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Chapter 8

General discussion

GENERAL DISCUSSION

This chapter starts with a summary of the main findings of this thesis, followed by an interpretation of these findings and a comparison to existing literature. Next, methodological aspects of the studies will be considered and recommendations will be made for practice and further research.

The high sickness absence figures among workers with major depressive disorder (MDD) do not only put a high financial burden on society, but they also negatively influence the wellbeing of the workers. Particularly prolonged absence from work has severe consequences for the quality of life of the depressed, sick-listed worker. Improvement of the care for sick-listed workers with MDD, and particularly improvement of the attention for return to work (RTW) in treatment, is necessary to enhance the quality of life of workers and to reduce costs. In order to better understand absenteeism and RTW, and to support the development of interventions aimed at reducing absenteeism and promoting RTW, it is important that factors associated with absenteeism and RTW are identified. Moreover, interventions need to be developed for sick-listed workers with MDD. In this thesis, several factors were examined for their association with sickness absence and RTW and a collaborative care intervention was examined for its effectiveness on RTW and depressive symptoms in sick-listed workers with MDD.

Main findings of this thesis

In a prospective cohort study among workers with all-cause sickness absence greater than 4 weeks, several health-related, personal and job-related factors were examined for their association with the duration until RTW. The results showed that sick-listed workers with older age (≥ 45), moderate to severe depressive symptoms (Patient Health Questionnaire-9 score ≥ 10), high physical symptoms (Physical Symptoms Checklist score ≥ 5), high physical job demands (Job Content Questionnaire scale score ≥ 17) and contact with medical specialists were at increased risk for a longer duration of sickness absence (Chapter 2) [1-3].

Furthermore, in a cross-sectional study on the associations between personality characteristics and absenteeism, high neuroticism, external locus of control, low extraversion and low conscientiousness were found to be associated with both short-term (≤ 2 weeks) and long-term (> 2 weeks) absenteeism. There were subtle differences in the associations between healthy workers and workers with a depressive or anxiety disorder: significant associations between personality characteristics and long-term absenteeism were found for workers both with and without psychopathology, but the associations of neuroticism and locus of control with short-term absenteeism were found only in healthy workers. In addition, low openness and low agreeableness were only associated with absenteeism in healthy workers (Chapter 3).

Next, the results of a randomised controlled trial (RCT) showed that a collaborative care treatment with a focus on RTW was not superior to usual care in reducing the duration until RTW among sick-listed workers with MDD. With respect to the results on depressive symptoms, collaborative care did have an immediate effect, but this effect decayed during the 12-month follow-up. More specifically, collaborative care led to a faster response than usual care and at 3 months after baseline, more collaborative care participants than usual care participants had achieved response. However, over the entire follow-up period collaborative care did not lead to more

response than usual care. Moreover, the two groups did not differ in terms of remission or on the continuous outcome measure of depressive symptoms (Chapters 5 and 6). Finally, cost-effectiveness analyses showed that collaborative care was not more cost-effective than usual care. Although the direct medical costs were lower in the collaborative care group, the 2 groups did not differ in productivity costs. In both groups, the quality of life of the workers improved, but the usual care group improved to a greater extent than the collaborative care group (Chapter 7).

Interpretation of findings

Factors associated with absenteeism and RTW

According to the International Classification of Functioning, Disability and Health (ICF), absenteeism and RTW can be viewed as outcomes of disorder-related, environmental and personal factors (see Figure 1) [4]. Although the ICF has often been applied to absenteeism and RTW, so far most research on these concepts only focused on health conditions and disorder-related factors. This thesis contributes to the gap in knowledge by examining various disorder-related, environmental and personal factors for their association with absenteeism and RTW.

Two disorder-related factors, i.e. physical and depressive symptoms, were found to be associated with a longer duration until RTW in sick-listed workers due to any cause. Thus, regardless of the initial cause of sickness absence, experiencing these symptoms may hinder the RTW process. These results may indicate a need for screening for these symptoms in sick-listed workers by the occupational physicians (OP). The 9-item depression scale of the Patient Health Questionnaire (PHQ-9) is a validated instrument for the screening and monitoring of depressive symptoms [1,5]. For physical symptoms, the Physical Symptoms Checklist (Lichamelijke Klachten Vragenlijst, LKV) might be used as a screening instrument, however, further research is needed on that [2]. Also, curative interventions aimed at symptom remission may be needed, such as collaborative care interventions for MDD. However, perhaps sick-listed workers are hampered in RTW by their symptoms partly because they focus (too) much on their symptoms when considering RTW. Although some workers may assume that they should postpone RTW until they are completely free from symptoms, current evidence suggests that a complete recovery of symptoms does not need to be a prerequisite for RTW. In fact, RTW may contribute to the worker's recovery [6-9]. Previous research already suggested the importance of the intention to 'RTW despite having symptoms' in promoting RTW [10]. Therefore, in order to promote RTW, it may as well be helpful to focus on the cognitions of workers with respect to RTW 'while having symptoms.' Of the environmental factors that were examined, high physical job demands were associated with a longer duration until RTW. Other job-related factors such as job control and social support at work were not found to be associated with the duration until RTW. This suggests that reducing the physical demands in a job may be a more effective approach for promoting RTW in sick-listed workers than efforts aimed at increasing job control and social support. Of the environmental factors, also contact with a medical specialist was related to a longer duration until RTW. Even when controlling for medical conditions and symptoms, workers who had had contact with a medical specialist were at an increased risk for a longer duration of sickness absence. Visiting a medical specialist may reflect a more severe condition, but this association might also indicate that receiving specialist care keeps workers at home, waiting for a diagnosis or treatment. Moreover, attention from a medical specialist may be interpreted by workers as a confirmation of the importance of

their problems [11]. An explanation of this finding might also lie in the communication between OPs and medical specialists. Communication between these two health professionals is often limited and hampered by the fact that both have different goals when treating the same patient [12]. Conflicting advices regarding activation and RTW may confuse the worker and are likely to hinder RTW. Of the personal factors, older age was found to be related to a longer duration until RTW, which confirmed previous research [13,14].

Other personal factors that were examined in this thesis are personality characteristics of the worker. Our study showed that high neuroticism, low extraversion, external locus of control and low conscientiousness were associated with absenteeism in workers both with and without a depressive or anxiety disorder. This might not come as a surprise, particularly since it is increasingly recognized that absenteeism and RTW should be viewed as behaviors, influenced by many factors other than the medical condition. When having health problems, workers with particular personality characteristics may have a lower threshold to report sick (or higher threshold to RTW) than others. Highly neurotic workers have the tendency to respond with negative emotional responses to stressors or frustrations, and perhaps reporting sick might be perceived as a way of responding to a stressful situation. The link between low extraversion and absenteeism might also be explained by how workers deal with stressful situations. In previous research, high extraversion was found to be associated with engagement coping, and perhaps reporting sick can be perceived as a form of avoidance coping. Research indeed showed that an avoidant coping style increased sickness absence [15,16]. The association between external locus of control and absenteeism might be understood by looking at behavioral models. For instance, the theory of planned behavior (TPB) has been applied before to understand absenteeism and RTW [17,18]. In the TPB, one of the determinants of behavior is perceived behavioral control, referring to the perceived ease or difficulty of performing a specific behavior. Compared to perceived behavioral control, locus of control is a more generalized trait that is stable across situations. In agreement with the importance of perceived behavioral control, our results suggest that the more general concept of locus of control is related as well to the specific behavior of reporting sick [19]. Finally, the association between low conscientiousness and absenteeism suggests that characteristics such as low responsibility, persistence and planning implicate a higher risk for absenteeism.

Some of the factors that were found to be associated with absenteeism and RTW are not directly modifiable. Particularly personality characteristics are assumed to be relatively stable and may be rather resistant to change. However, even in that case, knowledge on the associated factors is still useful by supporting OPs in identifying workers at risk for (a longer duration of) sickness absence. Moreover, interventions might not always need to be aimed at a substantial change in the associated factors. Instead, interventions may also be specifically tailored to groups of workers with specific characteristics. For example, interventions may focus on dealing with problems that workers with high neuroticism or external locus of control often encounter due to their vulnerability to stress and perceived lack of control. In addition, knowledge on the associated factors may increase awareness in OPs and other health professionals. For instance, since visiting a medical specialist was associated with a longer duration of sickness absence, OPs may become extra aware of the importance of good communication with the medical specialist. When functional limitations and possibilities for activation are discussed, conflicting advices may be prevented.

The abovementioned findings may be placed into the ICF, as shown in Figure 1. However, the ICF is a general framework in which absenteeism and RTW are associated with disorder-related, environmental and personal factors. More specific models may be taken into account as well. For example, with respect to environmental factors, a well-known model is the Demand-Control-Support (DCS) model, proposing that interactions between job demands (psychological and physical job demands, and job insecurity), decision latitude and social support determine psychological strain [3,20]. Of the components of the DCS model, only the importance of physical job demands in predicting RTW was confirmed in our study. Also communication between the OP-care manager and psychiatrist may be viewed as an environmental factor, and the integrated care component of our collaborative care intervention was aimed at this factor. In addition, personal factors might be better understood by looking at behavioral models such as the TPB. The TPB states that behaviour is determined by the intention to perform that behavior, which in turn is influenced by attitudes, subjective norms and perceived behavioral control [17,19]. Previous research showed personality characteristics to be moderators in the TPB. For example, behavioral intention was stronger associated with behavior in persons with high extraversion and high conscientiousness than in persons low on these characteristics. Also, those with high neuroticism and low extraversion had a stronger association between subjective norm and their intention to perform the behavior [21,22]. Moreover, the concept of perceived behavioral control in the TPB overlaps with locus of control, which we found to be associated with absenteeism. Thus, our findings suggest the importance of personal factors in predicting absenteeism and RTW, possibly by moderating the effects of behavioral determinants such as the intention to RTW.

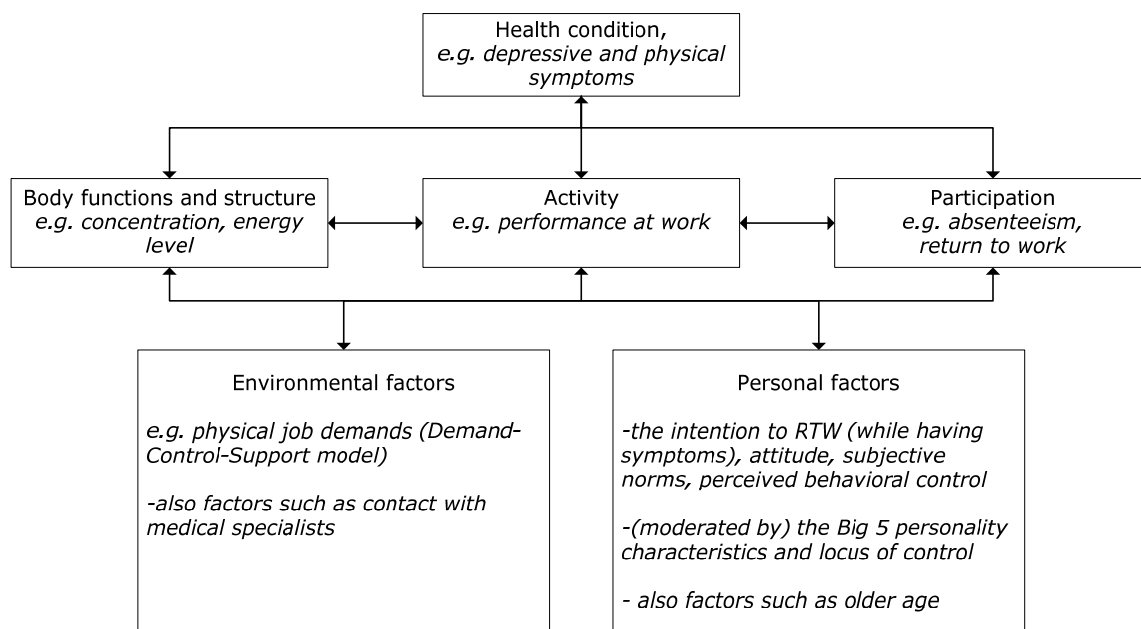


Figure 1. The International Classification of Functioning, Disability and Health, adjusted to the findings of this thesis.

Collaborative care treatment with a focus on RTW

The collaborative care treatment in our study showed less effect than expected. Although collaborative care led to a faster response than usual care, it neither had an effect on the duration until RTW nor on the other depression outcomes. An interesting aspect of the study results is that at 3 months after baseline, a significant effect for collaborative care was found on the dichotomous outcome measure response, whereas no effect was found on the continuous outcome measure. As was previously illustrated by Poirier and Boyer, this discrepancy can be explained by the variation in the PHQ-9 scores [23]. When visually examining a histogram with the difference scores on the PHQ-9, collaborative care participants seem overrepresented in the group with a large decrease in depressive symptoms and in the group with no improvement or a slight increase in symptoms, whereas usual care participants seem to be in the majority in the group with a moderate decrease of symptoms (see Figure 2). As a result, the two groups are comparable for mean PHQ-9 scores, whereas differences between the two groups become more apparent if a decrease in symptoms of at least 50% is needed [23]. Although response is a clinically relevant and internationally recognised outcome measure, the results at 3 months after baseline may be interpreted as modest, since an effect on the continuous outcome measure was lacking.

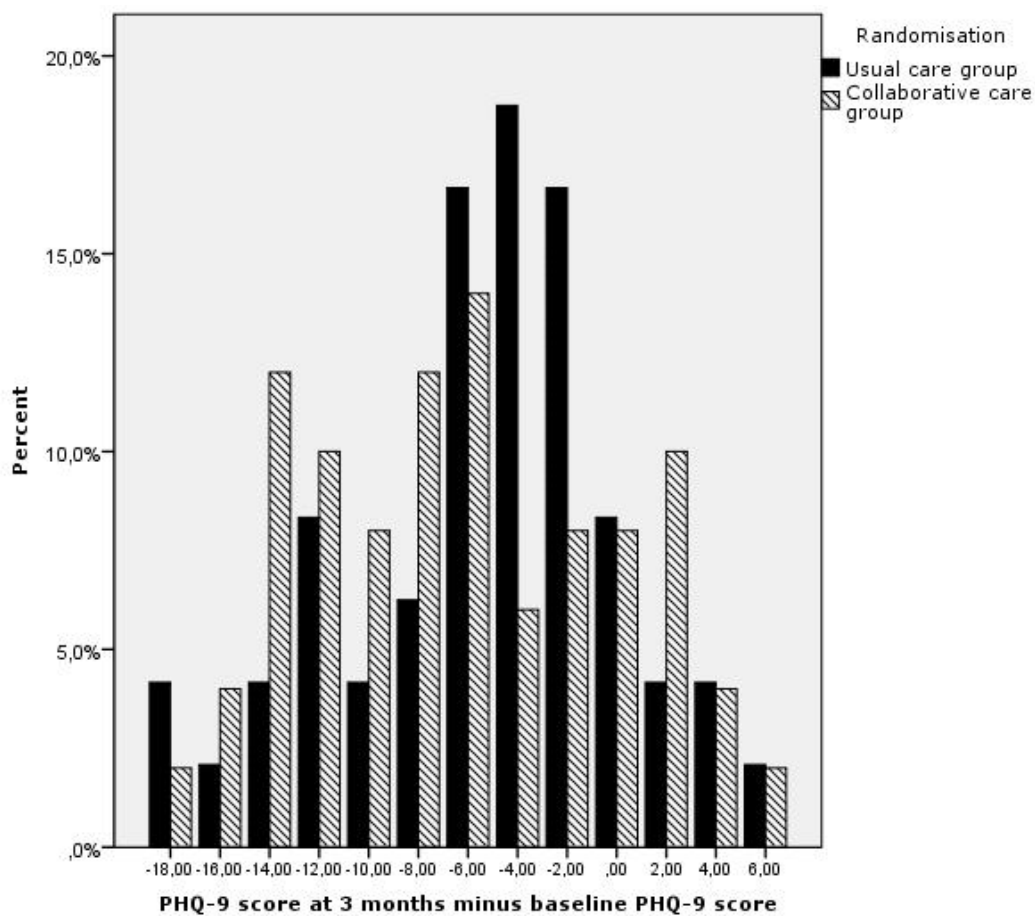


Figure 2. Difference scores on the PHQ-9 for the collaborative care group and the usual care group.

Program failure or theory failure

To interpret study results as ours, the concepts of program failure and theory failure are useful. An example to explain these concepts was put forward by Kristensen: "It does not help that the pill has effect if the patient does not take the pill (program failure) and it does not help that the patient takes the pill if the pill has no effect (theory failure)" [24]. Thus, when the collaborative care treatment itself is effective, but patients and OP-care managers are not adhering to the treatment protocol, it could be referred to as program failure. However, when patients and OP-care managers are adhering to the treatment protocol, but the collaborative care treatment itself is not effective, it would be theory failure.

In our study, program failure probably occurred, for several reasons. First, only two thirds of the collaborative care participants actually started the collaborative care treatment. Due to a lack of OP-care managers, long waiting lists for the collaborative care treatment started to exist during the recruitment phase of the study, which demotivated participants for starting the collaborative care treatment. While the idea was to provide depression treatment in the occupational healthcare setting in order to avoid waiting lists in the specialty mental health setting, ironically, this approach led to waiting lists and lack of treatment in the occupational healthcare setting as well. In addition to the waiting lists, another explanation for the substantial number of participants that did not start the collaborative care treatment might be found in the separation of treatment and sickness certification in the Dutch legislation. As a consequence of that separation, workers may not be used to the treatment role of the OP, and thus the approach of having OPs fulfilling the role of care manager may have been too different from what workers (and OPs) are familiar with. Since OPs are hired by the employer, workers might also be suspicious of the OP in a treatment role and might believe that the OP mainly acts in the interests of the employer [25,26].

Moreover, this unfamiliarity applied to the Medical Ethical Committee as well, to which we submitted our study protocol for approval. The committee was particularly concerned about the competences of the OP to provide a good quality of treatment and the potential conflict of interest between the treatment role and the sickness certification for the OP in the Netherlands. Therefore, in accordance with the separation in the Dutch legislation, we separated in our study the collaborative care treatment from the sickness certification and had them provided by different OPs (respectively, the OP-care manager and the company's OP). In addition, communication between the company's OP and the OP-care manager followed existing Dutch laws and guidelines and was only allowed after written informed consent of the worker [27,28]. Furthermore, to guarantee the quality of the collaborative care treatment, training and supervision were provided to the OP-care managers and the OP-care manager was supported by a consultation-psychiatrist and a web-based tracking system. However, despite these efforts, workers may still have felt inhibited in visiting the OP-care manager. A second indication for program failure is that the majority of the collaborative care participants did not receive the workplace intervention. Since particularly the workplace intervention was expected to support workers in their RTW, this eliminated the most important contrast in the intervention aimed at RTW. It may have felt unsafe for workers to be guided in the workplace intervention by the OP-care manager who also provided the depression treatment, particularly since the employer participated as well in the workplace intervention. Again, despite our efforts to ensure a high-quality treatment in a safe environment, perhaps it was not perceived as such by the workers. Perhaps the workplace intervention would

have been better implemented if it had been guided by a different occupational health professional, for example a company social worker or a labor expert, who might be perceived as more neutral by workers [18]. Some OP-care managers reported as well that they felt uncomfortable in providing the workplace intervention while also fulfilling the treatment role. Finally, compared with collaborative care trials in primary care, a relatively high percentage of workers in our usual care group achieved treatment response [29,30]. Therefore, another explanation for the lack of effect in this study in the occupational healthcare setting might be a relatively high quality of usual care, thereby reducing the contrast between the collaborative care group and the usual care group. In fact, the majority of workers in our usual care group had received treatment from a mental health professional. Perhaps MDD patients who are on sickness absence feel more pressured (by themselves or by others) to seek treatment than MDD patients who are not on sickness absence.

In addition to program failure, could there have been theory failure as well? The collaborative care treatment in our study was based on the ICF [4]. Parallel to the disorder-related, environmental and personal factors in the ICF, this model offers three opportunities for intervention, as described by Verbeek: 1. better treatment, aimed at improving the health-condition, 2. workplace adaptations, aimed at adapting the environment, 3. intervening on personal factors such as improving skills, changing cognitions about illness and work, and coping [31]. In agreement with these opportunities, our collaborative care treatment was aimed at providing better depression treatment (by providing evidence-based treatment, by continuously monitoring symptoms and by supporting the OP-care manager with a web-based tracking system and a consultant-psychiatrist), and our collaborative care treatment was aimed at workplace adaptations (by providing a workplace intervention). An aspect of theory failure in our study might be that the collaborative care treatment focused too little on personal factors. Although Problem Solving Treatment might also be perceived as an intervention teaching the patient new (problem solving) skills, our results and those of Van Oostrom et al. suggest that personal factors such as personality characteristics and the intention of workers to RTW (while having symptoms) deserve more attention in interventions as well [10].

The collaborative care study was part of a nationwide program, the Depression Initiative, aimed at improving depression care by implementing evidence based care according to the multidisciplinary guideline for MDD [32,33]. Although the treatment role of the OP-care manager in itself is a new role, it is in line with the 'intervention role' for OPs that is described in the OP guidelines for mental health problems of the Dutch Board for Occupational Medicine [34]. We only partly succeeded in achieving the aim of the Depression Initiative, since Problem Solving Treatment was applied by the OP-care managers according to the protocol, but the workplace intervention was not.

Comparison with other studies

Factors associated with absenteeism and RTW

Our studies on factors associated with absenteeism and RTW mainly confirmed and complemented previous research findings. Contrasting results may often, at least partly, be explained by differences in study populations and operationalizations. For example, as suggested by our study, previous sickness absence per se (regardless of the cause of that previous sickness absence) is not associated with the duration of sickness absence, whereas other studies suggested that previous absences longer than 20 weeks and

previous absences due to similar health conditions as the current absence episode are associated with the duration of sickness absence [35,36]. Furthermore, many studies examining factors associated with absenteeism and RTW focused on workers with specific disorders [37,38]. In our studies, we examined sickness absences due to any cause. In our study on personality characteristics, we did examine whether associations between personality characteristics and absenteeism differed between workers with a depressive or anxiety disorder and workers without a depressive or anxiety disorder. Only subtle differences were found between the two groups, and in the associations with long-term sickness absence the two groups were almost similar. This suggests that workers may be rather comparable to each other in the associations with absenteeism and RTW, regardless of their health conditions or the initial causes of sickness absence.

Collaborative care treatment with a focus on RTW

To our knowledge, our study was the first to examine the effectiveness of collaborative care in the occupational healthcare setting. In a previous study, linking the expertise of OPs with that of a consultant-psychiatrist showed to be a promising approach in workers with common mental disorders [39]. The collaborative care treatment in our study was intended to be a more elaborate form of collaboration between OPs and consultant psychiatrists, with trained OPs fulfilling the care manager role and closely monitoring treatment outcomes. Important difference between the 2 studies is that in the previous one the OPs themselves did not treat the depression [39]. Although OPs in the Netherlands are licensed to treat patients, our results suggest that actually providing treatment may yet be a bridge too far.

Two recent systematic reviews examined the effectiveness of interventions for depressed workers with respect to work outcomes [40,41]. Although Furlan et al. found twelve intervention studies, they could not recommend any of the interventions as effective since all studies were judged at a high risk of bias and evidence for the effectiveness of an intervention was always based on only one study [41]. They did recommend a number of interventions for further research, among which interventions with enhanced psychiatric care, an enhanced role for the OP and psychological interventions. In addition, in their Cochrane review, Nieuwenhuijsen et al. also concluded that there was no evidence of effectiveness on work outcomes for any of the interventions for depressed workers [40]. Again, each category of interventions was only examined in one or a few studies, and studies often had small sample sizes [40]. Thus, there clearly is a lack of research, and particularly a lack of high quality studies, on improving work outcomes in depressed workers. Nevertheless, research on mental health problems such as distress did suggest that interventions need to specifically focus on RTW, that the work environment needs to be taken into account and that these interventions may be best delivered by professionals who are close to, and familiar with, the work environment [6,7,42].

In our collaborative care intervention, particularly the workplace intervention was expected to support workers in their RTW. Originally, this intervention was developed, and proved effective, for workers with sub-acute low back pain [43]. After that, a reduced duration until RTW was found as well by Lambeek et al. in workers with chronic low back pain. In that study, an integrated care program was offered to the intervention group, consisting of the workplace intervention and a graded activity program based on cognitive behavioural principles [44]. However, another study showed that in sick-listed workers with distress the workplace intervention only reduced the duration until RTW in

the subgroup of workers who had the intention to RTW despite having symptoms [10]. Perhaps working with low back pain is more accepted among workers and employers than working while having mental health problems [10]. The workplace intervention is aimed at removing barriers for RTW, not at changing cognitions with respect to RTW while having symptoms, and the results of the distress study suggested that removing barriers for RTW may not be useful for workers who intend to postpone RTW until they are completely recovered from symptoms. Given the comparability of study populations, a comparable effect of the workplace intervention as in the distress study might have been expected in our population of sick-listed workers with MDD. On the other hand, our study is comparable with that of Lambeek et al. as well, since in both studies the workplace intervention was part of a more comprehensive model, i.e. collaborative care and integrated care. However, not only did we not measure the intention to RTW, the workplace intervention was also applied in too few participants in our study (N=5), whereas it was well implemented in the study of Lambeek et al [44]. This could also explain the lack of effects on RTW in our study compared to the study of Lambeek et al [44].

Methodological considerations

Several methodological aspects of our studies deserve consideration, including strengths as well as limitations. First, we believe that our studies met many of the requirements that have been described in the CONSORT Statement for reporting randomized controlled trials and in the STROBE Statement for reporting observational studies. For instance, eligibility criteria for participants and outcome measures were described in detail in our studies, and in the collaborative care study, both the research assistant and the participant were blinded for allocation when eligibility was assessed. Also, results were reported on all outcomes that were mentioned in the study protocol and intention-to-treat analyses were performed. Another strength of our study is that recruitment took place via a large occupational health service, covering about 15% of the Dutch working population, thereby recruiting workers with diverse occupations and from various companies. This increases the generalizability of our findings. After screening with the PHQ-9, diagnostic interviews were administered to check whether eligible participants really met the DSM-IV criteria for MDD. Finally, by performing multilevel analyses, we were able to take into account the possible clustering of data around OPs.

With respect to our collaborative care study, one limitation is that almost 15.000 workers had to be screened in order for us to reach the sample size of 126 participants. Only 20% of the workers filled in the screener, and of those scoring positive on the screener, many workers had to be excluded for various reasons. It is not known how many of the screen-positives actually had MDD, since the diagnostic interview was administered only after other inclusion criteria were confirmed (such as 'sickness absence between 4 and 12 weeks', 'no conflict with the employer'). These numbers might indicate that workers did not feel the need for depression treatment in the occupational healthcare setting. However, the invitation to participate in scientific research might have also deterred workers from responding to the screener. Although the response rate may be considered as low, it is comparable to other studies that were conducted in the occupational healthcare setting [10,44]. Another limitation of our collaborative care study is the high loss to follow-up on the self-report questionnaires. Although the collaborative care group and usual care group did not differ from each other in the loss to follow-up rates, this reduces the generalizability of the findings. In addition, the participants were

aware of their allocation to either the collaborative care group or the usual care group. Therefore, a Hawthorne effect cannot be ruled out and might have biased the results by overestimating the effect that we found on time to response. The fact that most data were obtained by self-report questionnaires might increase this bias, since participants might report what they think that is expected of them [45]. On the other hand, obtaining data from self-report questionnaires is standard in studies on depression treatment and excludes the possibility of interviewer bias. Furthermore, our power calculation was based on a collaborative care study in primary care in the United States, in which there may have been more contrast between collaborative care and usual care (as indicated by the substantially lower percentage of usual care participants receiving treatment and achieving response) [29]. Together with the high loss to follow-up in our study on the self-report questionnaires, this might imply that our sample size might have not been sufficient, which would result in an underestimation of the effect.

Our studies examining factors associated with absenteeism and RTW had some limitations as well. An important limitation in the study on personality characteristics is the cross-sectional nature of the study and the fact that depressive and anxiety disorders and personality characteristics were simultaneously assessed. Although a longitudinal study design with personality being assessed before the start of the depressive or anxiety disorder may be preferable, such studies are difficult to conduct [46]. A more practical approach is suggested by Costa et al., arguing that personality assessment in a person who is suffering a depressive or anxiety disorder provides valuable information on that person's personality in the midst of that disorder, and therefore that assessment will only be valid as long as the person is suffering that disorder [46].

Finally, our studies were performed in the Netherlands. Since there are large differences between countries in social security systems and disability policies, the results of our studies may not be generalizable to other countries.

Recommendations for further research and practice

Our results do not justify a widespread implementation of collaborative care as it was operationalized in our study in the Dutch occupational healthcare setting. It was an innovative study, but implementation of the model and the study results were only modest. Nevertheless, workers in the collaborative care group did achieve a faster response than workers in the usual care group, which suggests that there may be grounds to further explore collaborative care models in the occupational healthcare setting in future research. In that case, it needs to be considered which professional is in the best position to fulfill the role of care manager. For several reasons, as described in this chapter, our results suggest that the approach of having OPs fulfilling the role of care manager may be a bridge too far. Other professionals, such as company social workers, might be considered for the role of care manager. Anyhow, the dual focus on RTW and depressive symptoms remains important in the treatment of depressed, sick-listed workers, although future research needs to examine how that focus can be best put into practice. In the OP guidelines for mental health problems of the Dutch Board for Occupational Medicine, one role of OPs in the guidance of workers with MDD, is described as that of a process mediator who refers to treatment, monitors symptoms and treatment progress and communicates with the general practitioner and/or the treating psychologist or psychiatrist [34]. In line with the OP guidelines, further research may focus on improving referral to, and monitoring of, adequate treatment by the OP and on improving collaboration and communication between the OP and the curative sector.

Since workers with particular personality characteristics seem to have a lower threshold to report sick (or higher threshold to RTW) than others, it would be interesting to examine whether the effectiveness of RTW interventions can be improved by tailoring them to the specific characteristics or needs of the worker. Interventions may be composed of separate modules, with workers following those modules that fit to their characteristics, needs and situation. For example, for workers with an external locus of control, one module may focus on dealing with problems that they often encounter due to their perceived lack of control. In line with this, the findings of Van Oostrom et al. suggest that an intervention aimed at changing the workers' cognitions regarding RTW despite having symptoms may only be considered necessary for workers with a low intention to RTW despite having symptoms [47]. Future research might examine the cognitions of workers with MDD with respect to RTW, the extent to which these cognitions predict RTW and the extent to which these cognitions can be changed by interventions. Providing such an intervention, which for example may be based on cognitive behavioural techniques, to workers with low intention to RTW while having symptoms, might be a first step in the guidance to RTW [47]. In addition, further research needs to examine the effectiveness of the workplace intervention in workers with MDD, taking into account the cognitions of the workers with regard to RTW while having symptoms.

Since entitlement for a disability pension in the Netherlands is determined after a maximum of 2 years of sickness absence, a follow-up of 2 years on sickness absence data might be interesting for future studies with absenteeism or RTW as outcome measure. With respect to the collaborative care study, it is possible that the comprehensive collaborative care treatment not so much led to a faster RTW but that it did lead a more sustainable RTW, leading to less recurrences of sickness absence. However, it should be reminded that the intervention element that was specifically aimed at RTW, i.e. the workplace intervention, was applied in only 12.5% (N=5/40) of the collaborative care participants who visited the OP-care manager. Therefore, there was little contrast between the collaborative care group and the usual care group with respect to interventions aimed at RTW, which reduces the chance on effectiveness on any RTW outcome measure.

In addition to recommendations for further research, our study results have several implications for practice. First, OPs may screen for depressive and physical symptoms in sick-listed workers in order to identify those at risk for a longer duration of sickness absence. The PHQ-9 and the LKV may be used as screening instruments, however, further research on the validity of the LKV as screener is needed [1,2]. Second, our results underline the importance of communication between OPs and medical specialists. When functional limitations and possibilities for RTW are discussed, conflicting advises to the worker may be prevented. In addition, since attention to work and RTW is often lacking in the curative sector, more education on this issue might improve the awareness of treating physicians on the importance of work and might facilitate communication [12,25]. Third, for workers with high physical job demands, OPs may implement work(place) modifications, aimed at (temporarily) reducing the physical job demands. Fourth, OPs (and employers as well) need to be pay extra attention to workers with a vulnerable personality, since these workers may be at risk for long-term absenteeism. OPs may support them in dealing with their vulnerability to stress and lack of control. Finally, as mentioned above, a widespread implementation of this particular

collaborative care model with the OP fulfilling the treatment role cannot be recommended for the occupational health practice at this point.

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