Chapter 10

Rheumatoid arthritis (RA) is a chronic, systemic inflammatory disease of the joints. Patients with RA experience pain, tender and swollen joints, stiffness of the joints, and fatigue. In the Netherlands, the prevalence of RA is 0.5 among men and 0.9 among women. RA affects participation, and for patients with RA it is especially difficult to maintain work functioning. Despite the fact that patients with RA are less likely to be involved in paid work, usual care does not include consultations with occupational health services. This may result in a lack of attention for work-related problems. Furthermore, communication between occupational health services and treating physicians might be less than optimal.

Work disability rates are high among patients with RA, many patients have to stop working because of their health condition. Absenteeism refers to missed work days for employed patients, and occurs frequently for patients with RA. Instead of calling in sick, patients might also be limited in their functioning while being present at work, which is called presenteeism. Presenteeism is reported by a large segment of working RA patients. Presenteeism occurs more structurally, while absenteeism and permanent work disability occur more incidentally. In summary, patients with RA are limited in their work functioning, and occupational care is not a component of curative care. For patients with RA to continue working, it is vital that their work is adapted to their needs, they get supported at the workplace, and the disease is managed and under control.

There is a need to develop an intervention that focuses on patients still working, and incorporating the most important difficulties for proper work functioning. This includes that interventions should focus on integrating medical and occupational health care, improve support at the workplace, and adapt a workplace to the needs of a patient. All this led to the following objectives of this thesis:

1. To review the literature concerning the effectiveness of workplace interventions to prevent work disability;
2. To investigate factors associated with at-work productivity loss, and the association between at-work productivity loss and quality of life for workers with RA;
3. To develop and evaluate an intervention at the workplace with the aim to improve and maintain work productivity for workers with RA;

Objective 1: Review of literature concerning the effectiveness of workplace interventions

Chapter 2 described a systematic literature review on the effectiveness of workplace interventions in preventing work disability among sick-listed workers, when compared to usual care or clinical interventions. We searched the Cochrane Work Trials Register, the Cochrane Central Register of Controlled Trials (CENTRAL), MEDLINE, Embase, and PsycINFO databases on 2 February 2015. We included randomised controlled trials (RCTs) of workplace interventions that aimed to improve RTW for disabled workers. We performed meta-analysis
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where possible, and we assessed the quality of evidence according to GRADE criteria. We included 14 RCTs with 1897 workers. Eight studies included workers with musculoskeletal disorders, five workers with mental health problems, and one workers with cancer. Workplace interventions significantly improved time until first RTW compared to usual care, moderate-quality evidence. Workplace interventions did not considerably reduce time to lasting RTW compared to usual care, very low-quality evidence. The effect on cumulative duration of sickness absence showed a significant mean difference, favouring the workplace intervention, high-quality evidence. One study assessed recurrences of sick leave, and favoured usual care, moderate-quality evidence. Overall, the effectiveness of workplace interventions on work disability showed varying results.

In subgroup analyses, we found that workplace interventions reduced time to first and lasting RTW among workers with musculoskeletal disorders more than usual care (both moderate-quality evidence). In studies of workers with musculoskeletal disorders, pain also improved, as well as functional status. In studies of workers with mental health problems, there was a significant improvement in time until first RTW, but no considerable reduction in lasting RTW. One study of workers with cancer did not find a considerable reduction in lasting RTW. The quality of the evidence for the effectiveness of workplace interventions for workers with mental health problems and cancer was low, and results did not show an effect of workplace interventions for these workers. Future research should expand the range of health conditions evaluated with high-quality studies.

Objective 2: Factors associated with at-work productivity loss, and the association between at-work productivity loss and quality of life

In chapter 3, we aimed to determine which combination of personal, disease-related and environmental factors was best associated with at-work productivity loss in patients with RA, and to determine whether at-work productivity loss was associated with quality of life for these patients. At-work productivity loss was measured with the Work Limitations Questionnaire (WLQ), and quality of life with the RAND 36. Using linear regression analyses, a multivariate model was built containing the combination of factors best associated with at-work productivity loss. This model was cross-validated internally. We furthermore determined whether at-work productivity loss was associated with quality of life using linear regression analyses. We found that at-work productivity loss was associated with workers who had poorer mental health, more physical role limitations, were ever treated with a biological therapeutic medication, were not satisfied with their work, and had more work instability ($R^2 = 0.50$ and $R^2$ following cross-validation was 0.32). We found that at-work productivity loss was negatively associated with health-related quality of life, especially with dimensions of mental health, physical role limitations, and pain. We found that at-work productivity loss was associated with personal, work-related, and clinical factors. Although our study results
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should be interpreted with caution, they provide insight into patients with RA who are at risk for at-work productivity loss.

Objective 3: Development and evaluation of an intervention at the workplace to improve work productivity for workers with RA

In chapter 4, the design of the Care for Work study was described. Although a few strategies to maintain work productivity exist, these interventions do not involve the actual workplace. We therefore aimed to develop an intervention program at the workplace on work productivity for workers with RA. The intervention program (called the Care for Work intervention) consisted of two components: integrated care including a participatory workplace intervention. Integrated care involved a clinical occupational physician, who acted as care manager, to coordinate care. The care manager had an intermediate role between clinical and occupational care. The participatory workplace intervention was guided by an occupational therapist, and involved problem solving by the patient and the patients’ supervisor. The aim of the workplace intervention was to achieve consensus between patient and supervisor concerning feasible solutions for the obstacles for functioning at work.

The Care for Work intervention was evaluated in a randomized controlled trial (RCT) in specialized rheumatology treatment centers in or near Amsterdam, the Netherlands. Randomisation to either the control or the intervention group was performed at patient level. Both groups received care as usual by the rheumatologist, and patients in the intervention group also took part in the intervention program. Data collection took place at baseline and after 6 and 12 months by means of a questionnaire. The primary outcome measure was at-work productivity loss, measured by hours lost from work due to presenteeism. Secondary outcome measures included quality of life, supervisor support, work instability, pain and fatigue. The process of implementation was also evaluated. Cost-effectiveness of the intervention program was evaluated from the societal perspective.

The intervention effects on supervisor support, work instability and at-work productivity loss after 6 months of follow up are described in chapter 6. Supervisor support was measured with a subscale of the Job Content Questionnaire (JCQ), work instability with the Work Instability Scale for RA (RA WIS), and at-work productivity loss with the WLQ. Data were analysed using linear regression analyses. A beneficial effect of the intervention program was found on supervisor support among 150 participants. Analyses revealed no effects on work instability and at-work productivity. The positive effect on supervisor support was significant but small. Future research should establish whether this increase in supervisor support leads to improved work functioning in the long run.

Chapter 7 described the effectiveness of the intervention program after 12 months of follow up. Outcome measures were the at-work productivity loss (WLQ), work instability (RA WIS), pain, fatigue and quality of life (RAND 36). We performed linear mixed models to analyse the
outcomes. Participants were on average 50 years of age, and mostly female. After 12 months, no significant intervention effect was found on at-work productivity loss. We also found no significant intervention effects on any of the secondary outcomes. We did not find evidence for the effectiveness of our workplace integrated care intervention after 12 months of follow up. Future studies should focus on investigating the intervention in groups of workers with severe limitations in work functioning, and an unstable work situation.

Chapter 5 described the process evaluation of the intervention program. The implementation of the workplace integrated care intervention was evaluated with the framework of Linnan and Steckler. We used the concepts recruitment, reach, dose delivered, dose received, fidelity and satisfaction with the intervention. Data collection occurred through patient questionnaires and medical records. Integrated care was delivered according to protocol for 46.7%, while the participatory workplace intervention was delivered for 80.6%. Dose received was nearly 70%, which means that participants implemented 70% of the workplace adaptations proposed during the participatory workplace intervention. The fidelity score for both integrated care and the participatory workplace intervention was sufficient, although communication between members of the multidisciplinary team was limited. Participants were generally satisfied with the intervention.

The cost-effectiveness of the intervention program was discussed in chapter 8. Effect outcomes were at-work productivity loss and quality adjusted life years (QALYs). Health care costs, patient and family costs, costs in other sectors, and intervention costs were calculated from a societal perspective. Cost effectiveness- and cost utility analyses were conducted to indicate the incremental costs and benefits per additional unit of effect. A subgroup analysis and several sensitivity analyses to evaluate the impact of different methodological considerations on the results were conducted to attest the robustness of the findings. In total, average costs after twelve months follow-up were highest in the intervention group (€7,437.76) compared to the control group (€5,758.23). The cost-effectiveness and cost-utility analysis show that the intervention was less effective and (often) more expensive when compared to the control condition. Sensitivity analyses supported these findings.

In chapter 9, the results of this thesis are summarized and discussed. The overall conclusions of this thesis are:

- Workplace interventions are effective to return workers with musculoskeletal disorders back to work
- An intervention, consisting of integrated care and a participatory workplace intervention, was effective to improve supervisor support after 6 months of follow-up for patients with rheumatoid arthritis. The intervention was not effective after 12 months of follow-up on at-work productivity loss, quality of life, work instability, pain and fatigue
- The intervention was not implemented as planned, especially integrated care
- The intervention was less effective and more expensive than usual care
These findings make clear that it is not recommended to implement the intervention in its current form. We do however emphasize that at-work productivity loss is a very important aspect during the work life of patients with RA. We therefore urge researchers to proceed on studies to support workers with RA to maintain their work functioning, and be able to work in a healthy manner.