Work functioning impairments due to common mental disorders: measurement and prevention in nurses and allied health professionals
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General introduction
Common mental disorders and work
Mental disorders, such as adjustment, mood, and anxiety disorders, are highly prevalent in most industrialized countries. For the general working population in Europe, the 12-month prevalence for having any depressive, anxiety, or alcohol-related disorder is 9%. The prevalence of milder symptoms is even higher. Based on two Dutch studies, the prevalence for distress, mild depression, or mild anxiety ranges from 16% to 22% in adult men and from 19% to 26% in adult women. This group of mild and moderate severe mental disorders is conceptualized as common mental disorders. For the studies in this thesis, in accordance with Glozier, Watanabe and colleagues, and based on their prevalence, adjustment, depressive, and anxiety disorders, as well as substance abuse and dependence are included in the umbrella term of common mental disorders.

Common mental disorders (CMDs) are known to have a high burden of disease for patients, impairing their daily functioning and quality of life. Aside from the burden on one’s personal life, CMDs also impact one’s participation and functioning at work. The World Health Organization (WHO) expects depression to be the leading cause of absenteeism in industrialized countries in 2020. Absenteeism in relation to CMDs, its causes, costs, and related interventions has been studied extensively in the past. However, CMDs can also have substantial impact on the work functioning of workers attending work while suffering from mental health complaints, which is often referred to as presenteeism. Stewart and colleagues found that 81% of the costs for lost productive time of workers with depression were due to impaired performance while at work. In some occupations, such as healthcare services, CMD-related work functioning impairments can have serious consequences, as they can cause incidents with risks for the health of workers and patients.

Common mental disorders and the work of nurses and allied health professionals
In the nursing profession impaired work functioning due to CMDs is of special importance for three reasons. First, in the work of nurses – including surgical nurses and anesthetic nurses – the disposition to be absent from work is lower, which leads to more presenteeism compared to other professions. Second, impairments in the work functioning of nurses with CMDs can have serious implications for the health and safety of themselves and their patients. Previous studies in nurses have shown that workers with poor mental health experience significantly more medical accidents. Third, nurses have a high incidence of CMDs. The relative risk of depression is highest for nurses, RR = 3.5, 95% CI (1.3, 9.6), than for other human service workers and other healthcare workers. A possible explanation for this high prevalence may be found in work characteristics, which include high job demands, high emotional demands, a lack of autonomy, and insufficient social support. These are known risk factors for developing mental health complaints.

Next to nurses, allied health professionals, such as physiotherapists and radiotherapists, form another large group of workers in the hospital setting. To our knowledge, no research
findings on CMDs and associated work functioning impairments have been published about this group to date. Recognizing differences among the various occupations, departments and local conditions, nurses and allied health professionals have many work demands and conditions in common. Therefore, it is expected that the magnitude of CMDs and related work functioning problems is similar for these two groups of workers. In this thesis, I study both nurses and allied health professionals, and from here on I refer to them as one occupational group.

Until now, detailed knowledge on the exact impact of CMDs on work functioning is scarce, as most previous research on presenteeism expressed impaired work functioning quantitatively only, e.g., in terms of lost days,24 31 days attending work when feeling ill,17 or work days that require extra effort to function well when suffering from ill health.32 Those studies provide insight into the magnitude of impaired work functioning but do not reflect the nature of impaired work functioning. Few researchers have identified specific aspects of work that are impaired due to mental health complaints. Almost three decades ago, Motowidlo33 differentiated seven aspects of work performance in nurses that are negatively influenced by depressed feelings at work including the quality of patient care and cognitive, intra- and interpersonal aspects, as rated by supervisors and colleagues. In the first decade of the 21st century, more studies were published that distinguished specific aspects of work functioning for the working population in general. Lerner and colleagues34 showed that depression affects mental performance, interpersonal tasks, time management, and overall performance. Wang and colleagues35 differentiated two aspects of work performance that are impaired due to depression as follows: task focus or concentration and productivity (quality, speed, and efficiency of task completion).

If we want to reduce the burden and risks associated with work functioning impairments due to CMDs, we might profit from further insight into which different aspects of work functioning are affected by CMDs. Instruments for detection and monitoring of impaired work functioning can then be developed, which would enable future research on the onset of and recovery from the impairments. Additionally, intervention strategies might be developed to intervene purposefully in the identified aspects of impaired work functioning.

**Conceptual model of work functioning**

**The elements of work functioning**

No scientific consensus exists regarding what exactly constitutes work functioning. Various lines of research approach this topic differently. Based on the literature from the occupational health field and of work and organizational psychology, the following conceptual model of work functioning was developed (see Figure 1). First, two key elements of work functioning are distinguished in correspondence with the performance literature: task versus contextual aspects of work functioning.36 37 The task aspect includes all activities performed by a worker
to accomplish the core work tasks. The contextual aspect relates to all behavior that supports
the organization and the social and psychological environment in which the tasks are
executed, including interpersonal interactions and helping behavior.

Both task and contextual work functioning can be further specified, which is performed in
the studies of this thesis with a focus on nurses and allied health professionals. To guide the
specification of various aspects of work functioning, we formulated four dimensions that can
be applied to both task and contextual performance. The process of working is the first
dimension distinguished, which can be described as the behavior exerted to achieve work
outcomes. In other words, it regards evaluation of what a person is doing at work and how
the person is completing his or her tasks. The second and third dimensions that we included
follow the distinction between the quantity and the quality of work outcomes. In our opinion, it
is not sufficient to focus only on quantity outcomes, e.g., days or hours of lost productivity, as
is performed in many studies. For a comprehensive examination of work functioning, the
quality of work outcomes is also relevant. In previous research, the quality of work is not
expressed in economical terms but rather in terms of increased risk for incidents or near-
misses associated with underlying health impairments. The fourth dimension of work
functioning in this conceptual model is the extra effort required by a worker to function well at
work despite mental health complaints. It was found that workers with depression achieve
normal productivity on some days but sometimes at the cost of extreme personal effort.

The context of work functioning

Actual work functioning always takes place in a concrete context, which has to be regarded
when studying impairments in practice. Aside from the health condition of a worker, the forces
working within this context are environmental and personal factors (see Figure 1). This idea is
in line with the International Classification of Functioning Disability and Health (ICF) of the
WHO. In the ICF scheme, functioning and participation are characterized as the result of a
complex relationship between the individual’s health condition, (other) personal factors, and
environmental factors (physical and social) that represent the circumstances in which the
individual lives. These three components can positively and negatively influence participation.
Due to these components, the same health conditions impact the functioning and disability of
individuals differently, because different environmental and personal factors influence this
relationship.

When applying the ICF scheme to functioning at work, work tasks and work conditions can
be regarded as the environmental factors. It can be expected that some work demands and
conditions lead to different or more limitations in work functioning than others. Therefore,
differences in work functioning impairments can be expected for different occupational
groups. This idea is elaborated in a systematic review about factors associated with work
functioning in depressed workers by Lagerveld and colleagues. One study found that in jobs
involving proficiency in exercising judgment and communication tasks – such as the jobs of

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healthcare workers – more limitations in work functioning were found in depressed workers than in jobs that do not require these skills. Therefore, a job-specific approach to work functioning impairments due to CMDs might be useful for research and in practice.

Personal factors influencing work functioning and its impairment include a variety of aspects of the individual’s background. For instance, personality characteristics are known to be associated with a high level of work functioning impairment, such as higher neuroticism, more external locus of control, and lower self-esteem. Other characteristics may also be relevant, such as the professional expertise and personal priorities of a worker, e.g., which tasks are regarded as most favorable or important.

In the conceptualization of work functioning for this thesis, work functioning is presented as one concept including different dimensions. It is not assumed that all of these dimensions will be equally affected by CMDs. Rather, the aspects of work that are affected may differ from one person to another. For example, in one worker with depression, the quality of work will suffer, while in another worker with depression the quantity of work will decrease, whereas the quality of work might be unaffected. This assumption supports the need for a multidimensional approach of work functioning impairments due to CMDs.

Figure 1. Conceptual model of work functioning.
The measurement of work functioning impairments due to common mental disorders

Based on the description above, three requirements for instruments to assess work functioning and its impairments can be defined as follows: disease specificity, job specificity, and multidimensionality. A fourth aspect we regard as necessary for the measurement instrument is its suitability for the entire occupational group. It is assumed that even mild CMDs can result in impaired work functioning, even though the worker might not be aware of the presence of mental health problems and their consequences. Thus, if aiming to use a work functioning questionnaire for evaluative purposes or possibly also for the identification of individuals in need of interventions to improve work functioning, measurement instruments should be able to be administered in subjects with unknown or mild mental health complaints. Therefore, the items included in these instruments should not refer to any specific mental health or emotional problems.

Recently, two systematic reviews were published on existing work functioning questionnaires, their application in a CMD working population, and the associated clinimetric qualities. (Note: when referring to measurement properties the term clinimetric quality is used in this thesis, except for chapter 4, where the term psychometric properties is applied.) Twenty-one work functioning measures have been found in the literature; however, the requirements for measurements of work functioning impairment formulated above are not met in most of the existing questionnaires. First, regarding the disease specificity of existing instruments, a review by Abma and colleagues identified five instruments, of which the clinimetric quality was studied in a CMD population. Only one questionnaire, the Lam Employment Absence and Productivity Scale (LEAPS), was developed specifically for this patient group. Nieuwenhuijsen and colleagues identified 11 instruments that have been applied in this patient group; however, data on the clinimetric properties established in CMD patients were missing for most of these instruments. Second, no job-specific instrument has been found. Third, most of the existing work functioning questionnaires do not meet the demand for multidimensionality. In the review by Abma and colleagues, only two of the five questionnaires assessed multiple dimensions: the Work Limitation Questionnaire (WLQ) comprises four subscales, and the Lam Employment Absence and Productivity Scale (LEAPS) has two subscales. Fourth, many of the existing work functioning scales, e.g., the Work Limitations Questionnaire (WLQ) and the Stanford Presenteeism Scale (SPS), refer explicitly to health problems in their items before the description of a specific functioning problem is given. Therefore, these questionnaires are less suitable for administration in an apparently healthy working population and thus, also for detecting new cases of workers with impaired work functioning due to mild and often undetected mental disorders.

Overall, it is concluded that there are sound arguments for the development of a new work functioning instrument that fulfills the requirements described above.
Seeking help for mental health complaints

Although effective care for mental health complaints is available, mental health care is often not utilized by workers with CMDs. Regarding occupational health care in the Netherlands, it is known that workers in most cases make use of its service only after they are sick-listed. Late or no help-seeking for mental health complaints is a well-known phenomenon in primary care. A qualitative study in human service workers with burnout revealed that help-seeking often happens only after a breaking point. These breaking points can be incidents or conflicts at work. Two reasons for absent or late help seeking are known. Firstly, a lack of recognition of one’s own mental health problem seems to be an obstacle to help seeking. In a study by Lexis and colleagues, 43% of workers who had mild to severe mental health complaints, as indicated by an online screening, reported not to perceive mental health complaints. Moreover, in a study across six European countries, only 33% of adults with a mental health disorder perceived the need for mental health care. Secondly, it has been found that attitudinal aspects, such as a fear of stigmatization or lack of trust in health care are barriers to active help seeking. The prevailing negative attitude regarding mental health care is illustrated in a study by Ten Have and colleagues, in which 46% of randomly selected adults in the Netherlands regard the effectiveness of professional help for mental health complaints as “worse” or “equal to” no treatment. Furthermore, in that study, 35% of the Dutch adults stated that they would “probably not go” or “definitely not go” to a professional in the case of serious emotional problems. Healthcare workers in particular seem to experience barriers when seeking treatment for their own (mental) health complaints. Healthcare workers in particular seem to experience barriers when seeking treatment for their own (mental health complaints. This group finds it hard to seek help, as they are used to providing care instead of receiving care.

When mental health complaints go untreated for a long period of time, they can become worse. Thus, the later patients receive help, the more difficult successful treatment becomes, which prolongs the duration of illness. Preventive actions might be useful to detect workers with early signs of CMDs and to encourage active and early help-seeking behavior in this group. This form of preventive action is classified as indicated prevention. In relation to the content of this thesis, indicated prevention implies the screening of preliminary or mild symptoms of CMDs and early signs for impaired work functioning to prevent the onset or progression of CMDs or work functioning impairments. If such prevention can be offered successfully within a work setting, timely help for workers with CMDs can be provided. Work functioning that is impaired to the extent that workers cause serious incidents or that they must call in sick, can thus be prevented. Within the occupational healthcare setting, one well-developed strategy for preventive actions is workers’ health surveillance (WHS). WHS is a prevention strategy that aims at the early detection of negative health effects of work and of the inability to work to enable timely interventions. Regarding mental health aspects, a WHS mental module may be a successful preventive strategy to prevent the deterioration of CMDs and to prevent impairments in work functioning and work disability in the healthcare sector.
Workers’ health surveillance

WHS is a periodical assessment of employees’ health and work, e.g., carried out every two to four years. Usually, WHS is voluntary for employees, except for workers in high-demand jobs, such as firefighters. In 1998, the International Labour Organization (ILO) formulated criteria for the use of WHS. The four criteria that have to be met are: need, relevance, scientific validity, and effectiveness.

Despite the international recommendations of the ILO, the design of WHS differs among countries. In the Netherlands, a policy guideline on how to conduct WHS was published in 2005 by the Netherlands Society of Occupational Medicine. In the Netherlands, unlike some other countries, WHS does not include the assessment of risk factors, as these factors are included in a separate prevention strategy for risk assessment called the Risk Inventory and Evaluation (RI&E). The core aims of WHS according to the Dutch guidelines are the monitoring and improvement of any health problem in relation to the work and the monitoring and improvement of work functioning problems of individual workers along with the detection of occupational diseases. The focus on work functioning as it relates to health is explicit in the guidelines. According to the aim of monitoring and improvement, WHS comprises two key elements: first a screening, to detect employees with (incipient) health or work functioning problems; second, the provision of interventions to improve health and work functioning and to reduce the risk of deteriorations in health status.

Historically and also in the most recently developed WHSs, in the Netherlands WHS aims to target the health hazards and demands present in specific occupations. More recently, this approach has been referred to as job-specific WHS. With this job-specific approach, WHS are regarded as more likely to be needed, relevant, valid, and effective. Therefore, for a newly developed WHS mental module, the screenings and interventions are expected to closely reflect the demands and risks of the work tasks of specific occupations.

Although the use and application of WHS is increasing for various occupations and health effects, little is known about WHS targeting mental health effects. In a recent literature review by Plat et al. on WHS among military and emergency service personnel, only three of the 24 studies included mental health aspects: one in police personnel, one in rescue and recovery workers, and one in soldiers. It has been argued that a focus on mental health should be included in occupations with a high risk of developing CMDs. As aforementioned, these risks are also present in the work of nurses and allied health professionals. A WHS mental module for nurses and allied health professionals might stimulate insight into one’s own mental health state and work functioning, through which help-seeking behavior might be encouraged. Additionally, active help seeking among workers with CMDs or work functioning problems might be facilitated by the invitation to consult with an occupational physician. Help seeking might in turn lead to an improvement in work functioning impairments and mental health. However, as far as it is known, a WHS for mental health and its consequences for the
work of nurses or other healthcare service professionals has not yet been scientifically
developed and evaluated.

**A mental module for workers' health surveillance among nurses and allied health professionals**

A new WHS mental module for nurses and allied health professionals in the Netherlands should follow the combined requirements formulated by the ILO and the Dutch guidelines. First, both the screening and the intervention part should focus on health aspects as well as on the work functioning of employees. Second, the WHS mental module should reflect the hazards and demands of the work of nurses and allied health professionals and thus be job-specific. Third, the WHS mental module should be scientifically evaluated for its effectiveness.

Below, the development of the WHS mental module that is to be evaluated is further described. The description is presented separately for the two elements, screening and intervention.

**Workers' health surveillance mental module: screening**

For the screening part of the WHS mental module, various forms are conceivable. Self-report screening questionnaires are regarded as useful to enhance feasibility and to guarantee the confidential nature of screening. Self-report questionnaires are easy to administer in a reasonable amount of time compared to diagnostic interviews. Moreover, these questionnaires do not depend on third persons and, therefore, no supervisors or co-workers need to be involved in the assessment. As the WHS mental module will be offered at the level of the department or organization, large-scale screening must be feasible. Offering screening questionnaires online enables a large group of workers to utilize the WHS mental module.

The screening part ought to include screening for mental health complaints as well as for impaired work functioning. The screening for mental health aims to detect workers with mild to severe mental health complaints related to the work of healthcare workers. Therefore, there are separate questionnaires used for adjustment, fatigue, depression, and anxiety disorders, as well as for risky drinking behavior. To this end, there are several validated questionnaires that are also suited for application in the working population.

The screening for work functioning impairments should reflect all relevant facets of work exertion possibly impaired by CMDs. A job-specific questionnaire is regarded as advantageous for three reasons. First, items that give concrete examples of tasks ask for fewer interpretations and therefore make self-reporting easier. Second, the concrete examples of everyday work might provide insight into one’s own functioning and therefore stimulate the recognition of possible impairments. Third, screening results that present concrete examples of work tasks that may be impaired provide valuable input for interventions by the occupational physician and also for adaptations in the work or behavior initiated by the worker.
him- or herself. The job-specific questionnaire developed as part of this thesis will therefore be used.

**Workers’ health surveillance mental module: intervention**

This screening strategy and the feedback of its results are supposed to stimulate reflection on one’s own mental health. They are therefore expected to enhance help-seeking behavior in workers who are screened as positive for work functioning impairments and/or mental health complaints. To further encourage help-seeking behavior, an invitation for a preventive consultation with the occupational physician is included in this WHS mental module for workers who are screened as positive. It is presumed that visiting a care-giver (perchance the occupational physician) enhances the work functioning and mental health, by the interventions that would be initiated.

The care as usual provided by occupational physicians in the Netherlands for workers with CMDs follows the evidence-based guidelines of the Netherlands Society of Occupational Medicine.78 79 This care can be considered effective; however, it mainly focuses on the guidance of workers on sick-leave.78 80 Little is known on the effectiveness of care provided by occupational physicians in a preventive setting. Therefore, a protocol will be developed for the design of the WHS preventive consultation. This protocol will be based on the Dutch guidelines for the care provided by occupational physicians and adapted to the specific context of an open consultation. These consultations are taken on the employee’s initiative, which is in contrast to mandatory consultations for sick-listed employees. One difference from regular open consultations is that employees in the WHS setting do not always perceive the need for help but instead just follow upon the invitation to attend a consultation. The extent to which worker recognize their screening results therefore requires special attention in the preventive consultation.

**THESIS AIMS AND RESEARCH QUESTIONS**

Two main aims are formulated for this thesis.

**Aim I**

The first aim of this thesis is to develop a job-specific instrument to assess work functioning impairments due to common mental disorders in nurses and allied health professionals. This instrument is aimed to be multidimensional and in the form of a self-report questionnaire. The new instrument will be evaluated for its reliability, its validity, and the interpretability of change scores.
Research question i: What aspects of work functioning can be impaired due to CMDs in nurses and allied health professionals? (Chapters 2 & 3)

Research question ii: What are the content validity, factorial structure, and internal consistency of a newly developed questionnaire for work functioning impairments due to common mental disorders in nurses and allied health professionals – the Nurses Work Functioning Questionnaire (NWFQ)? (Chapter 3)

Research question iii: How is the clinimetric quality of the NWFQ evaluated in terms of the reproducibility, construct validity, and interpretability of change? (Chapters 4 & 5)

Aim II
The second aim concerns the evaluation of a newly developed workers’ health surveillance (WHS) mental module for nurses and allied health professionals. The WHS mental module aims to identify workers with mild to moderate severe symptoms of CMDs and/or early signs of impaired work functioning in an online screening. Workers, who are screened as positive for either mental health complaints or work functioning impairments, or both, are offered a consultation with the occupational physician to receive advice on appropriate interventions and care providers. The hypothesis is that workers who take part in the WHS mental module will show more help-seeking behavior compared to a control group. Also, in that group of workers an improvement of work functioning impairments and mental health complaints is expected.

Research question iv: Is a workers’ health surveillance mental module an effective strategy to stimulate help-seeking behavior and to improve work functioning and mental health in nurses and allied health professionals with mild to moderate severe mental health complaints and/or work functioning impairments due to common mental disorders, compared to a control group? (Chapters 6 & 7)

Research question v: How is the workers’ health surveillance mental module evaluated in terms of response, compliance, adherence, and perspectives on the workers’ health surveillance mental module among the workers and the occupational physicians? (Chapter 8)
THESIS OUTLINE

This thesis comprises two main parts: first, the development and evaluation of a work functioning questionnaire related to common mental disorders; second, the evaluation of a workers’ health surveillance mental module. In Chapter 2, a systematic literature review is presented which aimed to identify aspects of work functioning among nurses and allied health professionals that are impaired due to common mental disorders. Chapter 3 focuses on the development of a questionnaire to assess impaired work functioning in nurses and allied health professionals with common mental disorders, called the Nurses Work Functioning Questionnaire (NWFQ). In addition to the literature review, data from a focus group study were used to develop the questionnaire. Furthermore, the content validity and factorial structure are analyzed and discussed in this chapter. In Chapters 4 and 5, the clinimetric qualities of the NWFQ are evaluated. Chapter 4 focuses on the reproducibility and the construct validity of the NWFQ. The reproducibility analysis includes information on the agreement of the questionnaire (the extent of differences between repeated measures) and the reliability (the ability of the questionnaire to distinguish between persons despite measurement error). The construct validity provides information on whether the questionnaire measures what it intends to measure. Chapter 5 concerns the interpretability of change of the NWFQ. In the study described in this chapter, the smallest detectable change and the minimal important change values for the NWFQ total scale and its subscales were identified. In Chapters 6, 7 and 8, evaluation of the WHS mental module for nurses and allied health professionals is addressed. Chapter 6 describes the design of a cluster-randomized trial in which the effectiveness of an intervention strategy for a WHS mental module is studied and compared to a control group that did not receive the WHS mental module, including screening results and consultation. Chapter 7 addresses the effect of the WHS mental module on help-seeking behavior when the help of an occupational physician is offered. Besides, the effects on mental health complaints and work functioning are analyzed and discussed in this chapter. In Chapter 8, a process evaluation of the WHS mental module is presented, including participants’ compliance and perspectives on the WHS mental module as well as occupational physicians’ adherence and perspectives on the WHS mental module. This section also addresses suggestions for improvement of the WHS mental module. Finally, Chapter 9 presents the general discussion. In this chapter, the main research findings are summarized and discussed, methodological considerations are presented, and recommendations for future research and for practical implementation are provided.
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