

Summary

Summary

Almost each of us at some time will experience low back pain (LBP) that interferes with work, sport or routine daily activities. Non-specific low back pain is basically a self-limiting disease. However, in some cases it can turn into a chronic state.

The socio-economic consequences of low back pain for the worker, the employer and society are substantial. A delay in return to work (RTW) results in high compensation costs or even in a disability pension. These work-related costs are higher than the costs of treatment.

In order to prevent the development of more permanent disablement and sick-leave, there is a need for effective intervention strategies embedded in occupational health care which aims at a safe and rapid return to work of workers with low back pain. A promising intervention strategy consists of active rehabilitation directed at return to normal activity and work. An example of such active rehabilitation is the graded activity intervention, which was successful in the Volvo factories in Sweden.

This thesis focuses on evaluation of a graded activity intervention in Dutch occupational health care setting.

Chapter 2 presents the results of a systematic review of the literature on the effectiveness of return to work interventions for sub-acute low back pain on work absenteeism, severity of pain and functional status.

Nine randomized clinical trials met the methodological quality selection criteria were included in the review. A best evidence synthesis was performed. Five out of nine randomized controlled trials (RCT) comparing RTW intervention to usual care were identified as methodologically high quality studies. Strong evidence was found for the effectiveness of RTW interventions on RTW rate at 6-months of follow-up and for the effectiveness of RTW interventions on the reduction of days of absence from work at 12-months follow-up and longer. Scores for pain and functional status in these studies remained unchanged or improved as a result of the RTW intervention. Apparently, improvements in functional status and pain do not necessarily go together with earlier return to work. Based on these findings we can conclude that RTW interventions are equally or more effective on reduction of work absence due to sub-acute low back pain, in comparison to usual care.

The optimal RTW intervention for sub-acute low back pain is probably a mixture of exercise, education, behavioral treatment and ergonomic measures. But it is not clear which component, or which combination of components, is the most effective.

Chapter 3 reports on a comparison of available national guidelines on the management of low back pain in occupational health. The guidelines were compared regarding generally accepted quality criteria using the AGREE

Summary

instrument, and summarised with regard to the guideline committee, the presentation of the guideline, the target group, and assessment and management of the nature of the recommendations (i.e. advice, return-to-work strategy and treatment).

The results showed that the quality criteria were met in varying degrees by the guidelines. Common flaws concerned the absence of proper external reviewing in the development process, lack of attention to organisational barriers and cost implications, and lack of information on the extent to which editors and developers were independent.

There was general agreement on numerous issues fundamental to occupational health care management of low back pain. The assessment recommendations consisted of diagnostic triage, screening for 'red flag' signs and neurological problems, and the identification of potential psychosocial and workplace barriers for recovery. The guidelines also agreed on the advice that low back pain is a self-limiting condition, and that remaining at work or an early (gradual) return to work, if necessary in modified duties, should be encouraged.

Chapter 4 and 5 report on the results of randomized controlled trial on the return to work effects of the graded activity intervention compared to usual care. The RCT was carried out in KLM Royal Dutch Airlines by occupational health services at Schiphol Airport in the Netherlands. The trial population consisted of KLM employees who were partially or full sick-listed because of non-specific low back pain. The low back pain had to be present for at least 4 weeks.

The graded activity intervention can be described as a physical exercise program, applying operant conditioning behavioural principles. The goals of the intervention were an improvement of functioning and a rapid and safe return to work, despite possibly persisting pain complaints. The graded activity intervention was applied by a specially trained in-house physiotherapist.

From a population at risk of about 28,000 KLM employees, a total of 134 were randomly assigned to graded activity (67 workers) and to usual care (67 workers). Measurements of baseline characteristics and the outcomes measures functional status and pain took place at baseline before randomisation, and 3 and 6 months after randomisation. Sick leave data were continuously recorded in the company sick-leave registration system.

The median duration of the first post-randomization continuous period of sick leave was 54 days in the graded activity group and 67 days in the usual care group. The graded activity intervention was effective from 50 days after randomization and onwards. For this period the hazard ratio was in favor of the graded activity group during both 6 and 12 months

Summary

follow-up periods. The differences between the groups in number of recurrent episodes of sick leave, total number of days of sick leave due to low back pain, and total number of days of sick leave due to all diagnoses, were in favor of the graded activity group, although not statistically significant.

Both groups improved in functional status and pain over time. The mean differences between the two groups in improvement for functional status and pain at 3, 6 and 12 months were in favor of the graded activity group. The differences were however small and statistically not significant. The graded activity intervention did not effect pain severity more than usual care. This finding corresponds with the general principle of the graded activity intervention, which aims at improvement of functioning and in particular at return to work and not at pain reduction.

Chapter 6 reports on results of a comparison of the costs and benefits of a graded activity intervention to usual care for sick-listed workers with non-specific low back pain during a 3-year follow-up. The main outcome measures were the costs of health care utilization during the first follow-up year and the costs of productivity loss during the second and the third follow-up year. The mean total cost of the graded activity intervention was € 475. During the first three months of follow-up, the health care utilization costs were higher in the graded activity than in the usual care group. In the same period, the usual care group had spent less on physiotherapy and more on other medical services. At the end of the first year the average between-group difference in health care utilization costs was € 83 lower in the usual care group, but not statistically significant. The average saving per worker in graded activity group yielded at least € 999 due to a reduction in productivity loss. The potential cumulative savings were an average of € 1661 per worker over a 3-year follow-up period.

The graded activity intervention for non-specific low back pain may be a cost-beneficial RTW intervention from the employer's point of view. This intervention was marginally more expensive than usual care, while benefits were substantial and remained noticeable 3 years after the initial intervention. The costs of health utilization were only a fraction of the total cost of the low back pain in the working population and the economic burden of productivity loss was the main cost driver.

Chapter 7 reports on the analysis of 'easy to obtain' prognostic variables for return to work (RTW) at different stages of work absenteeism. The low back pain cohort included 2,445 airline employees from a population of 28,124 employees who reported unfit for their work due to an episode of low back pain during a period of 21 months. This low back pain cohort was followed for 12 months after inclusion. Work absence data due to low back pain and data on prognostic factors were collected from electronic sick-

Summary

leave databases. Prognostic models were built for different time strata of work-absence.

The incidence of work absence due to low back pain in the population at risk varied between 4.2% for women to 7.3% for men. Within 28 days, 66% of the workers had returned to work and within 91, 182 and 273 days these RTW percentages had increased to 84%, 91% and 94%, respectively. Cox regression analysis showed that seven variables predicted an earlier RTW within twelve months: 1) male sex, 2) non-specific nature of low back pain, 3) younger age 4) no work relatedness of low back pain, 5) no history of low back pain absenteeism in previous 12 months, 6) a higher wage and 7) white collar occupation. However, the basic model explained only 10% of the variance (pseudo-R²) of RTW. Work absence due to non-specific low back pain has a good prognosis. The prognostic model constructed from routinely collected data has a too low explained variance for routine day to day use. The model should be expanded with more variables or clinical factors.

Chapter 8 discusses the main results of graded activity intervention and its generalizability for other occupational health care settings in the Netherlands and in other countries. The data on the natural course of low back pain absenteeism learned us that this absenteeism has a good prognosis. However, it still bears a significant economic problem for the employer.

Performing a RCT in an occupational health practice has some limitations. For instance with concern to blinding of the participants for the intervention, or compliance of the occupational physicians with the recruitment protocol.

The graded activity trial was compared to other two Dutch studies on RTW intervention for low back pain absenteeism, which were performed in the Netherlands almost at the same time. Both of the studies used interventions based on cognitive behavior principles. However, these interventions were different with respect to timing of the therapy, the experience of the therapist and combination with other interventions. The cost-effectiveness of the graded activity intervention is discussed from the point of view of the employer and insurance company. Return of investment is introduced as a practical indicator, which can help the employer to make decision about implementation of a RTW intervention in daily practice.

This pooling of sick leave data of our study and the two other Dutch studies together supported the conclusion that the RTW interventions perform statistically significant better than usual care.

RTW can be seen as a complex human behaviour change, involving physical recovery, motivation, and interaction with a number of parties. Optimal intervention should be based on behavioural principals and

Summary

workplace intervention. At this point, adherence to the clinical guidelines and to evidence-based interventions seems to be the best strategy in primary care and occupational health care. The advantage of such strategy is that all providers of medical care will advice in the same way and will guide the patient towards the same therapeutic direction. The chapter ends with conclusions and general recommendations for future research.