation programme built upon behavioural medicine for patients suffering from long-term non-malignant pain and a history of long-term sick-leave to the same extent as native Swedes regarding the rate of return-to-work at the follow-up. There was a difference between immigrants and native Swedes, with the immigrants displaying a lower level of activity, higher pain intensity and higher use of analgesics. Furthermore, the immigrants estimated their own work ability to be lower compared with the native Swedes after concluding the rehabilitation programme. However, this did not interfere with the rate of return-to-work.

REFERENCES

- Hasselström J, Liu-Palmgren J, Rasjö-Wrååk G. Prevalence of pain in general practice. *Eur J Pain* 2002; 6: 375–385.
- Lindh M, Lurie M, Sanne H. A randomized prospective study of vocational outcome in rehabilitation of patients with non-specific musculoskeletal pain: a multidisciplinary approach to patients identified after 90 days of sick-leave. *Scand J Rehabil Med* 1997; 29: 103–112.
- Soares JJ, Grossi G. Experience of musculoskeletal pain. Comparison of immigrant and Swedish patient. *Scand J Caring Sci* 1999; 13: 254–266.
- Lofvander M. Attitudes towards pain and return to work in young immigrants on long-term sick leave. *Scand J Prim Health Care* 1999; 17: 164–169.
- Moeri R. Rehabilitation of foreign workers: myths and reality. *Ther Umsch* 1992; 49: 628–634.
- Lofvander M, Papastavrou D. Clinical factors, psycho-social stressors and sick-leave patterns in a group of Swedish and Greek patients. *Scand J Soc Med* 1990; 18: 133–138.
- Heinz C. Basic considerations in the rehabilitation of foreign workers. *Ther Umsch* 1992; 49: 597–599.
- RFV Redovisar 1996: 11 Invandrarna i socialförsäkringen. Sjukskrivning, rehabilitering och förtidspensionering under 1990-talet (in Swedish) [Immigrants within the Social Insurance: sick-leave, rehabilitation and disability pension]. Stockholm: Riksförsäkringsverket; 1996.
- Norrefalk J-R, Svensson O, Ekholm J, Borg K. Can the back-to-work rate of patients with long-term non-malignant pain be predicted? *Int J Rehabil Res* 2005; 28: 9–16.
- Main CJ. The modified somatic perception questionnaire. *J Psychosomatic Res* 1983; 27: 503–514.
- Main CJ, Wood PLR, Hollis S, Spanswick CC, Waddell G. The distress and risk assessment method. A simple classification to identify distress and evaluate the risk of poor outcome. *Spine* 1992; 17: 42–52.
- Bernstein IH, Jaremko ME, Hinkley BS. On the utility of the West Haven Yale Multidimensional Pain Inventory. *Spine* 1995; 20: 956–963.
- Salén BA, Spangfort EV, Nygren ÅL, Nordemar R. The disability rating index: an instrument for assessments of disability in clinical settings. *J Clin Epidemiol* 1994; 47: 1423–1434.
- Nachemson A. Back pain, neck pain. [Ont i ryggen, ont i nacken: en evidensbaserad kunskapsmanställning]. The Swedish Council of Technology Assessment in Health Care. Statens Beredning för Medicinsk Utvärdering. (SBU); 2000. Rapport No. 145/1, 145/2, vol. 1–2.
- Fordyce WE. Behavioral factors in pain. *Neurosurg Clin N Am* 1991; 2: 749–759.
- Marhold C, Linton SJ, Melin L. A cognitive-behavioral return-to-work program: effects on pain patients with a history of long-term versus short-term sick leave. *Pain* 2001; 91: 155–163.
- Marhold C, Linton SJ, Melin L. Identification of obstacles for chronic pain patients to return to work: evaluation of a questionnaire. *J Occup Rehabil* 2002; 12: 65–75.
- Alaranta H, Rytökoski U, Rissanen A, Talo S, Rönnemaa T, Puukka P, et al. Intensive physical and psychosocial training program for patients with chronic low back pain: a controlled clinical trial. *Spine* 1994; 19: 1339–1349.
- Bendix AF, Bendix T, Lund C, Kirkbak S, Ostfeldt S. Comparison of three intensive programs for chronic low back pain patients: a prospective, randomized, observer-blinded study with one-year follow-up. *Scand J Rehabil Med* 1997; 29: 81–89.
- Flor H, Fydrich T, Turk D. Efficacy of multidisciplinary pain treatment centers: a meta-analytic review. *Pain* 1992; 49: 221–230.
- Hazard RG, Fenwick JW, Kalisch SM, Redmond J, Reeves V, Reid S, et al. Functional restoration with behavioural support. A one-year prospective study of patients with chronic low back pain. *Spine* 1989; 14: 157–161.
- Mayer TG, Gratchel RJ, Mayer H, Kishino N, Keeley J, Mooney V. A prospective two-year study of functional restoration in industrial low back injury. An objective assessment procedure. *JAMA* 1987; 258: 1763–1767.
- Mitchell RI, Carmen GM. The functional restoration approach to the treatment of chronic pain in patients with soft tissue and back injuries. *Spine* 1994; 19: 633–642.
- Nordström-Björverud G, Moritz U. Interdisciplinary rehabilitation of hospital employees with musculoskeletal disorders. *Scand J Rehabil Med* 1998; 30: 31–37.
- Timpka T, Leijon M, Karlsson G, Svensson L, Bjurulf P. Long-term economic effects of team-based clinical case management of patients with chronic minor disease and long-term absence from working life. *Scand J Soc Med* 1997; 25: 229–237.