Chapter 10
General discussion
GENERAL DISCUSSION

In this final chapter we discuss and summarize the main findings of the thesis. In addition, we address methodological considerations and implications for practice as well as directions for further research.

This thesis had three aims: The first aim was to increase knowledge of the factors relevant for the duration of sickness absence due to common mental disorders (CMDs). The second aim was to validate, and if possible, to improve the prediction model developed by Nieuwenhuijsen et al. [1,2] for the duration of sickness absence due to CMDs in a heterogeneous population. The third aim was to increase knowledge regarding factors relevant for recurrence of sickness absence due to CMDs.

Main findings

Research question 1 (Chapter 2):
Does the common mental disorder diagnosis determine the duration of the sickness absence and which other factors play a role?

Register data of ArboNed an Occupation Health Service showed that 94% of sickness absences due to CMDs were diagnosed as emotional, neurotic, somatoform, stress-related, and mood disorders (ICD-10 F40-49, ICD-10 R45, ICD-10 F30-39). The return to work rates varied per diagnosis: 95% of employees with emotional disorders resumed work within 1 year, and 98% within 2 years after reporting sick. Among employees with neurotic, somatoform and stress-related disorders, the return to work rate was 89% within the first 2 years and 96% within 2 years of reporting sick. Return to work rates among employees with mood disorders were the lowest, i.e. 70% within one year and 86% within 2 years of reporting sick. For employees with emotional disorders, the likelihood of resuming work decreased strongly after 1 month. For employees with neurotic, somatoform, stress-related disorders and mood disorders the likelihood of RTW decreased after 2 and 3 months, respectively. Except for employees with mood disorders, age and socio-economic status were associated with the time to return to work after sickness absence due to CMDs. Employees with low socio-economic status resumed work sooner than those with high socio-economic status and young (<35) employees returned earlier than older employees (>55).

Research question 2a (Chapter 3):
Can the existing prediction model predict the duration of sickness absence due to common mental disorders in a heterogeneous population of employees, and does the addition of work-related factors improve the prediction model performance?

The existing prediction model developed by Nieuwenhuijsen et al. [1,2] was validated in a heterogeneous population. Sickness absence duration due to CMDs could not be predicted by using the existing model. After re-calibration to the data of the heterogeneous population, the prediction model discriminated moderately between employees with and without sickness absence three months after reporting sick with CMDs. The work-related factor ‘variety in work’ improved discrimination between employees with and without sickness absence three months after reporting sick. Other work-related factors, such as quantitative demands, emotional demands, autonomy in work, control over work, co-worker support, and supervisor support did not improve the performance of the prediction model.

Research question 2b (Chapter 4):
Does the prediction of the duration of sickness absence due to common mental disorders improve by incorporating illness perceptions of the employee in the prediction model?

Based on the outcomes of Chapter 3, we examined ways to further improve the prediction model. When the employee’s expectation of sickness absence duration in the existing model was replaced by the employee’s perceptions of ‘illness identity’ and ‘illness concern’, discrimination between employees with and without sickness absence three months after reporting sick improved to practically useful levels: AUC=0.78 (95% CI 0.67–0.89) and AUC=0.72 (95% CI 0.61–0.82), respectively. Other illness perceptions (illness consequences, timeline beliefs, personal control, treatment control, comprehensibility, and illness emotions) did not improve discrimination between employees with and without sickness absence at three months.

Research question 3 (Chapter 5):
Does the diagnosis of the first episode of sickness absence due to common mental disorders determine the risk of recurrent sickness absence, and what is the median time between onset and recurrence of sickness absence due to common mental disorders?

The CMD diagnosis did not determine the risk of recurrent sickness absence due to CMDs. Recurrence densities did not differ across CMD diagnostic categories, and the median time between onset and recurrence of sickness absence due to CMDs was 15 months. The time of recurrent sickness absence due to CMDs was the shortest amongst employees with mood disorders (5 months).

Research question 4 (Chapter 6):
Does the risk of incidence and recurrence of sickness absence due to common mental disorders differ between office employees and production employees in the same industrial sector?

The incidence of sickness absence due to CMDs was lower among office staff than among production staff. Office employees resumed work after SA after a median of 90 days, while production employees resumed after a median of 74 days. Emotional and neurotic, somatoform and stress-related disorders were more prevalent among production employees, but lasted longer among office employees. Sickness absence due to CMDs recurred as often in production employees as in office employees. The median time to recurrence of sickness absence was shorter for older employees (>55 years); Sickness absence due to CMDs recurred within 12 months in 91% of employees, with a median time to recurrence of 3.7 (95% CI 2.5–4.9) months.

Research question 5 (Chapter 7):
Are shift employees at higher risk of incidence and recurrence of sickness absence due to common mental disorders than daytime employees?

No difference was found between daytime employees and shift employees in the risks of sickness absence or its recurrence due to CMDs.
Research question 6 (Chapter 8):
Does the employment status of employees change in the years after full return to work after a period of sickness absence due to common mental disorders?
After a period of sickness absence due to CMDs a total of 10% of the employees left their jobs during the 5 years after full return to work, as compared with only 9% of the employees without sickness absence due to CMDs. Most of the first group of employees (79%) resigned their jobs within one year after returning to work. In the following 4 years, employees were dismissed because of poor work performance. After return to work from a period of sickness absence due to CMDs, employees reduced their working hours per week, particularly in the first year. Employees were also more likely to change their working time arrangements (from daytime to shift work or vice versa), in the 4 to 5 years after full return to work.

Research question 7 (Chapter 9):
Which factors, according to scientists and physicians, should be incorporated in a model to predict recurrent sickness absence due to common mental disorders?
A Delphi panel reached consensus on 21 factors that influence the risk of recurrent sickness absence due to depressive disorders; 7 of these factors were readily assessable in consultations with employees: stressful life events, stressful work events, age at first diagnosis, duration of last depressive episode, anxiety symptoms, lifetime number of depressive episodes, and psychological work demands. These 7 factors could be included in interviews aimed at assessing the likelihood of an employee’s recurrent sickness absence due to depressive disorders.

Reflections on the main findings

Duration of sickness absence due to common mental disorders
Sickness absence due to CMDs is usually of long duration and associated with disability pensioning. In several systematic reviews, the evidence for a relationship between the type of mental disorder and the duration of sickness absence has been qualified as limited and sometimes contradictory. In Chapter 2 we have shown that mood disorders have the longest sickness absence durations and the lowest percentages of return to work. Depression is known as a more severe disorder with a higher risk of impaired job performance. Symptoms are more severe in mood disorders as compared to emotional disorders and stress-related disorders. Besides being more severe, mood disorders might also result in longer SA duration because of comorbid psychiatric disorders. Mood disorders are associated with other psychiatric disorders, particularly anxiety disorders. Depressed employees are three to eight times more likely to develop an anxiety disorder than employees in the general population. In this thesis we were not able to consider comorbid psychiatric disorders because our sickness absence data were collected from an Occupational Health Service register in which occupational physicians could certify sickness absence with only one diagnosis. Sickness absence duration due to CMDs also depends on the type of work. Chapter 6 shows that in the industrial sector, sickness absence due to CMDs lasts longer among office employees than among production employees. A possible explanation for the longer absence duration may be that jobs with high cognitive demands are more challenging to return to in case of CMDs. Fatigue, one of the core symptoms of CMDs, reduces the ability to concentrate, making work tasks that require thinking, reading, writing and learning more difficult.

Prediction model for duration of sickness absence due to common mental disorders
The prediction model developed by Nieuwenhuijzen et al. included age, educational level, depressive and/or anxiety symptoms and the employee’s recovery expectations as factors predicting the duration of sickness absence due to CMDs. In Chapters 3 and 4 of this thesis we examined whether higher age (>50 years), higher education, presence of depressive/anxiety symptoms and longer (>3 months) recovery expectations were associated with a longer sickness absence duration due to CMDs. The original model, developed in a sample (N=188) with 54% teachers, did not predict such sickness absence in a heterogeneous population. Re-calibration of the model and the addition of new variables, particularly variety in work and illness identity, improved the performance of the prediction model, possibly making it useful as a tertiary preventive tool to identify employees at risk of long-term sickness absence (i.e., >3 months). Such a tool could help to determine which employees should be referred to interventions aimed at expediting return to work.

Besides differentiating between occupational health providers, the tool should also be linked to the appropriate types of intervention, for example work-related cognitive behavioural therapy or multidisciplinary occupational rehabilitation programs. In Dutch sickness absence legislation and policies, employers or sickness absence insurers pay the costs of interventions aimed at expediting return to work. An evidence-based decision-tree could help occupational physicians to convince employers and insurance companies of the necessity of interventions to prevent long-term sickness absence due to CMDs. The Brief Illness Perceptions Questionnaire might help occupational physicians to structure their examination of illness perceptions.

In this thesis and in the literature, negative illness perceptions were found to prolong the duration of sickness absence due to CMDs. The perceptions of employees about their illness determine their emotional and behavioural responses to illness. Negative illness perceptions can be changed into more positive perceptions, by occupational physicians or (occupational) psychologists or by e-health programs, which may facilitate return to work after sickness absence, hereby reducing the duration of absence. It should be noted that a more negative perception can also be the result of more severe CMDs, which might influence both the illness perception and the duration of sickness absence. Employees with less negative illness perceptions may experience their sickness as less severe and be more capable of using problem-solving strategies to maintain daily activities, including work. Moreover, they tend to have a high self-efficacy for RTW. An individual’s belief in his ability to succeed in a specific activity or behaviour is defined as self-efficacy. RTW self-efficacy determines how much effort employees will expend in RTW activities during sickness absence. Employees with low self-efficacy tend to avoid situations they believe exceed their skills and may therefore be inclined to take no actions aimed at return to work. The stronger the perceived self-efficacy, the more active the efforts to recover and
regain daily activities, including work. A recent study by Nieuwenhuijsen et al. describes how self-efficacy measured by the ‘Self-efficacy for RTW questionnaire’ predicts the duration of sickness absence. A higher self-efficacy for RTW was found to be associated with a shorter absence. Volker et al. found that lower self-efficacy, especially the thought of not being able to work while having symptoms and reporting chronic medical conditions, were predictors of a longer absence before RTW. It was concluded that guidance of sick-listed employees should focus on factors such as self-efficacy and illness behaviour. In a later study, Volker et al. showed that an eHealth module aimed at improving self-efficacy and a decision aid with advice regarding treatment and referral options reduced CMD symptoms and expedited return to work. Interventions should be directed not only towards the alleviation of complaints, but also towards increasing the employee’s self-efficacy. Besides activities to resume work, self-efficacious employees may also be more likely to accommodate work to their capacities. Self-efficacious employees rearrange their work to increase its variety in an attempt to make their job less boring, less hindering, and more motivating.

Recurrent sickness absence due to common mental disorders

Approximately 20% of employees who recover from sickness absence due to CMDs experience recurrent SA due to CMDs, often within 3 years. The decision to report sick again may depend on a variety of person-related, health-related, and work-related factors. In Chapter 6 we showed that the median time to recurrent sickness absence due to CMDs is 15.2 months. Employees aged 55 years or older are at risk of recurrent sickness absence due to CMDs within 12 months, with a median time to onset of 3.7 months. Our results showed that employees are best invited at 6 months, and older employees (>55 years) at 3 months, after return to work.

The likelihood of recurrent SA due to CMDs was independent of the CMD diagnosis; the time to recurrence of sickness absence was shorter for mood disorders than for other CMD diagnoses. When looking at recurrent sickness absence, problematic situations at work may increase the likelihood that employees report sick again with CMDs. For example, persistent conflicts with supervisors increase the risk of recurrent absence. Bertilsson et al described the perceived stigmatisation of employees sick-listed with CMDs, a factor which may contribute to recurrence risk. Stigmatisation can negatively affect an employee’s self-efficacy, thereby reducing the ability to solve problems or conflicts at the workplace. Early recognition of CMDs and a respectful approach, without stigmatisation, could prevent recurrent absence. Older employees (aged >65 years) have a higher risk of recurrent absence.

Arends et al. showed that a problem-solving intervention reduces the likelihood of recurrent sickness absence due to CMDs. Moreover, qualitative research has shown that employees find it difficult to meet job demands after sickness absence due to CMDs. Possibly, not only the perception of job demands, but also non-effective coping with these demands plays a role in the recurrence of absence. The present study showed that neither the type of work (office or production) nor the working time arrangement (daytime or shift work) influenced the likelihood of recurrent absence. (Chapters 6 and 7) Arens et al. reported that company size has an effect: the risk of recurrent absence was greater in companies with more than 100 employees. Several explanations are possible for the protective effect of small companies. Employees may experience more commitment and responsibility towards colleagues. Moreover, expectations of mutual give and take, based on the so-called psychological work contract between employee and employer, are probably more present in smaller organisations. Aspects of communication and organisational culture may also be of influence. In Chapter 9 we showed that scientists and (occupational and insurance) physicians reached consensus on 7 factors influencing the likelihood of recurrent sickness absence due to depressive disorders. These factors may serve as starting points for future research, as recurrent sickness absence due to CMDs is a complex phenomenon.

Methodological considerations

Sickness absence data

The strength of the studies in this thesis is that the sickness absence data were retrieved from an online OHS sickness absence register. Recorded sickness absence data are less likely to be recall-biased than self-reported data. Recorded data are assumed to be reliable because the data are used for salary payments and social security purposes. Furthermore, the studies used occupational physicians’ diagnoses, which is better than relying on employee-reported mental health symptoms or problems. Previous research showed reasonably good agreement between diagnoses by occupational physicians and those by psychiatrists, although the reliability is moderate for unspecified diagnoses such as ‘stress’. Occupational physicians’ diagnoses can be translated into ICD-10 codes, enabling international comparison of diagnostic codes. A disadvantage of the registration system is that since SA was certified with only one diagnostic code comorbidities could not be investigated.

A limitation of this study is that the data on recurrent sickness absence due to CMDs were collected after a self-set baseline sickness absence episode. There was no information as to whether the baseline episode was the first sickness absence or a recurrence of earlier absence. The studies reported in Chapters 5, 6, 7 and 8 were carried out in a large population, followed for 5 to 10 years. Employees who left their jobs (either voluntarily or non-voluntarily) were no longer followed in the OHS sickness absence register. Hence, selection bias cannot be excluded because employees with sickness absence due to CMDs are at greater risk of losing their jobs (Chapter 9). Follow-up information on work status and sickness absence is thus no longer available. Employees may transfer to another employer or go into unemployment. In such cases recurrent sickness absence due to CMDs will not have been recorded in the OHS sickness absence register.

Study designs and populations

The studies presented in Chapters 5, 6, 7 and 8 had a prospective design and included a large cohort of employees followed up for 5 to 10 years. Although employees had jobs varying from unskilled steel workers to managers, all were recruited from one steel mill company. Therefore, these findings cannot be
generalized to cover the general working population. In Chapters 7 and 8 the study population included only male production employees, which further restricted the external validity of the findings.

The studies reported in Chapters 3 and 4 were carried out in a heterogeneous population, but the size of this population was relatively small. In comparison with all employees who reported sick with CMDs in the baseline period, study participants were older and more often OP-diagnosed with neurotic disorders. Participants also had longer sickness absence duration, indicating that the studies may have included employees with more severe CMDs.

**Occupational health care system**

Occupational health care policies and practices, sickness absence certification, registration, compensation systems and sickness absence culture differ between countries. This makes it difficult to compare studies. For example, in the Netherlands, sickness absence episodes with fewer than 28 calendar days between are merged into one episode. This may not be the case in other countries, a possibility which restricts the comparability of sickness absence durations and recurrences. To facilitate international comparative studies on sickness absence, there is a need for international consensus on standardized sickness absence measures.

**Practical implications and directions for further research**

In this section we discuss the implications of findings for future occupational health practice and research. We discussed our findings with different stakeholders like occupational physicians, ArboNed, and human resources (HR) consultants.

**Implications for occupational health practice**

We found that OP's can identify employees at risk of long-term sickness absence (>3 months) due to CMDs by taking into account age, educational level, the presence of depressive and/or anxiety symptoms, variety in work, and the illness perceptions, illness identity and illness concern during their first consultation with the employees. This knowledge can be used to decide which employees to refer to interventions aimed at expediting return to work in an early stage of absence. During our discussions about these factors OPs asked for a tool to identify employees at risk of long-term absence (>3 months).

ArboNed plans to develop a digital anamnestic tool based on the predictive factors found in this thesis to identify employees at risk for long-term sickness absence (>3 months) due to CMDs. The outcome could be used to differentiate between guidance by an occupational physician, social worker or psychologist.

Illness perceptions are important for the duration of sickness absence. Although OPs mentioned that they did ask questions to investigate an employee's illness perceptions, they differed in their efforts to influence the illness perceptions of the employees. OPs need to be aware of their role in changing negative illness perceptions into more positive ones.

We also showed that the guidance of employees sick-listed with CMDs should not end with full RTW. The risk of recurrent sickness absence and of dismissal because of poor work functioning may be reduced by preventive consultations after full RTW. Overall, we recommend inviting employees for a preventive consultation six months after full RTW; however, employees aged >55 years should be invited sooner, for example two months after full RTW.

Given the fact that employees must now work longer, and the finding that older employees (aged >55 years) are at a higher risk of recurrent sickness absence due to CMDs, HR consultants have asked for advice and support to develop organizational policies to sustain these older employees in their work after RTW. Employers should include the possibility of inviting employees to review their mental health status after return to work in contracts with an occupational health service.

The increased risk of dismissal because of poor work functioning in the years following full RTW after absence justifies periodical monitoring and evaluation of an employee's work functioning. Occupational health care providers and supervisors could also examine whether the job still meets the employee's capabilities and values. If appropriate, the health care providers and supervisors should offer opportunities for coaching on the job or other interventions aimed at improving work functioning to maintain the employee at the workplace. In reflections with OPs they reported that there was no consistency in inviting employees to review their mental health and work functioning after full RTW. The guideline of the Netherlands Society of Occupational Medicine now states that the guidance of sick-listed employees with CMDs can be closed if “optimal work functioning” is achieved. A revision of this guideline is scheduled for 2016. Given the results of this study it would be advisable to include a longer period to monitor work function.

The HR consultants recognized that RTW of employees experiencing difficulties in coping with the cognitive demands of work may be expedited by accommodating work to the (reduced) capacities of employees. The use of a questionnaire with items measuring the fit between work and personal capacities can provide clues for work accommodation, but might also indicate that employees could best be guided to other workplaces or other jobs better suited to their capacities. Based on the results in this thesis, OP's could consider assessing work functioning six months after full RTW and investigating whether the job still fits the employee's wishes and capacities. The practical feasibility of questionnaires depends on the options offered by the employer to improve the fit between the employee's work, personal capacities and work functioning.

**Directions for further research**

The prediction rule including “variety in work” and “illness perception” is a potential tool to identify employees at risk of long-term sickness absence (i.e., >3 months) due to CMDs. The prediction rule needs further validation in larger samples and, if possible, improvement before it can be used in daily healthcare practice. Insight into the underlying causes of (recurrent) sickness absence due to CMDs is still needed; for this long-term longitudinal cohort studies are required.
Ideally, such longitudinal studies are conducted among starters at the labour market with repeated measurements of work engagement, work role functioning, capabilities, self-efficacy, mental health, and sickness absence to examine the aetiology of (recurrent) short-term sickness absence due to CMDs. In The Netherlands, the first consultation with an OP usually takes place between 3 and 6 weeks after reporting sick. The result is that short-term sickness absence often remains outside the scope of OPs, managers and human resource staff.

However, short-term sickness absence due to CMDs may be a precursor to long-term sickness absence. If future research reveals which patterns of short-term sickness absence episodes due to CMDs are predictive of long-term absence, interventions can be developed to prevent long-term absence. Repeated short-term sickness absence episodes may also be a signal of person–job misfit or may indicate that an employee is dissatisfied with his/her job. In that case, frequent absentees could be referred to interventions to accommodate work to their capabilities or could be helped to find work better suited to their capacities and wishes. This may reduce the number of employees dismissed because of poor work functioning, as well as the risk of unemployment after dismissal. In addition, future research should focus in more detail on recurrent sickness absence due to CMDs. Relevant questions would be: which factors increase the risk of recurrent sickness absence due to CMDs? Can recurrent sickness absence be predicted, for example by measuring the factors mentioned by the Delphi panel as being predictive? (Chapter 9).

To get insight into the risk factors of dismissal and unemployment after RTW (Chapter 8), we need further long-term follow-up research, addressing at least the first five years after full RTW. We also need qualitative studies to gain knowledge about: 1) the considerations of employees to leave their jobs after recovering from sickness absence due to CMDs, 2) the role of stigmatisation after sickness absence due to CMDs and 3) the considerations of supervisors assessing the work functioning of employees who have returned to work. These qualitative studies can provide information for further quantitative research into work functioning beyond full RTW. The cross-cultural and adapted Work Role Functioning Questionnaire (WRFQ 2.0) [35, 36, 37] could be used to periodically monitor work functioning in the years following full RTW.

In the studies made for this thesis, research starts with a sickness absence period due to CMDs. To study the current working population, data from occupational health checks should be linked to data on future sickness absence. This would enable research into the relationship between work functioning, appropriateness of the job, capabilities and future sickness absence due to CMDs. Occupational health checks could include, as standard, a more comprehensive list of questions on whether the job still fits the employee's capabilities and values [35]. It is important that outcomes be discussed with the employee and effective interventions be offered.

**Conclusion**

This thesis has discussed several factors that are relevant for the duration of sickness absence due to CMDs. The factors in the prediction model, including employees’ illness perceptions, help to identify those at risk of long-term sickness absence (>3 months). Guidance of employees should not stop after full RTW. To prevent recurrences, preventive consultations should be planned. Older employees (>55 years) should be consulted within two months of RTW. OPs should also monitor employees’ work functioning and the suitability of the job to their capabilities and values.
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