Labour market participation of individuals on sick leave with mental health problems

Intervention and cohort studies on return to work

PhD dissertation

Pernille Pedersen

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Psychiatric Research Unit West, Regional Psychiatric Services West
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Preface

This PhD thesis was carried out at the Psychiatric Research Unit West, Regional Psychiatric Services West in Herning and at CFK – Public Health and Quality Improvement in Aarhus between 2012 and 2015. This work has been made possible because of the advice, help, and support from numerous people.

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Pernille Pedersen, October 2015
Abbreviations

CI: Confidence interval
CIP: Cumulative incidence proportion
DREAM: Danish National Labour Market Authority’s database
OECD: Organisation for Economic Co-operation and Development
OR: Odds ratio
RR: Relative risk
RTW: Return to work
SD: Standard deviation
English summary

Background Sickness absence due to mental disorders is common in Western countries. It is associated with an increased number of sick leave days and a lower return to work (RTW) rate compared to sickness absence due to other health reasons. To help this group of employees to return to work, tailored interventions are needed. The use of psychoeducation as an intervention to facilitate RTW has not previously been documented.

Aim The aim of this thesis was to evaluate the effect of psychoeducation on the chance of returning to work. Moreover, the aim was to investigate differences in RTW and employment trajectories for individuals on sick leave for mental health reasons or for other health-related reasons.

Materials and methods In a randomised controlled trial, 430 participants on sick leave were randomly allocated to either psychoeducation or usual care. The difference between groups regarding RTW was the main outcome and was measured by register data during the first 3 and 6 months after inclusion to the study. Moreover, questionnaires on psychological symptoms, mental health-related quality of life, and locus of control were collected at baseline and after 3 and 6 months (Papers 1 and 2).

In a cohort study, 2,036 new sickness absence cases were divided into two exposure groups according to their self-reported sickness reasons for absence: mental health reasons or other health reasons. The outcome was employment status during the following 51 weeks and was measured using both time-to-event analysis and sequence analysis (Paper 3).

Results During the first 6 months after inclusion, the two groups had the same relative risk (RR) of a full RTW (RR: 0.97 (95% CI: 0.78;1.21)), but during the first 3 months, the individuals in the intervention group had a significantly higher risk of not having fully returned to work (RR: 0.68 (95% CI:0.47;0.98)). Psychoeducation did not decrease the level of psychological symptoms or improve mental health-related quality of life; however, individuals in the intervention group improved their scores on internal locus of control at both 3 and 6 months (Paper 2).

Individuals with mental health reasons for sickness absence had a higher risk of not having returned to work during the 51 weeks of follow-up (RR: 0.87 (95% CI: 0.80;0.93)). Adjusting for gender, age, education, and employment did not change the estimate, but the risk was no longer present when RTW expectations were added to the model (RR: 1.01 (95% CI: 0.95;1.08)). The sequence analysis showed that individuals with mental health-related absence had significantly higher odds for being in the sickness absence cluster and
significantly lower odds for being in the fast RTW cluster, but after adjusting for RTW expectations, these differences were somewhat attenuated and no longer significant (Paper 3).

**Conclusion** Participating in psychoeducation prolonged sick leave during the first 3 months after inclusion, but after the first 6 months, there was no longer a difference between the intervention group and the control group. Therefore, it cannot be recommended that psychoeducation in this form is offered in a municipal job centre setting to facilitate RTW. Individuals who reported mental health reasons as the cause of the sick leave spent more weeks in sickness absence and temporary benefits and had a higher risk of not having returned to work during the 51 weeks of follow-up compared to individuals on sick leave due to other health reasons. The difference could be explained by their lower RTW expectations at baseline.
Dansk resumé

Baggrund Sygefravær på grund af psykiske lidelser er almindeligt forekommende i de vestlige lande. Det medfører et øget antal sygefraværsdage og en lavere tilbage-til-arbejde (TTA) rate sammenlignet med andre lidelser. For at hjælpe denne gruppe tilbage til arbejdsmarkedet er det vigtigt med målrettede interventioner. Brugen af psykoedukation i den forbindelse er ikke tidligere blevet dokumenteret.

Formål Formålet med denne afhandling var at evaluere effekten af psykoedukation i forhold til TTA. Derudover var formålet at undersøge forskelle i TTA og mønstre i arbejdsmarkedstilknytning blandt personer, der var sygemeldte på grund af mentale helbredssårsgere eller andre helbredssårsgere.

Materiale og metode I en randomiseret kontrolleret undersøgelse blev 430 sygemeldte deltagere tilfældigt fordelt til enten at modtage psykoedukation eller vanlig behandling. Det primære udfald var forskellen mellem grupperne på TTA, hvilket blev målt ved hjælp af registerdata i løbet af de første 3 og 6 måneder efter inklusionen i undersøgelsen. Derudover blev der udsendt spørgeskemaer om psykologiske symptomer, mentalt helbredssrelateret livskvalitet og locus of control ved baseline og efter 3 og 6 måneder (artikel 1 og 2).

I en kohorte undersøgelse blev 2.036 sygemeldte inddelt i to eksponeringsgrupper afhængig af deres selvrapporterede sygefraværsårsg; mentale helbredssårsgere eller andre helbredssårsgere. Udfaldet var arbejdsmarkedstiltilknytning i løbet af de følgende 51 uger og blev målt både med overlevelsesanalyser og sekvens analyser (artikel 3).

Resultater I løbet af de første 6 måneder efter inklusionen havde de to grupper næsten den samme sandsynlighed for TTA på vanlig timetal (Relativ risiko (RR):0.97 (95% CI: 0.78;1.21)) men i løbet af de første 3 måneder havde deltagerne, som modtog psykoedukation en signifikant højere risiko for ikke at være kommet tilbage på arbejdsmarkedet (RR:0.68 (95% CI:0.47;0.98)). Psykoedukation havde ingen effekt på psykologiske symptomer eller mentalt helbredssrelateret livskvalitet, men det forbedrede niveauet af locus of control (en persons oplevelse af at have indflydelse på sin tilværelse eller være styret af forhold i omgivelserne).

Personer, der var sygemeldte med mentale helbredssårsgere, havde en større risiko for ikke at være kommet tilbage til arbejdsmarkedet i løbet af de 51 ugers opfølgning (RR: 0.87 (95% CI: 0.80;0.93)). Justering for køn, alder, uddannelse og erhverv ændrede ikke på estimatet, men risikoen var ikke længere signifikant efter justering af TTA forventninger (RR: 1.01 (95% CI: 0.77;1.34)).
CI: 0.95;1.08). I sekvens analyserne sås, at personer, der var sygemeldte med mentale helbredsårsager, havde signifikant større odds for at være i “sygfraværsgruppen” og signifikant lavere odds for at være i “hurtig TTA gruppen”, men efter justering for TTA forventninger var disse odds svagere og ikke længere signifikante (artikel 3).

**Konklusion** Deltagelse i psykoeducation havde ingen effekt på sygefravær 6 måneder efter inklusion, og efter 3 måneder sås endog forlænget sygefravær i interventionsgruppen. Derfor kan det ikke anbefales at tilbyde psykoeducation i denne form i jobcenter regi for at fremme TTA.

Personer, der var sygemeldte på grund af mentale helbredsårsager, havde flere uger med sygefravær og midlertidig overførselsindkomst samt større risiko for ikke at være kommet tilbage til arbejdsmarkedet i løbet af de 51 ugers opfølgning sammenlignet med personer, der var sygemeldte på grund af andre helbredsårsager. Denne forskel kunne forklares af deres lavere TTA forventninger ved baseline.
1. Introduction

Participation in working life is generally agreed upon as beneficial for physical and mental health and well-being; work provides social status, income security, a source of self-esteem, and a sense of identity and achievement (1,2). However, many individuals are temporarily or permanently cut off from participation in work due to ill health. On average, 4% of working days are lost due to sickness absence in the European countries, while 6-7% are lost in the Scandinavian countries (3). In Denmark, the number of individuals who have received sickness absence benefits has been stable during the last decade (4).

Sickness absence results in considerable costs for society (5) and has important implication for individuals, e.g. impact on career opportunities, economy, lifestyle, and social relationships. Moreover, a risk exists for prolonged sickness absence or disability pension (6,7). Therefore, it is important to facilitate return to work (RTW) by identifying interventions for and creating more knowledge on the RTW process in order to be able to help this group of individuals.

The reasons for sickness absence are multifactorial and can be influenced by the social insurance system, work environment, organisational factors, job satisfaction, as well as by social, psychological, and other health-related factors (8-10). This thesis focuses on the health-related reasons for sickness absence by applying an intervention to facilitate RTW for individuals at risk of having a mental disorder (Papers 1 and 2). Moreover, it investigates differences in RTW and employment trajectories for individuals with different health-related reasons for sickness absence (Paper 3).
2. Background

Health-related reasons for sickness absence

Health-related reasons for sickness absence are multiple, with mental disorders and musculoskeletal diseases being the most common causes (11). Also, health-related reasons have different impacts on the length of sick leave (1,12); individuals with severe mental conditions have a low RTW rate, whereas those with, e.g. infectious diseases, have a relatively high RTW rate (8,11). Individuals on sick leave due to mental disorders have an increased number of sick leave spells and sick leave days compared to other health-related diagnoses (13,14). Moreover, many mental disorders are persistent and have high recurrence rates (3) and are associated with increased risk of early retirement (15) and of receiving disability benefits (3) and unemployment benefits (14). Thus, the RTW process after sickness absence is complex because it covers a series of events, transitions, and phases of employment status (16,17).

Return to work

Sickness absence is not only related to having a disease; thus the chance of a worker returning to work is not only influenced by receiving adequate treatment (17). Therefore, the RTW process can be very complex and influenced by personal factors, such as RTW expectations (18-22), perception of the illness (20), coping strategies (23), and self-efficacy (24). RTW expectations are the individuals’ expectations of when they will be able to RTW, i.e. positive RTW expectations predict a shorter time to RTW (18-22), as they may represent the self-efficacy of the employees, i.e. the belief an individual has in his own capacity to perform a specific behaviour successfully, in this case in relation to RTW (19,21). Also the perception of the illness seems to predict RTW, as individuals with negative perceptions about their illness are less likely to return to work than those with positive ones (20). Also, an adequate coping strategy is important for RTW; thus a problem-solving coping strategy is able to reduce sickness absence in contrast to a reactive–passive coping strategy (23). Besides the personal factors, the RTW process is closely related to environmental factors such as the workplace, the healthcare system, the compensation system, and the interaction between all stakeholders in the disability problem (10,25).
Chapter 2: Background

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Besides the personal factors, the RTW process is closely related to environmental factors such as the workplace, the healthcare system, the compensation system, and the interaction between all stakeholders in the disability problem (10,25).

The case-management ecological model by Loisel et al. (26) (Figure 1) illustrates the full arena of the social actors needed to make work participation successful. The worker with a work disability is at the centre surrounded by four main influential systems of his or her work-limiting situation. The personal system consists of dimensions of the disabled individual in relation to social relationship together with mental and psychical health. The healthcare system contains rehabilitation services provided to the worker by different care management structures in the form of health professional working alone, in a multidisciplinary team, or an interdisciplinary and interorganisational team involving all stakeholders. The workplace system consists of different RTW opportunities for the disabled worker such as the worker’s job position, the entire workplace organisation, and the external environment. The compensation system contains the legislation, the insurance systems, and the involved actors (10). The cultural and political context is added to illustrate the societal context as influential factors on the work-disabling situation (27,28). These elements should be considered in an organised way if work disability is to be avoided and RTW facilitated. The actions and attitudes of key stakeholders and the interactions among the stakeholders are crucial for the RTW process (28).

Figure 1 The arena in occupational disability prevention

Overall societal context

Workplace System

Health Care System

Personal System

Variety of case management

Interdisciplinary and Interorganisational Team

Other Health Care Professionals

Work relatedness, employees assistance plans, workplace accommodation

External Environment

Organization

Department

Job Position

Worker with a work disability

Compensation system

WCB/insurer

Regulations of jurisdiction

Provincial and federal laws

Society’s safety net

Culture and politics

Physical

Cognitive

Affective

Social Relationships

Personal coping

(Loisel et al., J Occup Rehabil, 2005)
**RTW interventions**

A literature synthesis of interventions for workers with common mental health conditions has been performed in the report “Best Practices for Return-to-Work/Stay-at-Work Interventions for Workers with Mental Health Conditions” (29). The interventions were divided into three levels based on concepts from the integrated disability management framework by Loisel et al. (26).

**Organisational level:** interventions directed towards the whole organisation to improve the physical or psychosocial environment within which the worker functions. The goal is to improve worker outcomes by making positive changes in the organisation as a whole. Examples: changing organisational policies or creating a people-oriented culture through supportive management practices.

**Disability management practice level:** interventions directed towards the practice of disability management and can either aim to improve existing practices or introduce new RTW practices. Examples: improving communication among RTW stakeholders or providing information to the worker about the RTW process.

**Individual level:** interventions focus on the individual worker and try to improve worker care, access to care, or help the worker better adapt to his/her environment. Examples: cognitive behavioural therapy, occupational therapy, or care management.

The majority of the currently offered interventions for workers with mental health conditions are clinical interventions which focus on the individual worker and not on the workplace (29). The individual level is also the focus of this thesis because it is the usual way to treat individuals with mental health problems in clinical practice.

**Self-management education and psychoeducation**

Individuals on sick leave due to mental health problems who want to RTW have reported multiple difficulties, such as concentration problems, memory problems, feelings of inadequacy, low self-esteem, low energy, and negative thinking. They experience a considerable variation in their symptoms, which makes it difficult for them to estimate the state of their mental condition, and, therefore, also estimate when and how to RTW. Also, individuals on sick leave report a lack of knowledge on their health problems and a lack of help to determine when they have recovered so that they can make decision about RTW. Moreover, they find it a problem that their symptoms are invisible and diffuse, and they feel ashamed that they are not able to cope with normal, everyday activities (30). In relation to these thoughts, information and knowledge may be useful to include in an RTW intervention.
Chapter 2: Background

in which it would also be possible to discuss those issues. These aspects are a central part of self-management education, which is based on elements from problem-solving and cognitive behavioural theory that can be used to improve the patients’ self-efficacy, coping strategies, and motivation to change behaviour. In self-management education, the health professionals are experts on the disease and the patients are experts on their own lives (31,32). An interdisciplinary team is used together with a lay leader (an individual with a disorder). The health care professionals are able to give information about the disease, while the lay leader acts as a role model (31,32). Some components of self-management education could be: management of symptoms and psychological consequences, promoting healthy lifestyle, and mind-body therapies (33). The education is group-based, which promotes emotional support from others with the same disease (34). The relatives can be invited to join the sessions to promote social support in everyday life and increase the likelihood of positive changes in the individual’s lifestyle. There is no gold standard definition of self-management, and the education can be structured in different ways (31).

Education to individuals with a mental disorder or distress is called psychoeducation and is based on self-management (35). Generally, the sessions contain information on illness awareness, adherence to treatment, early detection of prodromal symptoms and recurrences, and lifestyle regularity (36,37). The group format seems important because the patients exchange ideas about their experiences, and some patients have stated that “sharing experiences” and “meeting other people in the same or similar situation” were very valuable and supportive (38). The multidisciplinary team often consists of various health professionals such as psychologists, psychiatrists, nurses, and social workers (37,39-41). Psychoeducation has improved clinical outcomes in patients with depression or bipolar disorder, e.g. by reducing the number of recurrences and prolonging the time to recurrence (39,42,43), reducing manic and depressive symptoms up to 1 year after the intervention (38,39,43-47), and preventing depression in individuals with subclinical depressive symptoms (47). Moreover, psychoeducation has shown to be effective in increasing the amount of pleasant activities and social interactions (48), as well as in enhancing self-esteem (46,48) and the frequency of social support (48) within 3 months after the intervention.
Self-management education and psychoeducation in a RTW setting

Self-management strategies and peer support are found to be helpful strategies to improve employment outcomes for individuals with mental health problems (49). Self-management education has been used in relation to individuals on sick leave due to musculoskeletal problems. Indahl et al. evaluated a light mobilisation programme for patients with sub-acute low back pain, in which the patients were examined at a spine clinic and given information, reassurance, and encouragement to engage in as normal physical activity as possible. Indahl et al. found a significantly higher reduction in sick leave in the intervention group compared to the control group (50). The intervention has been replicated by Hagen et al. (51) and Karjalainen et al. (52), who also found a positive effect on RTW after 12 months. The results show that a simple early specialist consultation with recommendations for further care has a positive impact on the recovery of patients with sub-acute low back pain (52).

The use of psychoeducation as a single RTW intervention has not previously been documented, but some studies have implemented psychoeducation as part of an intervention (53-55). Moreover, information and advice on lifestyle, coping, wellness, health, nutrition, physical exercise, and preparation to RTW have been employed in many studies (53,56-58). In general, providing information and education to stressed individuals has not resulted in better RTW outcomes for the intervention group than for the control group. Nevertheless, the study by van der Klink et al. (59) found a higher RTW rate in the group receiving information, while other studies have been able to lower the scores on depression, burnout, and perceived stress in the intervention group (54,56). As part of the Danish national RTW programme, the participants received psychoeducation (55). They gained more knowledge about their symptoms, which made them calmer, and they learned to apply new coping strategies when returning to work. The participants thought it was helpful to be in a group with other individuals in the same situation because it seemed to normalise the conditions of the participants, restore their self-confidence, and reduce the feeling of being alone (30).

Early identification of and intervention in individuals with mental disorders

Mental disorders, especially common mental disorders such as depression, anxiety and somatoform disorders, are the most frequent reasons for sickness absence, but also psychological distress (symptoms that do not reach the clinical threshold of a clinical
diagnosis) are highly prevalent (60,61). In particular, depression is common and a leading cause of disability in high-income countries (3,62). A review estimated the 12-month prevalence of mental disorders in the adult population of the European countries to be 27% (62). In regard to the magnitude of the influence of the disorders on sickness absence, the literature is inconsistent. Organisation for Economic Co-operation and Development (OECD) reports it as increasing (14), while Roelen et al. find it to be decreasing (63). The inconsistency may be due to the fact that it is difficult to detect mental disorders. Many studies have documented that mental disorders are likely to be underestimated due to under-recognition and under-reporting of psychiatric disorder as a cause of absence (13,60,64); either the psychiatric disorder remains unrecognised or is masked by somatic complaints (65). A Danish study based on a psychiatric examination of 337 individuals on sick leave showed that 21% had an undetected mental disorder (64). This study also found that half of the individuals on sick leave had a mental disorder (66).

Work is found to be therapeutic and helps to promote recovery and rehabilitation and improves quality of life and well-being (1,2). Therefore, efforts should be made to help the individuals to keep the absence period as short as possible (1). Early identification and intervention are assumed to shorten the length of spells, hasten RTW (60,67), and result in a better prognosis for the mental disorder (4,68), while a longer duration of sickness absence is a risk for future disability pension (6,7) and permanent exclusion from the labour market (1).

OECD has recommended that the Danish municipal case management job centres identify mental health problems among clients and address these problems with employment-oriented mental health care (4). To be able to identify the clients, the social workers in the job centres are suggested to screen for mental health problems (4). Identifying those individuals based on a simple screenings instrument could be useful as information about mental disorders is of relevance for the choice of RTW intervention and strategy (4). The screening questionnaire SCL-8AD has been found to be able to identify individuals at risk of having a mental disorder among those on long-term sickness absence (69). Employment-oriented mental health care is suggested to be an integrated offer between the health services and the social and employment services. The focus should primarily be on preventing instead of reacting to problems arising from mental health issues; thus more attention needs to be given to mild and moderate mental disorders as opposed to severe disorders (4).
The Danish sick leave policy

The Danish public sickness benefit scheme covers wage earners, self-employed, and unemployed persons. When the present studies were carried out, the scheme gave up to full wage compensation for up to 52 weeks within a period of 18 months. The employer was responsible for the sickness absence insurance for the first 30 days (70,71).

The social workers in the job centres administrate sickness benefit cases. The consultations between the social worker and the individuals on sick leave consist of an assessment to verify that conditions for continued benefit receipt are met and to improve or retain the individual’s labour market attachment. The social worker may advise the individual about contacting the employer, partial work resumption, modification of job demands, job counselling, and vocational rehabilitation. Furthermore, they may refer the individuals to various types of vocational rehabilitation, e.g. test of vocational abilities, workplace-based job training, long-term education, courses and activities like fitness workout, and stress and pain management (72).

When the individuals are considered fit-for-work, they can either go back to work, or if they do not have a job, they can receive unemployment insurance from an unemployment insurance fund or receive social assistance, a tax-financed benefit for individuals who are ready to return to the labour market. But for individuals not able to go back to the labour market, other health-related schemes are available (4,72).

The rationale for this study

Mental disorders are a common reason for sickness absence and contribute to an increased number of sick leave days and thus a lower RTW rate compared to other health reasons (13,14). Providing information and recommendations to patients about their disorders has shown a positive effect on RTW in individuals on sick leave with musculoskeletal disorders (50-52). However, only a few studies have included an offer of the same components to individuals on sick leave due to mental health problems, and these studies have not been able to detect an effect on RTW (53,54,56-59,73). Psychoeducation seems promising in this setting as it aims to improve the individuals’ self-management, self-efficacy, coping strategies, and the perception of the illness, all of which predict RTW. Therefore, it is relevant to study the effect of psychoeducation in this group of individuals.
To understand how sickness absence duration may be shortened in employees with mental disorders, we need to understand the course of sickness absence periods, risk of recurrences after RTW, and transitions to other benefits. Therefore, employment trajectories were studied for these absentees and compared with those seen in employees on sick leave for other reasons. This approach is new and provides a more complete understanding of the impact of work disability on the injured employee’s life and well-being (74,75).
3. Aims and hypothesis

**Intervention study: Papers 1 and 2**

Aim: To evaluate the effect of psychoeducation targeted specifically to facilitate RTW as an adjunct to standard case management for individuals on sick leave and at risk of having a mental disorder.

Hypothesis: Individuals who participated in the psychoeducational programme would have 1) shorter sickness absence periods, 2) fewer psychological symptoms, 3) improved mental health-related quality of life, and 4) improved internal locus of control compared to the control group.

**Cohort study: Paper 3**

Aim: To investigate differences in RTW and employment trajectories in individuals on sick leave for mental health reason and individuals with other health-related reasons for sick leave.
4. Materials and methods

In this section, the material and methods of the two studies will be presented. For further details, see the methods sections of the appended papers. An overview of the study designs and populations in the two studies is presented in Table 1.

Table 1 Overview of study designs and populations in the two studies

<table>
<thead>
<tr>
<th></th>
<th>Paper 1</th>
<th>Paper 2</th>
<th>Paper 3</th>
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</thead>
<tbody>
<tr>
<td><strong>Topic</strong></td>
<td>Description of the psychoeducation intervention in the RCT study</td>
<td>The effectiveness of the psychoeducation intervention</td>
<td>Investigate differences in RTW and employment trajectories</td>
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<tr>
<td><strong>Design</strong></td>
<td>RCT</td>
<td>RCT</td>
<td>Cohort study</td>
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<td><strong>Population</strong></td>
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<td>( n = 430 )</td>
<td>( n = 2,036/2,018 )</td>
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<tr>
<td><strong>Data sources</strong></td>
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<td>Registries and questionnaires</td>
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<td><strong>Data analysis</strong></td>
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<td>Group comparison by means of proportions and time-to-event analysis using the pseudo-value regression approach, and Wilcoxon–Mann–Whitney</td>
<td>Proportions and time-to-event analysis using the pseudo-value regression approach. RTW trajectories by means of sequence analysis</td>
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In relation to the intervention study, a qualitative study was conducted to investigate the participants’ perspectives. It was not part of the thesis, but findings will be presented in the discussion section.

Ethics

The studies were approved by the Danish Data Protection Agency (journal number: 2007-58-0010). According to the Danish National Committee on Biomedical Research Ethics (written communication), the intervention study did not need ethical approval as it did not include biomedical research. Informed consent was given by all participants. Trial registration: Clinical Trial.gov NCT01637363.
Study population included in the two studies

The studies included individuals who had been on sickness absence benefit for 4–8 weeks in four municipalities in the Western part of Denmark: Holstebro, Lemvig, Skive, and Struer. The participants were recruited from September 2012 to January 2014.

Intervention study

Design
The study was a randomised controlled trial in which the participants were divided into:
- Intervention group: Psychoeducation + usual care
- Control group: Usual care

Recruitment
All individuals on sickness absence benefit in the four job centres were identified weekly during the recruitment period and mailed information about the study: an invitation, a screening questionnaire with inclusion and exclusion criteria, and a return envelope. A reminder to return the questionnaire was sent after 10–14 days. The screening questionnaire included the questionnaire SCL-8AD. It consists of 13 questions derived from SCL-92 and has been evaluated to detect mental disorders (especially depression, anxiety, and somatoform disorders (69)) in individuals on long-term (>8 weeks) sickness absence. A cut-point of ≥5 was chosen for inclusion, with a sensitivity of 75%, a specificity of 68%, and a positive predictive value of 51% (69). Moreover, the screening questionnaire provided information on gender, age, the highest level of education, employment, and previously sickness absence periods. Also, the individuals were asked to state their own reasons for the sickness absence, a reason which had not necessarily been confirmed by a doctor. They could report several of the following reasons: anxiety, depression, other mental illness, stress and burnout, psychosocial working environment, musculoskeletal disorders, and also cardiovascular or lung diseases, infection, chronic/diffuse pain, cancer, abdominal illness, and personal problems. Furthermore, they were asked to report their recovery expectations, which were their own estimation in percentage in whole tens (0–100%) of the probability of not being on sick leave after 6 months.
Participants
Individuals were eligible for the study if they 1) were on sick leave from part-time or full-time work or unemployment, 2) were between 18 and 64 years old, and 3) had a SCL-8AD score ≥5. They were ineligible if they met one or more of the following exclusion criteria: 1) did not communicate in Danish, 2) had been on sick leave due to mental health problems for more than 3 consecutive months during the preceding year, 3) were pregnant, or 4) had a supported job/were in job training/in rehabilitation/had retired.

Eligible individuals were contacted by phone by a research assistant, who gave information about the study. If they agreed to participate in the study, they were randomised. Subsequently, they were mailed information about their allocation, a consent form to fill out and return, an invitation for their relatives, and a baseline questionnaire.

A total of 4,541 individuals were on sick leave and referred to the job centres in the study period. Of the 1,129 eligible individuals, 430 accepted to participate (Figure 2). After randomisation, 30 participants withdrew from the study.
Figure 2 Flowchart of the study

Referred to job centres (n=4,541)

Not returning screening questionnaire (n=1,753)

Returning screening questionnaire (n=2,788)

Excluded (n=1,659)

Eligible to participate (n=1,129)

Declined to participate (n=699)

Randomised (n=430)

Allocated to intervention group (n=215)

Excluded (n=15) Provided verbal but not written consent

Available for analyses (n=200)

Completed baseline questionnaire (n=189)

Completed 3 months questionnaire (n=155)

Completed 6 months questionnaire (n=112)

Allocated to control group (n=215)

Excluded (n=15) Provided verbal but not written consent

Available for analyses (n=200)

Completed baseline questionnaire (n=183)

Completed 3 months questionnaire (n=159)

Completed 6 months questionnaire (n=125)
Randomisation
The participants were equally randomised (1:1) to one of two parallel groups: the intervention group ($n = 230$) or the control group ($n = 230$). A computerised random number generator (Trial Partners) with block size 4 was used to allocate participants. The randomisation was carried out by a research assistant, who also informed the participants by mail about their allocation.

Blinding
The social workers at the job centres were in contact with all study participants in order to provide the usual social services at the job centre, but the social workers were not informed about participants’ allocation in the study. To examine the effectiveness of the blinding, information was collected about the social workers guess of the allocation for 176 randomly selected participants about 3 months after the randomisation. Due to the nature of the intervention, neither participants nor staff could be blinded to the allocation.

Data about the primary outcome, RTW, was collected by a research assistant and two social workers from registers in the job centres, whereas they were blinded with regard to study allocation of the participants in the study.

Intervention

*Intervention: psychoeducation*

The intervention group was offered psychoeducation in open group sessions, which consisted of six 2-hour sessions once a week and was held at two different locations. The open groups ran continually throughout the study period, and each session was conducted about nine times at each location. The number of participants in each session was on average 7 (SD 3.8), varying from 1–18.

The intervention was conducted and taught by four psychiatric nurses, a psychologist, a social worker, a physiotherapist, and a person previously on sick leave due to mental health problems. The psychiatric nurses were accustomed to practising psychoeducation, and one of the psychiatric nurses was present at each session. The intervention followed structured slides, and hand-outs were given to the participants.
The sessions focused on stress and work life and consisted of a mixture of didactic lectures and group discussions based on problem-solving techniques and coping strategies. The purpose was to impart knowledge about psychiatric conditions in order to provide individuals on sick leave with qualifications that would enable them to understand and improve their own situation. The focus was, to a great extent, on the general discomfort in everyday life caused by the symptoms and in particular on handling a job and to a less extent on diagnosis. The content of the intervention is described in Table 2 and elaborated in the appended Paper 1.
The sessions focused on stress and work life and consisted of a mixture of didactic lectures and group discussions based on problem-solving techniques and coping strategies. The purpose was to impart knowledge about psychiatric conditions in order to provide individuals on sick leave with qualifications that would enable them to understand and improve their own situation. The focus was, to a great extent, on the general discomfort in everyday life caused by the symptoms and in particular on handling a job and to a less extent on diagnosis. The content of the intervention is described in Table 2 and elaborated in the appended Paper 1.

### Table 2 Session-by-session outline for the psychoeducation intervention

<table>
<thead>
<tr>
<th>Session</th>
<th>Teachers /facilitators</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Psychiatric nurse</td>
<td>Information on symptoms of stress, depression, anxiety, and functional disorders related to the cause of the disorders and the consequences for the ability to work. The teaching focused to a less extent on diagnoses than on traditional psychoeducation. Instead, emphasis was on the general discomfort and dysfunction in everyday life caused by the symptoms of their disorders and, in particular, on the problems involved in handling a job.</td>
</tr>
<tr>
<td>2</td>
<td>Psychiatric nurse</td>
<td>Information on options and appropriate coping strategies related to the mental symptoms and the sick leave of the participants. The teaching focused on self-awareness, warning signs, and lifestyle. The participants were introduced to different cognitive tools which they could use in their everyday life.</td>
</tr>
<tr>
<td>3</td>
<td>Social worker / Psychiatric nurse</td>
<td>On the basis of the sick-leave legislation, the participants received counselling related to their sick leave. The teaching provided the participants with tools to facilitate labour market retention and return to work.</td>
</tr>
<tr>
<td>4</td>
<td>Psychologist / Psychiatric nurse</td>
<td>Information on mental reactions and symptoms related to being on sick leave. The teaching provided the participants with tools to achieve a higher level of mental well-being and to facilitate return to work. The participants were informed about where to turn for support and, additionally, challenges and barriers related to return to work were discussed.</td>
</tr>
<tr>
<td>5</td>
<td>Physiotherapist / Psychiatric nurse</td>
<td>The participants were informed about the importance of exercise for health in general and about the influence of exercise on mental well-being in particular. Additionally, training advice and counselling to ensure a continued motivation were given.</td>
</tr>
<tr>
<td>6</td>
<td>A person previously on sick leave / Psychiatric nurse</td>
<td>Both participants and relatives attended the first part of the session, which consisted of a presentation by a person previously on sick leave due to mental health problems. The speaker described the course of illness, the process of dealing with personal issues, and the course regarding return to work. Subsequently, the participants shared mutual experiences as well as experiences with the speaker. Concurrently, the relatives participated in a session held by a psychiatric nurse. The purpose was to strengthen the abilities of the relatives; in part to support the participants regarding return to work, and in part to take their own lives in their hands. The relatives were informed about the symptoms of stress, depression, anxiety, and functional disorders.</td>
</tr>
</tbody>
</table>
Control: usual care
All the participants received the usual care offered by the job centres, which typically comprises fitness workout, stress and pain management, and a gradual RTW. The Danish sickness benefit law does not specify which kind of activities should be available. Consequently, a large variation exists across municipalities (4). Because of the study’s natural setting, all participants were free to engage in any other treatment as well.

Data collection
At the start of the intervention and at 3 and 6 months of follow-up, the participants received a questionnaire by either e-mail or regular mail. This questionnaire consisted of psychological symptoms (six scales from the Symptoms Checklist 90-R (SCL90-R)) (76), mental health-related quality of life (four scales from the 36-item Short Form Health Survey (SF-36)) (77) and Multidimensional Health Locus of Control (MHLC) (78). A reminder to return the questionnaire was sent after 10–14 days. The participants received a gift certificate of 13 Euros for completing each questionnaire.

The psychiatric nurses registered the participants’ attendance at each session. Questions about attendance in other RTW activities offered by the job centres or co-interventions, such as treatment by the general practitioner, a psychologist, or a psychiatrist, were included in the questionnaire 3 months after randomisation.

The records from the job centres were used to retrieve information on whether the participants were on full time or part time sick leave and whether their job situation before sickness absence was full-time or part-time work or unemployment. Moreover, it was used to retrieve information on date for end of sickness absence benefits and the reason for it.

Outcome measures
RTW was operationalised as not receiving sickness benefits and measured by register data from the job centres.

The primary outcome was Time to full RTW, which was defined as the period (in days) between randomisation and not receiving any sickness benefits for at least 4 weeks without partial or full sickness absence recurrence.
Chapter 4: Materials and methods

Secondary outcomes

*Time to first RTW* was defined as the period (in days) between randomisation and to partial or full-time RTW without partial or full sickness absence recurrence.

*Psychological symptoms* of psychopathologic status were assessed with the Symptom Checklist-90-Revised (SCL-90-R) (76), a 90-item self-rating instrument for assessing the discomfort, as described in each item, experienced during the past 7 days. The discomfort is assessed on a 5-point rating scale ranging from “not at all” (0) to “extremely” (4). The instrument is divided into nine scales; however, only six of these were of interest in this study: somatisation, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, and phobic anxiety. The Danish version of the questionnaire was used (79).

*Mental health-related Quality of Life* was assessed by the 36-item Short Form Health Survey (SF-36) (77), a self-administered health survey with 36 items grouped into eight scales. Only the four scales related to mental health were of interest in this study: vitality, social functioning, role limitations due to emotional problems, and mental health. A high score indicates a better level of functioning (range 0–100). Furthermore, the question “In general, would you say your health is...” was included. Answers were dichotomised as good (response options excellent, very good, and good), and poor (response options fair and poor). The Danish version of the instrument was used (80).

*Locus of Control* was assessed by The Multidimensional Health Locus of Control (MHLC) scale Form C (81). It can be defined as the degree to which individuals believe that their health is controlled by internal or external factors. The Form C is condition-specific and can be used when studying individuals with an existing health/medical condition. Participants were asked to consider the condition responsible for the sickness absence. Form C consists of four subscales: “doctors” and “other people”, each with three items, and “chance” and “internal”, each with six items. For each item, a Likert scale ranging from 1 to 6 was applied (1 representing “strongly disagree” and 6 representing “strongly agree”). A translation of the questionnaire into Danish was done for the present study, and it was tested in a small group of participants in a pilot study.
Statistical power considerations

Duration of sickness absence until full RTW was chosen as the primary outcome measure and used for sample size calculation. Based on data from a Danish sickness absence study (61), it was assumed that 70% would return to work within 6 months (“fail probability” of 0.70). A 40% higher rate of RTW was expected in the intervention group than in the control group, corresponding to a hazard ratio of 1.4. To be able to detect a difference between the two groups with an 80% power and a two-sided significance level of 5%, a minimum of 397 participants divided equally into the groups were needed. To compensate for drop outs, an additional 10% was included.

Statistics

The main analysis was performed according to the intention-to-treat principle and was supported by per protocol analysis (i.e. restricted to participants who participated in at least four of the six sessions). The effect of psychoeducation was analysed using the pseudo-value regression approach during the first 3 and 6 months by estimating relative risk (RR) and cumulative incidence proportion (CIP). In the pseudo-value approach, a new set of observations (the pseudo-values) are generated and used in a generalised linear model (82,83). Analyses were performed for both full RTW and first RTW. Participants were right-censored if their sickness absence benefits had been suspended because they had moved to another municipality, the duration of sickness absence had reached the time limit (52 weeks during the previous 18 months), or the job centres reported that the individual did not cooperate. Individuals who had died or had been transferred to other benefits such as early retirement or supported job were treated as competing risk. However, in the analyses for first RTW, individuals who started in supported employment were considered as having returned to work because they were working a few hours a week.

The differences in scores on psychological symptoms, mental health-related quality of life, and locus of control between the groups were analysed at 3 and 6 months by using the Wilcoxon–Mann–Whitney test.

All point estimates are presented with 95% confidence intervals (CI). A two-sided probability of $p < 0.05$ was considered statistically significant for the RTW outcome and $p < 0.005$ for the outcomes on the questionnaire data. STATA/IC 11.2 (StataCorp LC, College Station, TX, USA) was used for all statistical analyses.
Cohort study

Design and participants

The cohort study consisted of 2,788 individuals (61.4%) who had completed the screening questionnaire in the RCT study (Figure 2, flowchart). Individuals who did not provide data on reason for sickness absence (n = 20), information on education (n = 31), employment (n = 123), and RTW expectations (n = 126) were excluded. All participants were linked to The Danish National Labour Market Authority’s DREAM database (84), which provided information about economic compensation for unemployment, sickness absence, and other kinds of economic assistance. The type of transfer payment in DREAM is recorded for each week if the person has received the benefit for 1 day or more. Termination of registration occurs following the first full week of not receiving any type of transfer payment. If no transfer payment is registered for a specific week, the person is considered to be self-supporting and consequently as working. In Denmark, a citizen in the workforce (employed as well as unemployed) is entitled to sickness absence compensation (at the time of this study after 4 weeks), and if the employee receives normal salary during the sick leave period, the employer receives municipal reimbursement. Data from the DREAM database is increasingly applied in research (85) and has previously been validated in the context of sick leave by comparing workplace-registered data (86) and self-reported information on transfer incomes to DREAM (84). Both studies found high validity.

A total of 452 of the participants were not registered as being on sick leave in the DREAM database when the questionnaire was sent, and consequently they were excluded from the study. It was done to avoid misclassification and prevent a difference in social benefits at follow-up from being attributed to a difference in social benefits at baseline. Thus, the final study population consisted of 2,036 individuals.

Outcome measures

The outcome variable was employment status during the 51 weeks following the questionnaire and was recorded weekly.

To assess RTW and labour market participation, two different analyses were used: time-to-event and sequence analysis. In the time-to-event analysis, the outcome was RTW, which was defined as the period (in weeks) between inclusion and not receiving any social benefits
for at least 4 consecutive weeks. In the sequence analysis, the outcome was extended to include five different categories for labour market participation and RTW: 1) sickness absence, 2) working, 3) unemployment, 4) temporary support, and 5) permanent support. Working was defined as the weeks with no benefits, and unemployment was defined as receiving unemployment benefits. Temporary support was defined as social benefits that are given temporarily and aimed at promoting subsequent employment, e.g. public education grant, social assistance, or rehabilitation benefit. Permanent support was defined as social benefits that are given on a permanent basis to individuals for whom regular employment is no longer possible. This includes early retirement, public retirement pension, and supported jobs (the Danish labour market arrangement for people with a reduced ability to work, which provides partial wage compensation).

Exposure variables
Self-reported reason for sickness absence was the main exposure. The participants could report several reasons for the absence, but if they had reported anxiety, depression, other mental illness or stress and burnout, they were categorised as having “mental health reasons”, while the rest of the individuals were categorised as having “other health reasons” (e.g. musculoskeletal disorders, cancer, or chronic pain)

Statistics
Time-to-event analysis
The pseudo value-regression approach was used to examine differences in the rates of RTW during the 51 weeks of follow-up between the two exposure groups (82,83). The allocation of the RCT study was adjusted for in all steps of the analysis (87), and thereafter, different adjustment strategies were carried out based on variables that were chosen a priori: 1) adjustment for gender and age, 2) plus education and employment, and 3) plus RTW expectations. Death, emigration, and receiving permanent support were considered as competing risk.

Sequence analysis
Sequence analysis is a statistical study of successions of status or events. A sequence is defined as an ordered list of elements (e.g. labour market status) and episodes (identical successive elements) expressed on a time axis (88,89). In this study, sequences showed a complete event history of labour market participation in each particular week from baseline to
follow-up. The relative proportion of each of the five employment status for every week was displayed in a status proportion plot (90). In the sequence analysis, a further 18 participants were excluded due to death or emigration. Thus, in those analyses, the study population consisted of 2,018 participants.

Differences in mean duration in weeks within a given status and mean number of episodes of different status between the exposure groups were calculated. Furthermore, the distributions of the sequences were compared in the two exposure groups. All individuals were divided into four groups according to their sequences: 1) only sick leave, 2) moving to continuous work, 3) having at least one episode of work, and 4) sick leave and social benefits. The different distributions of sequences were tested in a chi² test.

A volatility indicator was defined as the proportion of work and unemployment episodes in relation to total episodes. Episodes within work and unemployment reflected a positive status of RTW or readiness to RTW. The volatility indicator indicated that the higher the value of this indicator (range 0–1), the higher the quality of the transitions (91).

An integration indicator was measured as an indicator of how quickly and to what extent the individuals re-entered employment. It was assessed as the sum of a number of sequence positions in which status was work and which were weighted by their position within the sequence. This indicated that the longer or more episodes in work, the higher the quality of the integration process (range 0–1) (91).

Moreover, the sequences were grouped based on optimal matching algorithms and statistical cluster analysis to find and categorise observed sequences into a smaller number of clusters (88,92). Optimal matching was used to measure dissimilarities between sequences by applying the Levenshtein distance measure, which measures the number of operations that are needed to transform one sequence into another (88). Similar sequences were grouped together using hierarchical cluster analysis with Ward’s linkage (91,92). On the basis of these results, similar sequences were merged into eight clusters, which were named based on employment status. Afterwards, the distribution of the clusters across the exposure groups was tested by means of logistic regression. The same adjustment strategies were used as in the pseudo-value analysis.

Point estimates were presented with 95% CI. STATA/IC 11.2 (StataCorp LC, College Station, TX, USA) was used for all statistical analyses with the SQ-ADOS to perform the sequence analyses.
5. Results

This section will present the main findings of the two studies. Additional results and more detailed presentations are available in the appended papers.

Intervention study

Participation

A total of 1,129 individuals were eligible for the study, and 430 (38%) agreed to participate and were randomised to the intervention group \( n = 215 \) or the control group \( n = 215 \) (Figure 2).

Compared to those who declined to participate \( n = 699 \), participants were more likely to be women; to have an education longer than 3 years; to be on sick leave due to anxiety, depression, stress, or burnout; or to have complained of a poor psychosocial working environment. They were less often on sick leave due to cancer or musculoskeletal disorders. Moreover, they had a higher SCL-8AD score and lower RTW expectations (Table 3).
Chapter 5: Results

This section will present the main findings of the two studies. Additional results and more detailed presentations are available in the appended papers.

### Intervention study

#### Participation

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Moreover, they had a higher SCL-8AD score and lower RTW expectations (Table 3).

A total of 15 individuals from the intervention group and 15 individuals from the control group provided only oral consent and were excluded from the study. They were more likely to be on sick leave due to cancer and less likely to have stress and burnout. Additionally, they were more likely to have less than 3 years of tertiary education.

The questionnaires were completed by 189 (95%) and 183 (92%) at baseline, 155 (78%) and 159 (80%) at 3 months, and 127 (64%) and 141 (71%) at 6 months by participants from the intervention group and control group, respectively. There was no difference between

### Table 3 Comparison of participants and non-participants (who were eligible to participate)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Participants ($n = 430$)</th>
<th>Non-participants ($n = 699$)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender (female), n</strong></td>
<td>309 / 21.4</td>
<td>424 / 20.7</td>
</tr>
<tr>
<td><strong>Age (years), mean</strong></td>
<td>44.4 / 9.9</td>
<td>44.1 / 10.9</td>
</tr>
<tr>
<td><strong>Highest level of education, n</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary school/Secondary school</td>
<td>92 / 21.4</td>
<td>216 / 30.9</td>
</tr>
<tr>
<td>Tertiary education &lt;3 years</td>
<td>195 / 45.4</td>
<td>300 / 42.9</td>
</tr>
<tr>
<td>Tertiary education &gt;3 years</td>
<td>143 / 33.3</td>
<td>173 / 24.8</td>
</tr>
<tr>
<td>Not available</td>
<td>0 / 0</td>
<td>10 / 1.4</td>
</tr>
<tr>
<td><strong>Employment, n</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student</td>
<td>22 / 2.1</td>
<td>33 / 4.7</td>
</tr>
<tr>
<td>Unemployed</td>
<td>70 / 16.3</td>
<td>94 / 13.5</td>
</tr>
<tr>
<td>Unskilled worker (e.g. cleaning)</td>
<td>67 / 15.6</td>
<td>122 / 17.5</td>
</tr>
<tr>
<td>Skilled worker (e.g. artisan)</td>
<td>55 / 12.8</td>
<td>103 / 14.7</td>
</tr>
<tr>
<td>White collar worker (e.g. nurse)</td>
<td>190 / 44.2</td>
<td>251 / 35.9</td>
</tr>
<tr>
<td>Self-employed</td>
<td>21 / 4.9</td>
<td>51 / 7.3</td>
</tr>
<tr>
<td>Not available</td>
<td>5 / 1.2</td>
<td>45 / 6.4</td>
</tr>
<tr>
<td><strong>Reason for sickness absence, n</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anxiety</td>
<td>100 / 23.3</td>
<td>99 / 14.2</td>
</tr>
<tr>
<td>Depression</td>
<td>176 / 40.9</td>
<td>180 / 25.8</td>
</tr>
<tr>
<td>Stress and burnout</td>
<td>237 / 55.1</td>
<td>225 / 32.3</td>
</tr>
<tr>
<td>Psychosocial working environment</td>
<td>100 / 23.3</td>
<td>96 / 13.8</td>
</tr>
<tr>
<td>Musculoskeletal disorders</td>
<td>96 / 22.3</td>
<td>200 / 28.7</td>
</tr>
<tr>
<td>Cardiovascular or lung diseases</td>
<td>19 / 4.4</td>
<td>38 / 5.5</td>
</tr>
<tr>
<td>Infection</td>
<td>13 / 3.0</td>
<td>24 / 3.4</td>
</tr>
<tr>
<td>Chronic / diffuse pain</td>
<td>65 / 15.1</td>
<td>98 / 14.1</td>
</tr>
<tr>
<td>Cancer</td>
<td>7 / 1.6</td>
<td>38 / 5.5</td>
</tr>
<tr>
<td>Abdominal illness</td>
<td>18 / 4.2</td>
<td>43 / 6.2</td>
</tr>
<tr>
<td>Personal problems</td>
<td>63 / 14.7</td>
<td>86 / 12.1</td>
</tr>
<tr>
<td>Other mental illness</td>
<td>20 / 4.7</td>
<td>36 / 5.2</td>
</tr>
<tr>
<td>Other / unclear reasons</td>
<td>52 / 12.1</td>
<td>88 / 12.6</td>
</tr>
<tr>
<td><strong>Number of symptoms (SCL-8 AD), mean</strong></td>
<td>9.8 / 2.4</td>
<td>8.8 / 2.5</td>
</tr>
<tr>
<td><strong>Recovery expectations, n</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-30%</td>
<td>64 / 14.9</td>
<td>50 / 7.2</td>
</tr>
<tr>
<td>40-60%</td>
<td>106 / 24.7</td>
<td>104 / 14.9</td>
</tr>
<tr>
<td>70-90%</td>
<td>107 / 24.9</td>
<td>156 / 22.3</td>
</tr>
<tr>
<td>100%</td>
<td>139 / 32.3</td>
<td>360 / 51.5</td>
</tr>
<tr>
<td>Not available</td>
<td>14 / 3.3</td>
<td>29 / 4.2</td>
</tr>
</tbody>
</table>

IQR: Interquartile range, SD: Standard deviation

a) Several reasons were possible for each individual
those who completed the 6-month questionnaire and those who did not in relation to age, gender, education, and SCL-8AD score.

**Baseline characteristics**

At baseline, the participants from the two groups were similar with respect to the measured variables; however, individuals in the intervention group had a higher score on internal locus of control and slightly more individuals from that group were on full-time sick leave (Table 4).
Chapter 5: Results

At baseline, the participants from the two groups were similar with respect to the measured variables; however, individuals in the intervention group had a higher score on internal locus of control and slightly more individuals from that group were on full-time sick leave (Table 4).

<table>
<thead>
<tr>
<th>Variable</th>
<th>Intervention group (n = 215)</th>
<th>Control group (n = 215)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender (female), n</td>
<td>154 (49.8)</td>
<td>155 (50.2)</td>
</tr>
<tr>
<td>Age (years), mean</td>
<td>43.5 (10.0)</td>
<td>43.9 (9.9)</td>
</tr>
<tr>
<td>Length of sickness absence until randomisation (days), mean</td>
<td>56.4 (22.1)</td>
<td>57.2 (18.3)</td>
</tr>
<tr>
<td>Highest level of education, n</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary school/Secondary school</td>
<td>40 (18.6)</td>
<td>52 (24.2)</td>
</tr>
<tr>
<td>Tertiary education &lt;3 years</td>
<td>105 (48.8)</td>
<td>90 (41.9)</td>
</tr>
<tr>
<td>Tertiary education &gt;3 years</td>
<td>70 (32.6)</td>
<td>73 (34.0)</td>
</tr>
<tr>
<td>Employment, n</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student</td>
<td>16 (7.4)</td>
<td>6 (2.8)</td>
</tr>
<tr>
<td>Unemployed</td>
<td>37 (17.2)</td>
<td>33 (15.4)</td>
</tr>
<tr>
<td>Unskilled worker (e.g. cleaning)</td>
<td>33 (15.3)</td>
<td>34 (15.8)</td>
</tr>
<tr>
<td>Skilled worker (e.g. artisan)</td>
<td>29 (13.5)</td>
<td>26 (12.1)</td>
</tr>
<tr>
<td>White collar worker (e.g. nurse)</td>
<td>86 (40.0)</td>
<td>104 (48.4)</td>
</tr>
<tr>
<td>Self-employed</td>
<td>11 (5.1)</td>
<td>10 (4.7)</td>
</tr>
<tr>
<td>Don't know / not available</td>
<td>3 (1.4)</td>
<td>2 (0.9)</td>
</tr>
<tr>
<td>Reason for sickness absence, n a</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anxiety</td>
<td>54 (25.1)</td>
<td>46 (21.4)</td>
</tr>
<tr>
<td>Depression</td>
<td>85 (39.5)</td>
<td>91 (42.3)</td>
</tr>
<tr>
<td>Other mental illness</td>
<td>12 (5.6)</td>
<td>8 (3.7)</td>
</tr>
<tr>
<td>Stress and burnout</td>
<td>122 (56.7)</td>
<td>115 (53.5)</td>
</tr>
<tr>
<td>Psychosocial working environment</td>
<td>51 (23.7)</td>
<td>49 (22.8)</td>
</tr>
<tr>
<td>Musculoskeletal disorders</td>
<td>43 (20.0)</td>
<td>53 (24.7)</td>
</tr>
<tr>
<td>Other reasons</td>
<td>79 (36.7)</td>
<td>74 (34.4)</td>
</tr>
<tr>
<td>Number of symptoms (SCL-8 AD), mean</td>
<td>9.8 (2.3)</td>
<td>9.8 (2.4)</td>
</tr>
<tr>
<td>Recovery expectations, n</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-50% or don't know/not available</td>
<td>81 (37.7)</td>
<td>90 (41.9)</td>
</tr>
<tr>
<td>60-90%</td>
<td>67 (31.2)</td>
<td>53 (24.7)</td>
</tr>
<tr>
<td>100%</td>
<td>67 (31.2)</td>
<td>72 (33.5)</td>
</tr>
<tr>
<td>Sick-leave, n</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full-time sick leave</td>
<td>214* (99.5)</td>
<td>208* (96.7)</td>
</tr>
<tr>
<td>Part-time sick leave</td>
<td>1 (0.5)</td>
<td>7 (3.3)</td>
</tr>
<tr>
<td>Locus of control, medianb</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internal</td>
<td>22.0* (18.0-26.0)</td>
<td>20.0* (15.0-25.0)</td>
</tr>
<tr>
<td>Chance</td>
<td>14.0 (11.0-18.0)</td>
<td>14.5 (11.0-18.0)</td>
</tr>
<tr>
<td>Doctor</td>
<td>12.0 (10.0-14.0)</td>
<td>12.0 (10.0-14.0)</td>
</tr>
<tr>
<td>Other people</td>
<td>11.0 (9.0-13.0)</td>
<td>11.0 (8.0-13.0)</td>
</tr>
<tr>
<td>Psychological symptoms, medianb</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Somatisation</td>
<td>1.1 (0.6-1.7)</td>
<td>1.2 (0.7-1.8)</td>
</tr>
<tr>
<td>Anxiety</td>
<td>1.2 (0.6-1.8)</td>
<td>1.2 (0.6-1.8)</td>
</tr>
<tr>
<td>Interpersonal sensitivity</td>
<td>1.2 (0.8-1.9)</td>
<td>1.3 (0.8-2.0)</td>
</tr>
<tr>
<td>Depression</td>
<td>1.8 (1.2-2.5)</td>
<td>1.9 (1.2-2.6)</td>
</tr>
<tr>
<td>Phobic anxiety</td>
<td>0.4 (0.1-0.9)</td>
<td>0.4 (0.1-1.1)</td>
</tr>
<tr>
<td>Obsessive compulsive</td>
<td>1.6 (1.0-2.3)</td>
<td>1.7 (1.0-2.3)</td>
</tr>
<tr>
<td>Health-related QoL, medianh</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vitality (VT)</td>
<td>30.0 (20.0-40.0)</td>
<td>30.0 (15.0-45.0)</td>
</tr>
<tr>
<td>Social functioning (SF)</td>
<td>62.5 (37.5-87.5)</td>
<td>62.5 (37.5-87.5)</td>
</tr>
<tr>
<td>Role limitations due to emotional problems (RE)</td>
<td>33.3 (0.0-33.3)</td>
<td>0.0 (0.0-33.3)</td>
</tr>
<tr>
<td>Mental health</td>
<td>48.0 (36.0-60.0)</td>
<td>48.0 (36.0-56.0)</td>
</tr>
<tr>
<td>General health, n</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poor</td>
<td>101 (54.0)</td>
<td>101 (56.1)</td>
</tr>
<tr>
<td>Good</td>
<td>86 (46.0)</td>
<td>79 (43.9)</td>
</tr>
</tbody>
</table>

IQR: Interquartile range, SD: Standard deviation, QoL: Quality of life

a) Several reasons were possible for each individual, b) Completed by 189 in the intervention group and 183 in the control group, *) P-value <0.05
Blinding

The social workers who assessed readiness to RTW and allocated job centre activities to the participants provided a guess about allocation group for 96 (55%) of 176 randomly selected participants. They were able to guess the allocation correctly for two-thirds of the participants in the control group, but only guessed half of the allocations correctly for the participants in the intervention group (Table 5).

Table 5 Social workers guess of the participants’ allocation

<table>
<thead>
<tr>
<th>Allocation</th>
<th>Guess by social workers</th>
<th>p-value*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Intervention group</td>
<td>Control group</td>
</tr>
<tr>
<td>n (%)</td>
<td>n (%)</td>
<td></td>
</tr>
<tr>
<td>Intervention group (n = 52)</td>
<td>26 (50)</td>
<td>26 (50)</td>
</tr>
<tr>
<td>Control group (n = 44)</td>
<td>11 (25)</td>
<td>33 (75)</td>
</tr>
<tr>
<td>Total (n = 96)</td>
<td>37</td>
<td>59</td>
</tr>
</tbody>
</table>

*chi^2 test

Participation in psychoeducation sessions

A total of 68 (34%) individuals participated in all sessions, while 24 (12%) did not show up. Furthermore, 74 (37%) participants brought a relative to the special session for them (Table 6).

The individuals who participated four to six times were on average older than those who participated less than four times (45.3 vs 40.2 years, p < 0.001). The different participation levels were not related to gender, education, or SCL-8AD score.

On average, participation in the first session took place 16 days after randomisation (range: 2–91 days) and 73 days after the first day of sickness absence (range: 22–134 days).
Chapter 5: Results

Blinding

The social workers who assessed readiness to RTW and allocated job centre activities to the participants provided a guess about allocation group for 96 (55%) of 176 randomly selected participants. They were able to guess the allocation correctly for two-thirds of the participants in the control group, but only guessed half of the allocations correctly for the participants in the intervention group (Table 5).

Table 5
Social workers guess of the participants' allocation

<table>
<thead>
<tr>
<th>Allocation Guess by social workers</th>
<th>p-value*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intervention group</td>
<td></td>
</tr>
<tr>
<td>n (%)</td>
<td></td>
</tr>
<tr>
<td>26 (50)</td>
<td></td>
</tr>
<tr>
<td>26 (50)</td>
<td></td>
</tr>
<tr>
<td>Control group</td>
<td></td>
</tr>
<tr>
<td>n (%)</td>
<td></td>
</tr>
<tr>
<td>11 (25)</td>
<td>0.01</td>
</tr>
<tr>
<td>33 (75)</td>
<td></td>
</tr>
<tr>
<td>Total (n = 96)</td>
<td></td>
</tr>
<tr>
<td>37</td>
<td></td>
</tr>
<tr>
<td>59</td>
<td></td>
</tr>
</tbody>
</table>

*chi2 test

Participation in psychoeducation sessions

A total of 68 (34%) individuals participated in all sessions, while 24 (12%) did not show up. Furthermore, 74 (37%) participants brought a relative to the special session for them (Table 6). The individuals who participated four to six times were on average older than those who participated less than four times (45.3 vs 40.2 years, p < 0.001). The different participation levels were not related to gender, education, or SCL-8AD score.

On average, participation in the first session took place 16 days after randomisation (range: 2–91 days) and 73 days after the first day of sickness absence (range: 22–134 days).

Usual care and co-interventions

No differences between groups were found for participation in usual care or co-interventions 3 months after the randomisation. Among those who had completed the question, a total of 99 (64%) individuals in the intervention group and 107 (69%) in the control group had received treatment for their mental condition (Table 7). The number of individuals who had participated in activities offered by the job centres were 65 (42%) in the intervention group and 57 (36%) in the control group (Table 8).

Table 6 Participation in psychoeducation sessions

<table>
<thead>
<tr>
<th>Number of sessions</th>
<th>Compliance</th>
<th>n = 200</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n (%)</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>24 (12)</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>16 (8)</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>7 (4)</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>21 (11)</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>24 (12)</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>40 (20)</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>68 (34)</td>
<td></td>
</tr>
</tbody>
</table>

Table 7 Usual care received from health care professionals

<table>
<thead>
<tr>
<th>Treatment received from...</th>
<th>Intervention group n = 154</th>
<th>Control group n = 155</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n (%)</td>
<td>n (%)</td>
</tr>
<tr>
<td>GP</td>
<td>72 (47)</td>
<td>80 (52)</td>
</tr>
<tr>
<td>Psychologist</td>
<td>78 (51)</td>
<td>74 (48)</td>
</tr>
<tr>
<td>Psychiatrist</td>
<td>14 (9)</td>
<td>8 (5)</td>
</tr>
<tr>
<td>Elsewhere</td>
<td>22 (14)</td>
<td>18 (12)</td>
</tr>
<tr>
<td>No treatment received</td>
<td>54 (35)</td>
<td>48 (31)</td>
</tr>
</tbody>
</table>

Percentages do not add up to 100 as people could receive more than one treatment

Table 8 Participated in activities offered by the job centres

<table>
<thead>
<tr>
<th>Activities participated in...</th>
<th>Intervention group n = 156</th>
<th>Control group n = 159</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n (%)</td>
<td>n (%)</td>
</tr>
<tr>
<td>Mindfulness</td>
<td>12 (8)</td>
<td>18 (11)</td>
</tr>
<tr>
<td>Physical training /exercise</td>
<td>44 (28)</td>
<td>32 (20)</td>
</tr>
<tr>
<td>Job training / job application course</td>
<td>7 (4)</td>
<td>6 (4)</td>
</tr>
<tr>
<td>Psychology course / stress – depression course</td>
<td>7 (4)</td>
<td>12 (8)</td>
</tr>
<tr>
<td>Pain management course</td>
<td>1 (1)</td>
<td>1 (1)</td>
</tr>
<tr>
<td>Diet course</td>
<td>2 (1)</td>
<td>1 (1)</td>
</tr>
<tr>
<td>Unspecific courses</td>
<td>10 (6)</td>
<td>10 (6)</td>
</tr>
<tr>
<td>No activities</td>
<td>91 (58)</td>
<td>102 (64)</td>
</tr>
</tbody>
</table>

Percentages do not add up to 100 as people could participate in more than one activity
Sick leave

During the first 6 months after randomisation, the two groups had almost the same relative chance of full RTW (RR 0.97, Table 9, Figure 3). However, during the first 3 months, the participants in the intervention group had a statistically significantly higher risk of not having fully returned to work (RR: 0.68 (0.47;0.98).

For first RTW, no significant differences were found between the groups at either time points; however, trends were similar to what was seen for full RTW.

In the per-protocol analysis, the individuals in the intervention group who had participated in at least four of the six psychoeducational sessions returned to work (both full RTW and first RTW) considerably later during the first 3 and 6 months compared to the control group (Table 9).

Table 9 Chance of return to work according to participation in psychoeducation

<table>
<thead>
<tr>
<th></th>
<th>Control group</th>
<th>Intervention group</th>
<th>Intervention group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Intention-to-treat</td>
<td>Per-protocol</td>
</tr>
<tr>
<td>Full RTW^a</td>
<td>n = 200</td>
<td>n = 200</td>
<td>n = 132</td>
</tr>
<tr>
<td>3 mo</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CIP % (95% CI)</td>
<td>28 (22;35)</td>
<td>19 (14;25)</td>
<td>11 (5;16)</td>
</tr>
<tr>
<td>RR (95% CI)</td>
<td>1 (ref)</td>
<td>0.68 (0.47;0.98)</td>
<td>0.38 (0.22;0.65)</td>
</tr>
<tr>
<td>6 mo</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CIP % (95% CI)</td>
<td>45 (38;52)</td>
<td>44 (37;51)</td>
<td>40 (31;48)</td>
</tr>
<tr>
<td>RR (95% CI)</td>
<td>1 (ref)</td>
<td>0.97 (0.78;1.21)</td>
<td>0.89 (0.68;1.15)</td>
</tr>
<tr>
<td>First RTW^b</td>
<td>n = 200</td>
<td>n = 200</td>
<td>n = 132</td>
</tr>
<tr>
<td>3 mo</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CIP % (95% CI)</td>
<td>38 (31;44)</td>
<td>31 (25;38)</td>
<td>26 (19;34)</td>
</tr>
<tr>
<td>RR (95% CI)</td>
<td>1 (ref)</td>
<td>0.83 (0.63;1.09)</td>
<td>0.69 (0.49;0.97)</td>
</tr>
<tr>
<td>6 mo</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CIP % (95% CI)</td>
<td>52 (45;59)</td>
<td>49 (42;56)</td>
<td>46 (38;55)</td>
</tr>
<tr>
<td>RR (95% CI)</td>
<td>1 (ref)</td>
<td>0.94 (0.77;1.14)</td>
<td>0.88 (0.70;1.11)</td>
</tr>
</tbody>
</table>

CIP (Cumulative Incidence Proportion) shows the percentages of individuals having returned to work

^a Competing risk: death or other benefits such as early retirement or supported job, ^b Competing risk: death or other benefits (except supported job)
Chapter 5: Results

Figure 3 Cumulative incidence probability of full work resumption and competing risks during 1 year of follow-up after randomisation. Intervention group (n = 200) and control group (n = 200).

Sick leave
During the first 6 months after randomisation, the two groups had almost the same relative chance of full RTW (RR 0.97, Table 9, Figure 3). However, during the first 3 months, the participants in the intervention group had a statistically significantly higher risk of not having fully returned to work (RR: 0.68 (0.47;0.98).

For first RTW, no significant differences were found between the groups at either time points; however, trends were similar to what was seen for full RTW.

In the per-protocol analysis, the individuals in the intervention group who had participated in at least four of the six psychoeducational sessions returned to work (both full RTW and first RTW) considerably later during the first 3 and 6 months compared to the control group (Table 9).

Table 9 Chance of return to work according to participation in psychoeducation

<table>
<thead>
<tr>
<th></th>
<th>Control group</th>
<th>Intervention group</th>
<th>Intervention group (ccom. risk)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n = 200</td>
<td>n = 200</td>
<td>n = 132</td>
</tr>
<tr>
<td>Full RTW</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 mo CIP % (95% CI)</td>
<td>28 (22;35)</td>
<td>19 (14;25)</td>
<td>11 (5;16)</td>
</tr>
<tr>
<td>RR (95% CI)</td>
<td>1 (ref)</td>
<td>0.68 (0.47;0.98)</td>
<td>0.38 (0.22;0.65)</td>
</tr>
<tr>
<td>6 mo CIP % (95% CI)</td>
<td>45 (38;52)</td>
<td>44 (37;51)</td>
<td>40 (31;48)</td>
</tr>
<tr>
<td>RR (95% CI)</td>
<td>1 (ref)</td>
<td>0.97 (0.78;1.21)</td>
<td>0.89 (0.68;1.15)</td>
</tr>
<tr>
<td>First RTW</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 mo CIP % (95% CI)</td>
<td>38 (31;44)</td>
<td>31 (25;38)</td>
<td>26 (19;34)</td>
</tr>
<tr>
<td>RR (95% CI)</td>
<td>1 (ref)</td>
<td>0.83 (0.63;1.09)</td>
<td>0.69 (0.49;0.97)</td>
</tr>
<tr>
<td>6 mo CIP % (95% CI)</td>
<td>52 (45;59)</td>
<td>49 (42;56)</td>
<td>46 (38;55)</td>
</tr>
<tr>
<td>RR (95% CI)</td>
<td>1 (ref)</td>
<td>0.94 (0.77;1.14)</td>
<td>0.88 (0.70;1.11)</td>
</tr>
</tbody>
</table>

CIP (Cumulative Incidence Proportion) shows the percentages of individuals having returned to work

a Competing risk: death or other benefits such as early retirement or supported job, b Competing risk: death or other benefits (except supported job)

Mental health

No significant differences in psychological symptoms were found between the two groups at any time point. The participants in the intervention group reported a significantly higher score on internal locus of control at both time points, but no differences were found for the other three locus of control variables. No difference was observed between the groups for vitality, social functioning, role limitations due to emotional problems, or mental health at either time point.
Cohort study

Participants
A total of 2,036 participants were included in the study of which 725 (36%) reported mental health problems as the reason for the sickness absence, while 1,311 (64%) reported other health reasons. The most frequent reasons for sick leave in the mental health group were stress and burnout, depression and anxiety, while in “other health reasons”, musculoskeletal disorders, chronic/diffuse pain and unclear reasons were most frequent (Table 10). The two exposure groups were significantly different in relation to all baseline characteristics. Individuals with mental health as the reason for the sickness absence were more often women, younger, had more than 3 years of tertiary education, and had lower RTW expectations. Furthermore, they were to a greater extent white collar workers and less often unskilled or skilled workers.

Table 10 Reasons for sickness absence in the two exposure groups

<table>
<thead>
<tr>
<th>Reasons for sickness absence</th>
<th>Mental health reasons n = 725</th>
<th>Other health reasons n = 1,311</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anxiety</td>
<td>218 (30.1)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Depression</td>
<td>405 (55.9)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Stress and burnout</td>
<td>516 (71.2)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Other mental illness</td>
<td>79 (11.0)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Personal problems</td>
<td>139 (19.2)</td>
<td>34 (2.6)</td>
</tr>
<tr>
<td>Psychosocial working environment</td>
<td>166 (22.9)</td>
<td>46 (3.5)</td>
</tr>
<tr>
<td>Cardiovascular or lung diseases</td>
<td>25 (3.5)</td>
<td>106 (8.1)</td>
</tr>
<tr>
<td>Infection</td>
<td>19 (2.6)</td>
<td>53 (4.0)</td>
</tr>
<tr>
<td>Chronic / diffuse pain</td>
<td>85 (11.7)</td>
<td>197 (15.0)</td>
</tr>
<tr>
<td>Cancer</td>
<td>16 (2.2)</td>
<td>66 (5.0)</td>
</tr>
<tr>
<td>Abdominal illness</td>
<td>32 (4.4)</td>
<td>63 (4.8)</td>
</tr>
<tr>
<td>Musculoskeletal disorders</td>
<td>74 (10.2)</td>
<td>799 (61.0)</td>
</tr>
<tr>
<td>Other / unclear reason</td>
<td>74 (10.2)</td>
<td>210 (16.0)</td>
</tr>
</tbody>
</table>

Percentages do not add up to 100 as people could report several reasons for sickness absence

Return to work
During the 51 weeks of follow-up, individuals with mental health reasons had a significantly higher risk of not having returned to work. Even after adjusting for gender, age, education, and employment, the difference was still present but somewhat attenuated. After adjustment for RTW expectations, the RR was the same in the two groups (Table 11).

The confounding by RTW expectations is visualised in Table 12, which shows that the cumulative incidence probability of RTW was almost the same in the two groups within same strata of RTW expectations and sickness absence reasons.
Chapter 5: Results

Table 11 Change of having returned to work in individuals on sick leave due to mental health or other health reasons at 1 year follow-up

<table>
<thead>
<tr>
<th>Reason for sickness absence</th>
<th>CIP% (95% CI)</th>
<th>Crude analysis * RR (95% CI)</th>
<th>Adj. model 1 RR (95% CI)</th>
<th>Adj. model 2 RR (95% CI)</th>
<th>Adj. model 3 RR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mental health reasons</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n = 725</td>
<td>56 (52;59)</td>
<td>0.87 (0.80;0.93)</td>
<td>0.89 (0.82;0.96)</td>
<td>0.92 (0.85;0.99)</td>
<td>1.01 (0.95;1.08)</td>
</tr>
<tr>
<td>Other health reasons</td>
<td>n = 1,311</td>
<td>67 (65;70)</td>
<td>1 (ref)</td>
<td>1 (ref)</td>
<td>1 (ref)</td>
</tr>
</tbody>
</table>

RR: Relative risk. CI: confidence interval, CIP (Cumulative Incidence Proportion) shows the percentages of individuals having returned to work, *: Adjusted for effect of the psychoeducation intervention, Adj. model 1: Adjusted for effect of intervention, gender, and age, Adj. model 2: Adjusted as in model 1 and also for education and employment, Adj. model 3: Adjusted as in model 2 and also for RTW expectations.

Table 12 Change of returning to work according to RTW expectations and sickness absence reason

<table>
<thead>
<tr>
<th>RTW expectations</th>
<th>Mental health reasons</th>
<th>Other health reasons</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CIP % (95% CI)</td>
<td>CIP % (95% CI)</td>
</tr>
<tr>
<td>n = 725</td>
<td>n = 1,311</td>
<td></td>
</tr>
<tr>
<td>0-30%</td>
<td>29 (19;38)</td>
<td>24 (16;33)</td>
</tr>
<tr>
<td>40-60%</td>
<td>32 (25;39)</td>
<td>40 (32;48)</td>
</tr>
<tr>
<td>70-90%</td>
<td>54 (47;61)</td>
<td>54 (47;61)</td>
</tr>
<tr>
<td>100%</td>
<td>77 (72;82)</td>
<td>80 (77;83)</td>
</tr>
</tbody>
</table>

CIP: cumulative incidence proportion

Trajectories of employment status

Individuals with mental health reasons had significantly more weeks of sickness absence and temporary support but fewer weeks of work throughout the follow-up period compared to individuals with other health reasons. The group of other health reasons had significantly more episodes in work, whereas individuals with mental health reasons had more episodes in unemployment and temporary support.

During the follow-up period, there were a total of 181 different sequences in the group with mental health reasons and 238 in the group with other health reasons. The two groups displayed different sequences because a larger percentage with mental health reasons stayed in sickness absence throughout the study period, while a larger percentage with other health reasons went from sickness absence to continuous work (Table 13).

Table 13 Distributions of sequences in four categorises in the two exposure groups

<table>
<thead>
<tr>
<th>Sequence</th>
<th>Mental health reason</th>
<th>Other health reason</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n = 721 n (%)</td>
<td>n = 1,297 n (%)</td>
</tr>
<tr>
<td>Only sick leave</td>
<td>144 (20.0)</td>
<td>174 (13.4)</td>
</tr>
<tr>
<td>Moving to continuous work</td>
<td>195 (27.0)</td>
<td>509 (39.2)</td>
</tr>
<tr>
<td>At least one episode of work</td>
<td>279 (38.7)</td>
<td>477 (36.8)</td>
</tr>
<tr>
<td>Sick leave and social benefits</td>
<td>103 (14.3)</td>
<td>137 (10.6)</td>
</tr>
</tbody>
</table>

*Chi² test
Clusters

Eight clusters were merged on the basis of similar sequences and displayed aggregated shares of employment status. Three of the clusters (5, 7, and 8) displayed work-oriented trajectories, while two clusters (1 and 2) indicated continuous sickness absence or relapse into sickness absence. Only one cluster (6) showed a permanent withdrawal from the labour market, while two clusters (3 and 4) displayed general or partial temporary support.

Individuals with mental health reasons had significantly higher odds for being in the sickness absence cluster and significantly lower odds for being in the fast RTW cluster after adjusting for gender, age, education, and employment; however, after adjusting for RTW, expectations the odds were somewhat attenuated and no longer significant (Table 14). Moreover, the individuals with mental health reasons had significantly higher odds for being in the relapse cluster, although the number of observations was rather small.

<table>
<thead>
<tr>
<th>Clusters</th>
<th>Mental health reason (n=721) (n(%))</th>
<th>Other health reason (n=1,297) (n(%))</th>
<th>Crude analysis* OR (95% CI)</th>
<th>Adj. model 1 OR (95% CI)</th>
<th>Adj. model 2 OR (95% CI)</th>
<th>Adj. model 3 OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Sickness absence</td>
<td>317 (44.0)</td>
<td>422 (32.5)</td>
<td>1.35 (1.10;1.65)</td>
<td>1.30 (1.06;1.59)</td>
<td>1.31 (1.06;1.60)</td>
<td>1.05 (0.85;1.31)</td>
</tr>
<tr>
<td>2. Relapse</td>
<td>17 (2.4)</td>
<td>15 (1.2)</td>
<td>2.69 (1.31;5.52)</td>
<td>2.69 (1.29;5.59)</td>
<td>2.65 (1.27;5.52)</td>
<td>2.77 (1.31;5.87)</td>
</tr>
<tr>
<td>3. Sickness absence / temporary support</td>
<td>39 (5.4)</td>
<td>35 (2.7)</td>
<td>1.92 (1.17;3.16)</td>
<td>1.60 (0.97;2.65)</td>
<td>1.55 (0.94;2.56)</td>
<td>1.32 (0.80;2.18)</td>
</tr>
<tr>
<td>4. Temporary support</td>
<td>37 (5.1)</td>
<td>47 (3.6)</td>
<td>1.45 (0.91;2.32)</td>
<td>1.12 (0.70;1.82)</td>
<td>1.11 (0.68;1.79)</td>
<td>1.12 (0.69;1.82)</td>
</tr>
<tr>
<td>5. Unemployment</td>
<td>32 (4.4)</td>
<td>66 (5.1)</td>
<td>0.83 (0.52;1.32)</td>
<td>0.80 (0.50;1.27)</td>
<td>0.77 (0.48;1.23)</td>
<td>0.79 (0.49;1.27)</td>
</tr>
<tr>
<td>6. Permanent support</td>
<td>17 (2.4)</td>
<td>40 (3.1)</td>
<td>0.91 (0.50;1.66)</td>
<td>1.74 (0.90;3.39)</td>
<td>1.61 (0.83;3.12)</td>
<td>1.43 (0.73;2.80)</td>
</tr>
<tr>
<td>7. Slow RTW</td>
<td>104 (14.4)</td>
<td>197 (15.2)</td>
<td>0.87 (0.66;1.14)</td>
<td>0.93 (0.70;1.24)</td>
<td>0.92 (0.69;1.23)</td>
<td>1.03 (0.77;1.38)</td>
</tr>
<tr>
<td>8. Fast RTW</td>
<td>158 (21.9)</td>
<td>475 (36.6)</td>
<td>0.63 (0.50;0.78)</td>
<td>0.66 (0.52;0.82)</td>
<td>0.67 (0.53;0.84)</td>
<td>0.84 (0.66;1.07)</td>
</tr>
</tbody>
</table>

Reference group: Other health reasons, OR: Odds ratio. CI: confidence interval, *: Adjusted for effect of the psychoeducation intervention, Adj. model 1: Adjusted for effect of intervention, gender and age, Adj. model 2: Adjusted as in model 1 and also for education and employment, Adj. model 3: Adjusted as in model 2 and also for RTW expectations.
6. Discussion

This section includes a discussion of the main findings in light of the existing literature followed by a critical appraisal of the methodology applied in the two studies.

Main findings for the intervention study

In Paper 2, the effect of psychoeducation on RTW in individuals at risk of having a mental disorder was evaluated. Participating in psychoeducation had no impact on the chance of full RTW during the 6 months, but the participants had a significantly higher risk of not having fully returned to work during the first 3 months. The same pattern was seen for the outcome first RTW. Individuals who had participated in four to six sessions had a higher risk of not having returned to work during the first 3 months compared to the control group. Participating in psychoeducation did not decrease the level of symptoms of depression or anxiety or any other of the psychological symptoms. It did not improve mental health-related Quality of life; however, individuals in the intervention group improved their scores on internal locus of control at both 3 and 6 months.

Effect of RTW interventions

As mentioned in the background section of this thesis, other studies on psychoeducational interventions offered to individuals on sick leave with mental health problems have reported null findings. Thus, giving information and knowledge does not seem enough to facilitate RTW in this group (53,54,56-59,73). Still, Indahl et al. showed that self-management education given to individuals with sub-acute low back pain was able to improve the RTW rate in this group. Also, different effects of coordinated and tailored work rehabilitation have been found across mental and musculoskeletal disorders in a Danish setting (93,94). In this study the intervention was able to reduce the length of sickness absence among individuals with musculoskeletal disorders but prolonged it among individuals with mental disorders. Thus, it may indicate that the content of the interventions needs to be different to facilitate RTW across diagnoses. Moreover, it may show that it is difficult to find interventions that are able to facilitate RTW in individuals with mental disorders. There could be different explanations
for this. Mainly it may be because interventions within the field of vocational rehabilitation are complex because they include several components (95). Giving a drug in medical research is relatively simple, whereas complex interventions are more difficult to define, develop, document, and reproduce. In complex interventions, it is possible to assess whether the intervention has been given, but it is more difficult to assess whether it has been “taken” and applied by the participant. Moreover, participants are also often free to engage in other treatments and activities that could have an influence on the effect of the intervention. The control group often receives standard practice, which also can be complex and change over time. The Danish National RTW programme found that the effect of their intervention differed considerably among municipalities (96,97). The authors reasoned that this might be contributed to a variation in the professionals’ skills, to the attitudes and complexity of the participants, and to whether the intervention was implemented as intended (96,97). Thus, contextual factors seem to be of importance with regard to the effect of RTW interventions, but also the content of the intervention could contribute to prolonged sickness absence. As an example, Sogaard et al. performed a psychiatric examination followed up with advice for treatment and rehabilitation to the caregivers. The authors reasoned that recognition of a psychiatric diagnosis may have offered legitimacy to remain on sick leave, thereby prolonging the time to RTW. In addition, if some form of treatment was advised, the waiting time until that treatment could be given may have caused a delay in RTW (98). Another explanation for the lack of effect on RTW could be that mental disorders cause cognitive impairments that can interfere with vocational functioning for an extended period (99).

In the following section, different approaches with regard to interpreting the results of the present intervention study will be discussed.

Content of the psychoeducational sessions

A qualitative study based on interviews with eight participants from the intervention group showed that open groups were not preferable (100). It caused a lack of continuity in the psychoeducation that the participants had not taken part in the same previous sessions. Furthermore, the participants were not socially well connected since they only took part in a few sessions together. This also limited their opportunity to exchange experiences with other participants. The participants also generally agreed that the sessions were rather inactive because they were based too much on lectures and too little on discussions. Also, some participants were aware of much of the information provided, resulting in a disapproving view of the content of the sessions. It is possible that tools and exercises would have helped the
participants to work with the topics, made it a part of their daily lives, and helped to create the motivation for preparing to RTW. Furthermore, the course may not have focused enough on RTW and too much on mental health in general. The nurses were not used to working with individuals on sick leave or advising on RTW issues; however, the physiotherapist, the social worker, and the psychologist were.

Even though the sessions were structured and the same slides were used, the content may not have been identical as the focus could change according to the participants’ questions and needs. Also, the participants were free to engage in other activities and the standard care was individualised. Therefore, the perception of participating in the intervention was most likely experienced in different ways among the participants.

Even though psychoeducation in this form showed a lack of effect on RTW and on psychological symptoms, some aspects of the intervention may be found useful in another setting. The qualitative study emphasised three aspects that were positively acknowledged by the participant: bringing a relative, listening to experiences from a lay leader, and social interaction with others in the same situation (100).

**Group format over several weeks**

Another explanation for the negative effect could be that psychoeducation was performed in group sessions over several weeks. It has been presumed that participating in an intervention programme for several weeks may obstruct the natural RTW and, hence, introduce a negative effect (101). The participants in the psychoeducation group had a higher risk of not returning to work during the first 3 months, which could be explained by an ambition to complete the sessions before they returned. This explanation is plausible because those who participated four to six times had an even higher risk of not returning to work compared to the risk of all the other participants in the intervention group. For all individuals allocated to the intervention group, the chance for first RTW was not significantly lower than in the control group. This may be because the participants took part in the course while working part time. If psychoeducation or course participation in general results in prolonged sickness absence, it is important to be aware of this risk when implementing interventions.
Time for start of intervention

The intervention was offered close to the start of the sickness absence period, which could be an explanation for the lack of effect. Most workers will return to work rapidly within the first months after reporting sick (59,102). Participating in interventions at an early stage could therefore prolong the time to RTW. The optimum time window for the start of an effective structured intervention has been suggested to be approximately 8 to 12 weeks after start of the sickness absence in individuals on sick leave due to low back pain (101). Psychoeducation was, on average, provided 10 weeks after the start of sickness absence (in Paper 2 it was stated 7-8 weeks, which is not correct), but, it could be questioned whether the intervention started too early. Some of the participants expressed difficulties remembering and acquiring information during the early stages of sick leave, thus, they may not have been ready for the early intervention (100).

Social actors in the intervention

The intervention used in this study was in line with the self-management intervention by Indahl et al. (50) as both interventions included information and guidance from healthcare professionals to the participants. Thus, in relation to the case-management ecological model by Loisel et al. (26), the health care system and the personal system were included. As part of the usual care, all participants had to participate in consultations in the job centres and in vocational rehabilitation programmes. But as this was not directly a part of the intervention, the compensation system was not involved. Moreover, the workplace system was not a part of the intervention. Thus, all aspects of the model were not included in the intervention, which could explain why psychoeducation in this form was not effective. Two reviews have shown that interventions which include the workplace are the most effective in reducing the duration of sickness absence (29,103). An example of an intervention that includes all aspects of the model and has been shown to be effective in increasing the employment rate is the Individual Placement and Support (IPS) model for patients with severe mental disorders. The intervention is integrated within the mental health services, and consists of an individualised and rapid search for competitive employment or education with emphasis on the individuals’ preferences and choice regarding jobs. It also includes ongoing job support and benefit counselling (104).
**Mental health of the participants**

Psychoeducation has proven to have positive effects on psychiatric patients, e.g. reducing number of recurrences, reducing depressive symptoms, and increasing social interactions as presented in the Background section of this thesis. In this study, no differences between groups were found with regard to psychological symptoms and mental health-related quality of life. An explanation could be that the participants in this study had better mental health compared to psychiatric patients; thus the mental status of the participants was “too” good at baseline, and an improvement was not possible to identify after 3 and 6 months (ceiling/floor effect). However, compared to patients admitted to a day hospital in Denmark due to non-psychotic mental disorders (105,106), the participants’ mean baseline scores on somatisation, anxiety, depression, phobic anxiety, interpersonal sensitivity, and obsessive compulsive were comparable. Also, the mean scores 6 months after inclusion were markedly poorer compared to the Danish general population (107), but similar to the scores at discharge for patients admitted to a day hospital (106). Moreover, the participants reported a markedly poorer general health at baseline compared to the general population, and even at 6 months after inclusion, a difference was still present (108). Thus, the participants in this study had poorer mental health than the general Danish population and were comparable with patients at a day hospital. Therefore, it must be assumed that the lack of effect on the mental health outcomes cannot be attributed to the notion that the participants were too well at baseline.

The psychoeducation used in this study was in some aspects different from the more effective psychoeducational interventions, which may explain the lack of effect in this study in relation to symptom reduction. The psychoeducation consisted of only six sessions; thus it may not have been intensive enough. Other studies have applied up to 21 sessions that were also more treatment focused compared to the intervention in our study (44,109). According to a manual on psychoeducation by Colom el al., patients should be allowed to focus on their specific needs, which not was done in our study (35). Moreover, psychoeducation has typically been used in closed groups or individually, but its use has not been documented in open groups. Patients participating in closed groups might benefit from sharing experiences, expertise, and insight about their disorders (36), which probably was not possible at the same level in our study.
Main findings for the cohort study

In the cohort study (Paper 3), differences in RTW and employment trajectories for individuals on sick leave with mental health reasons and other health reasons were investigated. Compared to individuals with other health reasons, individuals on sick leave due to mental health reasons spent more weeks on sickness absence and in temporary support and fewer weeks on work. Moreover, fewer of the individuals on sick leave due to mental health reasons had returned to work during the 51 weeks of follow-up, compared to the individuals with other health reasons. They also had a lower chance of having returned to work; however, after adjusting for RTW expectations, the chance was the same in the two groups. The same pattern was seen in relation to their higher odds of being in the “sickness absence” cluster and lower odds of being in the “fast RTW” cluster, as the differences between groups were attenuated after adjusting for RTW expectations.

RTW expectations

The results indicate that RTW expectations can be considered a confounder in the effect of health reasons for RTW; individuals with mental health reasons returned to work later than individuals with other health reasons, but after adjusting for RTW expectations, both exposure groups were found to return to work at the same time. In the literature, RTW expectations are found to be a predictor of RTW in individuals on sick leave due to both mental and physical disorders, i.e. positive RTW expectations predict shorter time to RTW (18-22). RTW expectations is closely connected with self-efficacy (19,21,110), which is the “belief in one’s abilities to organise and execute the courses of action required to produce given attainments” (111). The belief one has in relation to RTW is, besides the seriousness of the disorder, probably also based on the person’s own expectations and on what the person believes is the environment’s expectation. Thus, the person considers his possibilities and considers whether the workplace is interested in having him/her back. Such considerations are probably influenced by character of the disorder.

In Paper 3, individuals with other health reasons had a higher level of RTW expectations than individuals with mental health reasons, which is in line with the study by Huijs et al. (21). A possible explanation could be that the stigmatisation of mental health problems in the workplace is high, and therefore the employees might avoid their workplace and receive less support from their colleagues and leaders/ supervisors, making it seem less likely to RTW. Another explanation could be that they are influenced by their psychological symptoms like
hopelessness, discourage, and reduced self-confidence, which make them less able to meet job demands. The active coping processes in self-management education can promote a sense of confidence and self-efficacy (31,32). Therefore, psychoeducation in an adjusted form may be a tool to improve the self-efficacy of individuals with mental health problems.

**RTW measures**

In RTW research, the duration of sickness absence is typically measured as cumulative (the duration of all days lost from work starting with the first day of sickness absence), as categorical (RTW status: yes/no), or as continuous (such as time to RTW) (25,28). A categorical outcome is often used; however, it does not account for the exact time point that the individual has returned to work. Survival analysis is a method that includes time by applying a continuous outcome (exact date/week). In both Paper 2 and Paper 3, a rather new method in RTW research was used, namely the pseudo-value method. It combines the variable status and time point in one outcome variable (82,83). Use of the pseudo-value method instead of the more conventional analysis of survival (Kaplan–Meier analysis and Cox regression) has some advantage. First of all, the estimates are shown as relative risk (RR) or relative difference (RD), which may be easier to interpret compared to a hazard ratio (112). Also, it is possible to compare survival curves at one or more fixed time points (82).

In the two studies of this thesis, two different outcome measures were used. In the intervention study (Paper 2), the outcome was measured as not receiving any sickness benefits; thus the individuals were considered fit for work. In the cohort study (Paper 3), the outcome was measured as not receiving any social benefits; thus the individuals were considered to be working. Many different ways of measuring RTW exist and this results in different estimates of the outcome (16). When RTW is considered a return to active employment, there are many explanations for not currently working which are not related to the illness or injury, e.g. returning to study instead of work, retirement, failure to find work, taking on household/domestic duties or volunteer jobs (113). Also, individuals who were employed before their sick leave may have a higher probability of returning to work than individuals who were unemployed. Even though this way of measuring RTW has some pitfalls, returning to work has an impact on the economy. If this method was used in the intervention study, it would probably have resulted in fewer having a positive outcome as many of the participants presumably had returned to unemployment.
Survival analysis does not cover the many possible states and transitions experienced by individuals on sick leave, and it has been argued that RTW is a complex and evolving process that is not well characterised by measures collected at a single point in time (114,115). Rather it should be looked at as a process which covers a series of events, transitions, and phases of RTW and begins at the onset of work disability and concludes when a satisfactory long-term outcome has been achieved (16,17). The advantage of this approach is that it provides a more complete picture of RTW and employment trajectories and therefore, a more complete understanding of the impact of work disability on the individual’s life and well-being (74,75). Sequence analysis was used in the cohort study (Paper 3) to analyse trajectories of employment status, a method that has its roots in sociology (116). Other studies have used multi-state models to study employment trajectories (117-119). Pedersen et al. studied the transitions for Danish individuals on sick leave during 4 years of follow-up in relation to work, unemployment, sickness absence, and disability pension and identified predictors for each of the different transitions (118). Two Norwegian studies have used multi-state models to analyse the transitions between various states of employment/social benefits (117,119). Lie et al. applied three different states that low back pain patients could be in after an RTW intervention; recovery (RTW), sick leave benefits, or disability pension (117). The model has been extended to include eight different categories for employment and social benefits over a 4-year period by Oyeflaten et al. (119). Sequence analysis is considered an exploratory method rather than a method for hypothesis testing and is not suitable for answering questions of causality because it aims to detect structures visually more than testing them statistically. Therefore, sequence analysis is best used in combination with other methods and cannot replace methods like event history models (120).

**Methodological considerations**

**Selection bias**
A general strength of the intervention study (Papers 1 and 2) was the randomised design, minimising the risk of confounding and selection bias. Selection bias at study entry was prevented by the use of computerised randomisation to ensure allocation sequence concealment (121). Unfortunately, the participants were randomised based on oral consent and therefore knew their allocation before they provided written consent. This could introduce bias. The procedure was chosen in order to be able to offer the intervention at an early stage
in the sickness absence period. Also, it did not seem to have influenced the relative participation rates because the same number of individuals from each group dropped out of the study after randomisation. Furthermore, no differences were found between the dropouts in the two groups, and therefore it did not seem to have been a serious threat for the internal validity. Structured information on reasons for withdrawing for those individuals was not collected even though it would be have been relevant because the reasons might have differed between the groups (121).

A total of 36% and 29% from the intervention group and the control group, respectively, did not complete the questionnaire at 6-month follow-up. Those lost to follow up did not differ from those who provided data in relation to age, gender, education, employment, SCL-8 AD score, or RTW status. Moreover, no systematic differences between groups were found with respect to the baseline characteristics; thus attrition bias is unlikely (121).

The source population (Paper 3) was considered unselected as it was based on all individuals on sick leave from the four municipalities. Only 61.4% completed the questionnaire, and thus, the self-reported reasons for sickness absence for non-responders were not possible to retrieve. The relationship between sickness absence reasons and employment status may have been different in non-responders, and if so, it could have changed the estimates, but there is no reason to believe that this was the case. If there was such a difference, a higher participation rate would not have changed the conclusion, although it would have made the estimates stronger.

Information bias

In the intervention study (Papers 1 and 2), register data from the job centres was used to measure RTW. Administrative data about employment status are standardised, objective, and have a broad coverage and are thus reliable to use in studies (16). Moreover, the data from the job centres provided full follow-up on all participants; thus information bias was limited (121). The data from the job centres were registered on a daily basis, while DREAM data were registered on a weekly basis. It was also possible in the data from the job centres to identify when a person moved from full-time sick leave to part-time sick leave, which was not possible in the DREAM database.

The baseline questionnaire was completed after the participants knew about their allocation. It is possible that it could have introduced information bias if the participants in the control
group were disappointed about the allocation and thus reported a worse score. As a consequence of the early start of the intervention, some participants completed the baseline questionnaire after they had started the first session. In the analysis, we did not adjust for baseline scores because they could be biased, and therefore, we only compared scores at 3 and 6 months between the two groups. However, when looking at the data, information bias seems to be a minor issue. The scores on symptoms of depression and anxiety (SCL-90-R) at baseline and the score on the SCL-8 AD were similar for the two groups. The SCL-8 AD consists of items on symptoms of depression and anxiety and was completed before they knew about their allocation. Also, the scores on the remaining baseline questions seemed to be similar between the two groups. But, the significantly higher score on internal locus of control in the intervention group at both 3 and 6 months might be explained by a difference that was already present at baseline. If we had adjusted for baseline data, it is possible that this effect may have been attenuated.

The Multidimensional Health Locus of Control (MHLC) questionnaire, which was used to assess Locus of Control (81), was translated into Danish to be used in the intervention study. After two forward translations, a synthesis of these translations was made. The questionnaire was tested in a small group of participants in a pilot study. However, as this was not the correct way to test the validity of the translation, the validity may be affected. Optimally, a “cross-cultural adaptation” should have been performed to incorporate a process that looks both at language and at cultural adaptation issues (122).

An attempt was made to blind the social workers at the job centres to the allocation since they have a central part in assessing whether the individuals on sick leave are still entitled to receive sickness absence benefits. It was partially succeeded since they only guessed half of the allocations correctly for the participants in the intervention group but were able to guess the allocation correctly for two-thirds of the participants in the control group. Thus, it is possible that the RTW outcomes could be influenced by “confounding by indication” if the social workers had assessed the participants’ readiness to RTW differently depending on the group allocation.

The RTW outcome of Paper 3 was measured with DREAM data, and therefore the study had complete follow-up of weekly employment status and social benefits. DREAM is based on administrative data on transfer income, but has been validated in research in individuals on sick leave (84,86). However, a few issues may be challenging when DREAM is used to study RTW. Only one transfer payment code, placed in hierarchical order, is available for each
week, thus low-ranking codes are overwritten by high-ranking codes (e.g. sickness absence benefits). If no transfer income is registered, the individual is self-supporting and considered not to be on sick leave. However, the individuals may be living on their spouse’s income, but not necessarily ready to work. The number of such individuals is not registered by Statistic Denmark, but it is presumably a small number of the individuals in the population. Moreover, misclassification in relation to RTW may occur as a new sickness absence period is registered only if it is longer than 4 weeks. Thus, short-term sickness absence periods may be underestimated and participation in work overestimated.

The grouping of the exposure may cause misclassification if employees do not report the right reason for their sickness absence. Some aspects of this situation may give rise to concerns that mental health reasons could be underestimated; individuals attribute their symptoms as a normal response to everyday life events, they tend to focus on their physical health rather than on their mental health, and, in addition, mental health problems are often masked by somatic complaints and are connected with stigmatisation (123). However, in the study population 36% reported mental health as the reason for their sickness absence, which is in line with the 30% who in 2008 were on sick leave due to mental disorders in Denmark (124). Moreover, individuals were included on the basis of a questionnaire that was sent in relation to the intervention study (Papers 1 and 2), a study that targeted individuals with mental health problems, and this may have legitimated their reporting of mental health reasons. Therefore, it is most likely that the participants have reported the right reason for their sickness absence and thus, misclassification seems to be a minor issue.

**Confounding factors**

Only a limited number of variables were included in the questionnaire. Therefore, in Paper 3, adjustments were only made for age, gender, education, employment, and RTW expectations. The chance of RTW is, however, also influenced by other factors. According to the case-management ecological model by Loisel et al. (26), the health care system, workplace system, and the legislative and insurance systems also have an influence on an individual’s RTW process. Having that in mind, information on predictors such as treatment received from the healthcare system, contact with the workplace, and previous labour market attachment could have improved the study.

Some studies have divided the sickness absence reasons into mental, physical, and co-morbidity and found that co-morbidity was associated with longer time until RTW than was
seen in individuals who only reported physical or mental problems as the cause for their sickness absence (21,125). In this study, individuals with co-morbidity were not categorised separately, as it was not the aim of the study. Moreover, only co-morbidity that was due to the sickness absence was reported. Therefore, the degree of co-morbidity in this study is unknown.

**External validity**

The intervention study (Papers 1 and 2) was performed in individuals on sick leave in four different municipalities in Denmark, all of whom received the standard care from the job centres and health care system. As the standard care is different among municipalities, it improves the external validity of the study to have included four different municipalities. As the social systems differ across countries, the results may primarily be generalised to Denmark and other Nordic countries as these countries have similar welfare systems (126). Only one-third of the eligible individuals participated in the study, and the study population consisted to a greater extent of women than men, those who were intermediate to highly educated and on sick leave due to mental health problems, and those with low RTW expectations. It is possible that those accepting to participate were more eager to return to work compared to those not accepting to participate. This limits the generalisability of the study to a subgroup of intermediate to highly educated women with low RTW expectations.

The findings on sickness absence reasons and employment status (Paper 3) are to a high degree related to the social systems. As a large variation exists between countries in the regulation of sick leave compensation and social benefits, the results may be difficult to generalise. However, within the Nordic countries, the social security systems are relatively similar and make comparisons feasible (126); thus findings may, therefore, be generalised to these countries. Findings regarding the longer sickness absence periods and lower RTW expectations for those with mental health reasons compared to those with other health reasons may be generalised to other Western countries.
7. Conclusion

Psychoeducation was offered to individuals on sick leave and at risk of having a mental disorder. Participating in the intervention resulted in a higher risk of not returning to work during the first 3 months after randomisation, but after the first 6 months, there was no longer a difference between the intervention group and the control group. Also, participation in the intervention did not decrease the level of psychological symptoms or improve mental health-related quality of life and internal locus of control. It cannot be recommended to offer psychoeducation in this form in a municipal job centre setting in order to facilitate RTW. However, it could prove advantageous to use some aspects of the intervention in another setting, such as bringing a relative, listening to experiences from a lay leader, and social interactions with others in the same situation.

Individuals who reported mental health reasons to be the cause of sick leave spent more weeks in sickness absence and temporary benefits and had a higher risk of not having returned to work within a year compared to individuals on sick leave due to other health reasons. The difference could be explained by their lower RTW expectations at baseline. RTW expectations are closely connected with self-efficacy, which is an important predictor of RTW. Therefore, these results indicate the need to develop suitable interventions to facilitate RTW for individuals with low RTW expectations.
8. Perspectives

Based on the intervention study, the use of psychoeducation in the form applied in the present study cannot be recommended to facilitate RTW. In future studies, it seems important to start the intervention later, as most workers will return to work rapidly within the first months after reporting being sick. Moreover, closed groups should be applied to improve the social interaction between the participants. Also, tools and exercises are important to help the individuals work with the topics and make them a part of their daily lives. Thus, psychoeducation consists of some positive and important aspect for individuals on sick leave, but needs to be combined with other elements to improve the chance of RTW. Primarily, the workplaces need to be included.

A similar course has been offered in the Danish municipalities since 2014 to individuals with a long-term disorder. It is called "Lær at tackle job og sygdom" ("Learn to tackle job and illness") and consists of six sessions of 2.5 hours duration and aims to facilitate RTW by improving the self-efficacy and coping skills (127,128). It does not include all elements in the case-management ecological model by Loisel et al. (26), as the workplaces and medical centres are not included. Thus, it will be interesting to learn whether the course is shown to be effective. The Individual Placement and Support (IPS) model has a more clinical focus because it integrates the mental health and employment services. It has been able to improve the employment rates in other countries (104), and at present the model is being tested in both a Danish and a Norwegian setting (129,130).

The findings from the cohort study indicate that individuals with mental health problems have low expectations of RTW. Health care professionals need to be aware of this because knowledge of this aspect may help them to alter their expectations, e.g. by using cognitive behavioural therapy. Moreover, future studies should, to a greater degree, include individuals on sick leave with lower expectations of RTW and lower self-efficacy because they may be the ones who will benefit the most from participating in RTW interventions compared to individuals who have a higher expectancy to return to work. To assess individuals’ confidence to meet job demands and their beliefs in own ability to RTW, it is relevant to use the Return to Work Self-Efficacy (RTW-SE) questionnaire (110,131), which currently is being validated in a Danish version.
8. Perspectives

Based on the intervention study, the use of psychoeducation in the form applied in the present study cannot be recommended to facilitate RTW. In future studies, it seems important to start the intervention later, as most workers will return to work rapidly within the first months after reporting being sick. Moreover, closed groups should be applied to improve the social interaction between the participants. Also, tools and exercises are important to help the individuals work with the topics and make them a part of their daily lives. Thus, psychoeducation consists of some positive and important aspect for individuals on sick leave, but needs to be combined with other elements to improve the chance of RTW. Primarily, the workplaces need to be included.

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Psychoeducation to facilitate return to work in individuals on sick leave and at risk of having a mental disorder: protocol of a randomised controlled trial

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Abstract

**Background**: Sickness absence due to poor mental health is a common problem in many Western countries. To facilitate return to work, it may be important to identify individuals on sick leave and at risk of having a mental disorder and subsequently to offer appropriate treatment. Psychoeducation alone has not previously been used as a return to work intervention, but may be a promising tool to facilitate return to work. Therefore, the aim of the study is to evaluate the effectiveness of psychoeducation designed specifically to facilitate return to work for individuals on sick leave and at risk of having a mental disorder. The psychoeducation was a supplement to the various standard offers provided by the job centres.

**Methods/Design**: The study is a randomised controlled trial, in which individuals on sick leave either receive psychoeducation and standard case management or standard case management alone. Participants were individuals with mental health symptoms, who had been on sick leave from part-time or full-time work or unemployment for about 4–8 weeks. The psychoeducational intervention was group-based and the course consisted of 2 hour sessions once a week for 6 weeks. The course was given by psychiatric nurses, a psychologist, a social worker, a physiotherapist and a person who had previously been on sick leave due to mental health problems. The sessions focused on stress and work life, and the purpose was to provide individuals on sick leave the skills to understand and improve their mental functioning.

The primary outcome is the duration of sickness absence measured by register data. Secondary outcomes include psychological symptoms, mental health-related quality of life, and locus of control. These outcomes are measured by questionnaires at the start of the intervention and at 3 and 6 months follow-up.

**Discussion**: On the basis of this trial, the effect of psychoeducation for individuals on sick leave and at risk of having a mental disorder will be studied. The results will contribute to the continuing research on sickness absence and mental health. It will primarily show whether psychoeducation can lead to faster and sustainable return to work.

**Trial Registration**: Clinical Trial.gov NCT01637363. Registered 6 July 2012.

**Keywords**: Sickness absence, Psychoeducation, Mental health, Return to work, Psychological symptoms, Mental health-related quality of life, Locus of control
Background

Sickness absence and mental health problems

In many Western countries, mental health problems are a main cause of sick leave [1-3]. Common mental disorders, such as adjustment disorders, depression, anxiety and somatoform disorders constitute the most prevalent causes of long-term sickness absence [4-6]. Interventions aiming to facilitate return to work (RTW) for this group have received attention in recent years and a review by Soegaard et al. showed that several research papers have been published [7]. Moreover, two Cochrane reviews have described that a broad range of interventions have been tested, such as pharmacotherapy, relaxation therapy, exercise programmes, occupational therapy, enhanced primary care, employee assistance programmes and psychological interventions [2,8]. Psychological interventions, such as cognitive behavioural therapy and problem-solving therapy, are commonly used [2]. In this study, the effect of a psychological intervention will be tested, i.e. psychoeducation (PE), in individuals on sick leave and at risk of having a mental disorder. PE has been chosen as it is a simple intervention, which can convey knowledge of personal mental health problems to a broad range of individuals on sick leave. These acquired competences will presumably be helpful in the RTW process. To our knowledge, the effect of PE on RTW has not yet been evaluated; however, evaluations have been recommended [9].

Psychoeducation

PE is education offered to individuals with mental disorders or mental distress and can include their relatives [10,11]. The purpose of PE sessions is to provide individuals with tools that enable them to be more active in their recovery process and to cope with their situation [12]. Thus, psychotherapeutic techniques, such as behavioural activation, cognitive behavioural therapy and problem-solving therapy, are often included [13]. These techniques aim to promote awareness and proactiveness in relation to recognition of episode recurrences, to change the individuals’ behaviours and attitudes towards their disorders as well as to improve psychosocial and occupational functioning plus quality of life [14,15].

In this trial, PE is used as a group-based intervention; however it can be applied in a variety of formats [11]. The number of sessions varies, but many psychoeducational interventions include 6–12 sessions [13,16-22].

PE, in combination with standard pharmacotherapy, has proven to have a long-term effect (for up to 5 years) in terms of reducing the number of recurrences and prolonging the time to recurrence in individuals who suffer from depression or bipolar disorder [16,22,23]. Additionally, PE can reduce manic and depressive symptoms for up to 1 year after the intervention [13,16-19,22,24] as well as prevent depression in individuals with subclinical depressive symptoms [19]. Participants with a relatively mild initial depressive symptomatology seem to benefit more from the education than participants with higher levels of initial symptoms [13,19,25]. PE has also proven effective in terms of non-clinical outcomes. Within 3 months after the intervention, PE has shown to be effective in increasing participation in pleasant activities, social interaction [26], self-esteem [24,26] and the frequency of seeking social support [26]. These outcomes are presumably all important for RTW.

Information and education in RTW-interventions

To our knowledge, PE alone has not previously been used as an RTW intervention. However, information and education on mental health problems have been used in combination with other types of interventions. These interventions have mainly included individuals on sick leave or employees suffering from stress or work-related stress [4,27-32]. De Vente et al. [28] and Willert et al. [31] implemented PE taught by a psychologist as part of their intervention; but, the content was not further elaborated. Information and advice on lifestyle, coping, wellness, health, nutrition, physical exercise and preparation of RTW have been employed in many studies [4,28-30]. Furthermore, in the study by Stenlund et al. [4] the relatives were invited to participate in part of the intervention.

In general, interventions comprising information and education to stressed individuals have not resulted in better RTW outcomes for the intervention group than for the control group. Nevertheless, the study by van der Klink et al. [32] found a higher RTW rate in the group receiving information. The interventions by Willert et al. [31] and Grossi et al. [29] were able to lower the scores on depression, burnout and perceived stress in the intervention group. Grossi et al. concluded that a course teaching patients to identify, understand and handle stress symptoms may be more effective in reducing stress-related exhaustion than conventional treatment alone [29]. One reason for the overall limited effect could be that many of the studies within the field had low power, as commented by others [4,33]. As a general rule, the required sample size in studies measuring occupational outcomes should be larger than the sample size in studies measuring clinical outcomes alone [8].

Sickness absence in a Danish context

In Denmark, social workers in the municipal case management centres, the so called “job centres” administrate sickness benefit cases and are part of the initial RTW process of individuals on sick leave. The first consultation between the social worker and the individuals on sick leave must take place before the end of the first eight weeks of absence [34]. The social workers may...
require a workability record from the general practitioners, but this may not be obtained until after the first consultation. Thus, the social workers often rely on the information from the beneficiaries, for instance regarding their diagnoses [35]. The social workers do not screen for mental health symptoms. However, it may be advantageous to screen and to identify individuals at risk of having a mental disorder as 24% of individuals on long-term sick leave have been assessed to suffer from an undetected mental disorder [36]. Sogaard & Bech have developed a simple screening instrument, SCL-8 AD, to identify individuals at risk of having a mental disorder in the group of individuals on long-term sickness absence (>8 weeks) [36]. The screening instrument is meant as a useful tool for social workers to better identify mental health problems and to offer a tailored rehabilitation strategy.

In a Danish context, there is a lack of evidence-based RTW interventions [9], and the activities offered by the job centres are not necessarily targeted at individuals at risk of having a mental disorder. As a consequence, we intended to evaluate a pragmatic intervention targeted at this population and based on a model which is simple to implement in the Danish job centres.

The intention was to identify individuals on sick leave and at risk of having a mental disorder (screened by SCL-8 AD) and subsequently to offer PE. The study was a pragmatic randomised controlled trial (RCT) testing the intervention in a heterogeneous group of individuals on SA.

Study aim and hypothesis
The aim of the study was to evaluate the effect of psychoeducation targeted specifically to facilitate RTW as adjunct to standard case management for individuals on sick leave and at risk of having a mental disorder.

It was hypothesised that individuals who participated in the psychoeducational programme would have shorter sickness absence periods compared to the control group, and furthermore, fewer psychological symptoms, improved mental health-related quality of life and internal locus of control.

Methods/Design
Study design
In this RCT the intervention group received PE in addition to usual care whereas the control group only received usual care. In Denmark, compulsory activities are provided by the municipal job centres, the purpose being to promote RTW. These activities were considered as usual care.

Setting
The study was conducted in four municipalities in the Western part of Denmark (Skive, Struer, Lemvig and Holstebro) with a total of approximately 150,000 citizens.

The recruitment of participants started in September 2012 and ended in January 2014.

In the spring of 2012, a pilot study was conducted.

Recruitment
Individuals on sickness absence benefit for about 4–8 weeks were identified weekly during the recruitment period and mailed information about the study, an invitation, a screening questionnaire with inclusion, and exclusion criteria and a return envelope. A reminder to return the questionnaire was sent after 10–14 days. The screening questionnaire included the questionnaire SCL-8 AD. It consists of 13 questions derived from SCL-92 and has been evaluated to detect mental disorders (especially depression, anxiety and somatoform disorders [37]) in individuals on long-term (>8 weeks) sickness absence. A cut-point of ≥5 was chosen for inclusion, with a sensitivity of 75%, a specificity of 68% and a positive predictive value of 51% [37]. The instrument has previously been used in a larger Danish national RTW project [38].

Eligible individuals were contacted by phone by a research assistant who gave information about the study. If they agreed to participate in the study, they were randomised. Subsequently, they were mailed information about their allocation and a consent form to fill out and return.

Individuals could only be invited to participate in the study once during the study period.

Participants
The target population were individuals on sick leave from part-time or full-time work or unemployment.

Participants were eligible for the study if they were between 18 and 64 years old and had a SCL-8 AD score ≥5.

Participants were ineligible when they met one or more of the following exclusion criteria: 1) did not communicate in Danish; 2) had been on sick leave due to mental health problems for more than 3 consecutive months during the preceding year; 3) were pregnant; 4) had a supported job/were in job training/in rehabilitation/had retired.

A total of 4,541 individuals were on sick leave and referred to the job centres in the study period. Of the 1,129 eligible individuals, 430 accepted to participate (Figure 1). After randomisation, 30 participants withdrew from the study. RTW data were registered for all participants.

Randomisation
The participants were equally randomised (1:1) to one of two parallel groups; the intervention group or the control group. The study was designed as a superiority trial. A computerised random number generator with a block
The study was conducted in four municipalities in the Western part of Denmark (Skive, Struer, Lemvig and Holstebro) with a total of approximately 150,000 citizens. These activities were considered as usual care. In this RCT the intervention group received PE in addition to usual care whereas the control group only received adjunct to standard case management for individuals on sick leave and at risk of having a mental disorder. As a consequence, we hypothesised that individuals who participated in the study once during the study period.

**Methods/Design**

The intention was to identify individuals on sick leave for mental health symptoms. However, it may be advantageous to screen and to identify individuals at risk of having a mental disorder as 24% of individuals on long-term sick leave have been assessed to suffer from an undetected mental disorder [36]. Sogaard & Bech have developed a simple screening instrument, SCL-8 AD, to identify individuals at risk of having a mental disorder [36].

**Recruitment**

In the spring of 2012, a pilot study was conducted. Eligible individuals were contacted by phone by a research assistant who also informed the participants by mail of their allocation.

**Randomisation**

A computerised random number generator with a block size 4 was used to allocate participants. The programme was prepared by a data manager with no further involvement in the study. The randomisation was carried out by a research assistant who also informed the participants by mail of their allocation.

**Blinding**

The social workers at the job centres were in contact with all study participants to provide the usual social services at the job centre, but they were not informed about their allocation in the study. Due to the nature of the intervention, neither participants nor staff could be blinded to the allocation.

**Baseline and outcome measures**

From the screening questionnaire, information on gender, age, education, employment, reason for sickness absence and self-reported recovery expectations (estimation in percentage regarding the probability of being back to work in 6 months) was received.

The records from the job centres were used to retrieve information on whether the participants were fully or partially on sick leave and whether their job situation before sickness absence was full-time or part-time work or unemployment.

At the start of the intervention and at follow-up after three and six months, the participants received a questionnaire by either e-mail or mail. This questionnaire consisted of psychological symptoms (six scales from the Symptoms Checklist 90-R (SCL90-R)) [39], mental health related quality of life (four scales from The 36-item Short Form Health Survey (SF-36)) [40] and Multidimensional Health Locus of Control (MHLC) [41]. A reminder to return the questionnaire was sent after 10–14 days. The participants received a gift certificate of 13 euros for completing each questionnaire.

**Monitoring for participants’ compliance**

Questions about attendance in other RTW activities offered by the job centres or co-interventions, such as treatment by the general practitioner, a psychologist or a psychiatrist,
were included in the questionnaire three months after randomisation.

The attendance in the PE sessions was registered to monitor compliance.

**Primary outcome**

**Sickness absence duration**

Time to full RTW was the primary outcome of the study and was measured by register data from the job centres. It was defined as the period (in days) between randomisation and to full-time RTW for at least 4 weeks without (partial or full sickness absence) recurrence. Full return to work was operationalised as not receiving sickness benefits.

**Secondary outcomes**

**Sickness absence duration and recurrence**

Time to first RTW was defined as the period (in days) between randomisation and to first (partial or full-time) RTW or being fit-for-duty if unemployed for at least 4 weeks without (partial or full sickness absence) recurrence. Thus, the participants could still receive partial sickness benefits.

Furthermore, recurrence of sick-leave was measured, regardless of reason. Time to recurrence was defined as the period between the date of full RTW and the date of recurrence.

The observations were based on register data from the job centres.

**Psychological symptoms**

Six scales from the Danish version of the Symptom Checklist-90-Revised (SCL-90-R) were used to assess psychological symptoms of psychopathologic status [42]. The scales were somatisation, obsessive-compulsive, interpersonal sensitivity, depression, anxiety and phobic anxiety. It is a self-report instrument, and the participants are asked to state how much discomfort, as described in each item, they had experienced during the past seven days. The discomfort is measured on a five-point rating scale ranging from “not at all” (0) to “extremely” (4).

**Mental health-related quality of life**

The four psychologically based scales from the Danish version of The 36-item Short Form Health Survey (SF-36) were used to measure mental health-related quality of life [43]. These domains were vitality, social functioning, role limitation due to emotional problems and mental health. The score of each domain ranges from 0 to 100; the higher the scores, the higher the levels of functioning. Furthermore, the question “In general, would you say your health is” with the options; excellent, very good, good, fair and poor, was included.

**Locus of control**

The Multidimensional Health Locus of Control (MHLC) scale Form C was used to measure health locus of control and can be defined as the degree to which individuals believe that their health is controlled by internal or external factors. The Form C is condition-specific and can be used when studying individuals with an existing health/medical condition. It consists of four subscales: “doctors” and “other people” with each three items, and “chance” and “internal” with each six items. For each item, a Likert-type scale ranging from 1 to 6 was applied (1 representing “strongly disagree” and 6 representing “strongly agree”).

This study applied a Danish version of the questionnaire. It has been translated and back-translated by a person with experience within the field. The translation was made especially for this study. It was tested among participants in the pilot study.

**Treatments**

**Usual care**

All the participants received usual care which entailed RTW activities arranged by the job centres. RTW activities typically comprise fitness workout, stress- and pain-management and gradual RTW. The Danish sickness benefit law does not specify which kind of activities should be available. Consequently, a large variation across municipalities is seen in what is being done, when and for whom [44]. Because of the naturalistic study setting, all participants were free to engage in any other treatment as well.

**Psychoeducation intervention**

The PE used in this study was group-based, and the course consisted of 2 hour sessions once a week for 6 weeks. The course was in line with a slow-open group, meaning that new participants could be included shortly after they had accepted to participate. Receiving the intervention as fast as possible had a high priority. All courses were held at two different job centers; two locations were chosen to reduce transportation. Mileage allowance (0.27 euro/km) was offered to the participants.

The courses were conducted and taught by four psychiatric nurses, a psychologist, a social worker, a physiotherapist and a person who had previously been on sick leave due to mental health problems. Two meetings were held to discuss the content of the sessions, and subsequently the teachers prepared the materials. The psychiatric nurses were experienced in PE, and one of them was present at each session. The sessions focused on stress and work life and consisted of a mixture of didactic lectures and group discussions. The purpose was to provide the individuals on sick leave with qualifications to understand and improve their own situation through knowledge, dialogue and personal experiences.
The Stress-Vulnerability Model [45] was used to help the individuals recognise sources of stress in their lives and how to eliminate some of them. Moreover, problemsolving techniques and coping strategies were incorporated. The focus was, to a high extent, on the general discomfort which the symptoms caused in everyday life and in particular on handling a job. To a low extent, focus was on diagnosis. The intervention was standardised, and each session followed structured slides to uniform the intervention. Hand-outs were given to the participants. The content of each session is described in Table 1. A session for relatives was included with the purpose of providing them with tools to support the individuals on sick leave. Research has established that when family members benefit from PE, patients experience lower rates of relapse, longer time intervals between episodes, a better treatment adherence and a reduction in symptoms [25]. One session was devoted to a person with a previous sickness absence. People with personal experience may be in a better position than clinicians to give advice and to identify and address psychosocial issues as it is grounded in experimental knowledge and actual feelings [46]. One session on physical exercise was included since studies show that engaging in regular physical activities can improve recovery from mental illness [47,48].

**Sample size calculation**

Duration of sickness absence until full RTW was chosen as the primary outcome measure and used for sample size calculation. Based on data from a Danish sickness absence study [36], we assumed that 70% would return to work within 6 months (“fail probability” of 0.70). We expected a 40% higher rate of RTW in the intervention group than in the control group, corresponding to a hazard ratio of 1.4. Sample size calculation, using a two-sided significance level of 5% and a power of 80%, indicated a minimum of 397 participants divided equally into the two groups. We decided to include an additional 10% to compensate for drop outs.

**Statistical analysis**

It will be studied whether the participants differ from the eligible individuals who declined participation, and if the participants at follow-ups are different from the baseline population in relation to socio demographic and health characteristics. Adherence to the intervention will be described.

| Table 1 Session-by-session outline for the psychoeducation intervention |
|---|---|---|
| Session | Teachers/facilitators | Content |
| 1 | Psychiatric nurse | • Information on symptoms of stress, depression, anxiety and functional disorders related to the cause of the disorders and the consequences for the ability to work. The teaching focused on diagnoses to a lesser extent than traditional PE. Instead, emphasis was on the general discomfort and functioning in everyday life caused by the symptoms and in particular on handling a job. The session was based on the Stress-Vulnerability Model |
| 2 | Psychiatric nurse | • Information on options and appropriate coping strategies related to the mental symptoms and the sick-listing of the participants. The teaching focused on self-awareness, warning signs and lifestyle. The participants were introduced to different cognitive tools, which they could use in their everyday life. The session was based on the Stress-Vulnerability Model |
| 3 | Social worker/Psychiatric nurse | • On the basis of the sick-leave legislation, the participants received counselling related to their sick-listing. The teaching provided the participants with tools to facilitate labour market participation and RTW. |
| 4 | Psychologist/Psychiatric nurse | • Information on mental reactions and symptoms related to being on sick leave. The teaching provided the participants with tools to achieve a higher level of mental well-being and to facilitate RTW. The participants were informed about where to turn for support and, additionally, psychological challenges and barriers related to RTW were discussed. |
| 5 | Physiotherapist/Psychiatric nurse | • The participants were informed about the importance of exercise for health in general and about the influence of exercise on mental well-being in particular. Additionally, training advice and counselling to ensure a continued motivation were given. |
| 6 | A person previously on sick leave/Psychiatric nurse | • Both participants and relatives attended the first part of the session which consisted of a presentation by a person who previously had been on sick leave due to mental health problems. The speaker described the course of illness, the process of dealing with personal issues, and the course towards RTW. Subsequently, the participants shared mutual experiences as well as experiences with the speaker. Concurrently, the relatives participated in a session held by a psychiatric nurse. The purpose was to strengthen the abilities of the relatives; in part to support the individuals on sick leave towards RTW, and in part to take their own lives in their hands. The relatives were informed about the symptoms of stress, depression, anxiety and functional disorders. |
The rates of sustainable RTW will be compared between the intervention group and the control group during the first 3 and 6 months after randomisation by means of the pseudo value method [49,50]. Any effects on psychological symptoms, mental health-related quality of life, and locus of control will be measured in secondary analyses. In those analyses symptoms of depression and anxiety will be the main outcome.

The analyses will be performed using STATA 11 IC (Stata Corp, College Station, TX).

All analyses will primarily be performed on an intention-to-treat basis; however, per-protocol analyses will also be performed [51].

**Ethical considerations**

All participants were offered treatment as usual according to their individual needs, i.e. RTW activities offered by the job centres and treatment from health professionals. Participation was voluntary, and project information was given both verbally and in writing. The participants were informed about their rights to decline participation and to withdraw with no consequences in terms of their sickness absence benefits.

Previous research has not indicated that PE induces risk to the participants. However, it has been discussed whether information about possible mental symptoms can implant expectations of pathology and dysfunction [10]. Compared to traditional PE, the intervention in this study focused on diagnosis to a less extent. Therefore, we expect negative expectations of pathology and dysfunction to be rare.

During the sessions, the psychiatric nurses were aware of the participants’ reactions, and, if needed, they talked to them. If the psychiatric nurses observed a need for additional treatment, they could encourage the participants to see their general practitioner or refer them to a psychiatrist (HJS).

All participants were assigned an identification number and were treated anonymously in all analyses. Papers and electronic documentation with names and personal identification numbers were stored securely in locked cabinets or on a password-protected computer.

The study has been notified to and approved by the Danish Data Protection Agency (http://www.datatilsynet.dk). According to the Danish National Committee on Biomedical Research Ethics (written communication), the intervention did not need ethic approval as it did not include biomedical research. The study is registered at Clinical Trials.gov (NCT01637363).

**Discussion**

This trial will evaluate the effect of PE on RTW among individuals on sick leave and at risk of having a mental disorder. We will assess the impact of the intervention on sickness absence duration, psychological symptoms, mental health-related quality of life and locus of control.

The study will assess the effectiveness rather than the efficacy of the RTW intervention. Thus, it will evaluate what is possible in practice. As a consequence, participants were included based on a simple screening instrument which is easily applicable for the social workers. Not all the participants may have a mental disorder, meaning that the included individuals can be very different with some suffering from a major depression and some having distress. On the other hand, if individuals on sick leave with a specific diagnosis had been included, then the participants had to be screened by their general practitioner, which deviates from usual practice in the job centres.

Individuals who had been on sick leave due to mental health problems for more than three consecutive months during the preceding year and those without a paid job were excluded. This was done based on the assumption that the intervention would probably not fully accommodate the needs of these individuals. Furthermore, a previous Danish study conducting a psychiatric examination found that the feedback and information based on the examination was most effective for individuals on sick leave from full-time work and without a psychiatric sick leave diagnosis [52].

**Psychoeducation**

The topics in the PE course should be versatile to address all the different needs of this heterogeneous group. Consequently, different health professionals were used to provide the individuals with broad information. PE has been documented to be meaningful in settings where a multidisciplinary team effort is available [12]. The psychiatric nurses were highly experienced in PE while the social worker, the psychologist and the physiotherapist had experience in working with individuals on sick leave. PE can be administered by therapists from various disciplines without extensive training [12]. The use of different health professionals may also be important to avoid that the effect may be ascribed to the influence of a personality of a single professional, which cannot be replicated in other settings.

We decided to provide the courses as a slow-open group and not as a closed group. To our knowledge, PE has not previously been carried out in this way. We chose this setting to be able to offer the intervention as fast as possible since it has been documented to be important [9]. If closed groups had been used, participants could have waited up to 6 weeks to start the intervention. It is plausible that the waiting time could worsen their symptoms. To compensate for the weekly inclusion of new participants, the same psychiatric nurse was present for six successive sessions. She welcomed new participants and was familiar with the group.
**Strengths and limitations**

The main strengths of this study are the randomised controlled design and the large sample size. The study includes a sample from a large heterogeneous population which should further a generalisation of our results to individuals on sickness absence in Denmark. Based on registers on sickness benefits, information on all individuals on sickness absence benefits in the source population were retrieved and thus, the study is not affected by incomplete coverage. The risk of bias related to group allocation is low since randomisation was performed by a computerised random number generator. To measure RTW, register data will be used, which is preferable compared to self-report in regard to receive more accurate information on the sick leave period [53]. To our knowledge, this is the first study to include measures of locus of control in this population. First of all, this assessment enables us to describe the external and internal locus of control of the individuals and then to assess whether it changes after PE. This particular questionnaire has not been validated in a Danish context; however, it has been translated, back-translated and pilot-tested in a group of individuals on sickness absence benefits.

The main weakness of this study is that the social workers were not effectively blinded. In collaboration with the individuals on sickness absence benefit, they assess whether the individuals are ready to RTW. About three months after the randomisation, we asked the social workers to guess which group they think the participant belongs to. Their guesses will show whether they have been aware of the group allocation. When examining the effect of an RTW intervention, such as PE, it is not possible to blind the participants or the staff, which may induce bias.

The results will contribute to the continuing research on sickness absence and mental health problems. It will primarily show whether PE can lead to faster and sustainable RTW and enable politicians and leaders of the job centres to decide whether the intervention should be implemented. Results will be available at the end of 2015.

**Competing interests**

The authors declare that they have no competing interests.

**Authors’ contributions**

PP, EAN, BFY and HJS were applicants on the funding proposal. All authors participated in the design of the study and PP, HJS and BFY designed the PE intervention. PP was responsible for the data collection and the coordination of the study. PP and CJ drafted the manuscript with input from the other authors. ML critically read the manuscript. All authors approved the final manuscript.

**Acknowledgements**

We would like to thank all the participants and the four job centres for participating in the study.

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**References**


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Effectiveness of psychoeducation in reducing sickness absence and improving mental health in individuals at risk of having a mental disorder: a randomised controlled trial

Pernille Pedersen1,2,3*, Hans Jørgen Søgaard1,2, Merete Labriola3,4, Ellen A. Nohr5 and Chris Jensen6,7

Abstract

Background: The aim of this study was to evaluate the effect of psychoeducation on return to work as an adjunct to standard case management in individuals on sick leave at risk of having a mental disorder. The participants could have different diagnoses but were all at risk of having a mental disorder.

Methods: Between 2012 and 2014, 430 participants on sick leave were randomly allocated to either an intervention or control group. The psychoeducation consisted of 2-h sessions once a week for 6 weeks. The sessions focused on stress and work life and was based on problem-solving techniques and coping strategies. The main outcome, the relative risk (RR) of a full return to work based on register data from the job centres, was determined during the first 3 and 6 months after participation in the psychoeducation programme. At baseline and at 3 and 6 months after the intervention, the participants received a questionnaire on psychological symptoms, mental health-related quality of life, and locus of control.

Results: During the first 6 months after inclusion, the two groups had almost the same RR of a full return to work (RR:0.97, 95% CI: 0.78;1.21), but during the first 3 months, the individuals in the intervention group had a significantly higher risk of not having fully returned to work (RR:0.68, 95% CI:0.47;0.98). The individuals in the intervention group who had participated in at least four of the six psychoeducational sessions returned to work considerably slower at both time points than did the control group. The intervention did not decrease the level of psychological symptoms or improve mental health-related quality of life; however, individuals in the intervention group improved their scores on internal locus of control at both 3 and 6 months.

Conclusion: Offering psychoeducation to individuals on sick leave at risk of having a mental disorder had no influence on the chance of a full return to work during the first 6 months; however, it did result in a higher relative risk of not returning to work after 3 months. Therefore, we do not recommend offering psychoeducation in this form to facilitate return to work.

Trial registration: Clinical Trial.gov NCT01637363. Registered 6 July 2012.

Keywords: Sickness absence, Psychoeducation, Mental health, Return to work, Psychological symptoms, Mental health-related quality of life, Locus of control

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Background

Common mental disorders, such as adjustment disorders, depression, anxiety, and somatoform disorders, are highly prevalent in the working population [1–3]. In the Western countries, mental disorders are a main cause of sick leave [4–6], estimated to be involved in more than half of all individuals on long-term sickness absence [7]. Sickness absence due to mental health problems has a considerable societal impact, in addition to the individual consequences in the form of reduced quality of life as well as a reduced functional ability and workability [8]. The high prevalence of individuals on sick leave with a mental disorder calls for stronger emphasis to meet the needs of this group. Moreover, studies have shown that mental disorders are likely to be underestimated because of both under-recognition and under-reporting of mental disorders as a reason for sickness absence [9–11]. Thus, it has been recommended that the social workers in the Danish municipal case management centres (job centres) screen and identify individuals with mental health problems in order to be able to offer a tailored return to work (RTW) intervention [12]. Early identification and intervention are assumed to shorten the length of spells of sickness absence, hasten RTW [11], and result in a better prognosis for the mental disorder [8, 12]. Early action seems especially important as long-term sickness absence is a predictor of future disability pension [13].

In relation to interventions and treatment in Denmark, the introduction of shared care models has been suggested to facilitate a better connection between case management in the social sector and specialist mental healthcare [12]. Some studies have included interventions by a specialist in mental health care with the aim of reducing symptoms and enhance participants’ coping skills in relation to work [14–16]. Psychoeducation (PE) is a simple therapy offered to individuals with mental disorders in the healthcare systems and in primary care settings [17–19] and gives the patients a theoretical and practical approach towards understanding and coping with the consequences of the disorder [20]. It has been assumed that PE can modify an individual’s perception of themselves and their future by giving information, correcting dysfunctional thoughts, and thereby assisting adaption. Moreover, it has been assumed that when PE provides individuals with information about symptoms, they might find these experiences to be less disturbing [21].

Overall, PE has proven to be able to improve clinical outcomes in patients with a psychiatric disorder [22–24], besides increasing participation in pleasant activities, social interaction [25], self-esteem [25, 26], and the frequency of seeking social support [25]. These acquired competences will presumably be helpful in the RTW process. To the best of our knowledge, PE has not previously been used specifically as an offer to individuals on sickness absence at risk of having a mental disorder [8].

The aim of this study was to evaluate the effect of PE targeted specifically to facilitate RTW as an adjunct to standard case management in individuals on sick leave at risk of having a mental disorder. The first consultation at the job centre between the social worker and the individual on sick leave is often based on self-reported diagnosis. But as mental disorders are likely to be underestimated, it seems important to screen and identify individuals at risk of having a mental disorder.

It was hypothesized that individuals who participated in the PE programme would have shorter periods of sickness absence than would a control group, and furthermore, fewer psychological symptoms, and improved mental health-related quality of life and internal locus of control.

Methods

Study design, procedure, and participants

A randomised controlled trial (RCT) was conducted among individuals on sick leave in four municipalities in the Western part of Denmark. Between September 2012 and January 2014, 4541 individuals who had been on sick leave for 4–8 weeks received by mail information about the study and a screening questionnaire. Individuals were included in the study if they were between 18 and 64 year of age, on sick leave from work or unemployment, and had a SCL-8 AD score ≥5 [27]. SCL-8 AD was used to identify individuals at risk of having a mental disorder. Individuals who did not communicate in Danish, had been on sick leave due to mental health problems for more than 3 consecutive months during the preceding year, were pregnant, or had a supported job/were in job training/in rehabilitation/had retired were excluded (n = 1659, see Flowchart Fig. 1).

Eligible individuals were contacted by phone and given information about the study. If they agreed to participate in the study, they were randomised (block size 4) based on a computerised random number generator into the intervention group or the control group. Subsequently, they were mailed information about their allocation and a consent form to fill out and return. This allocation procedure was chosen to avoid delay in starting the PE programme because of late arrival of written consent forms. Participants who were randomised to the intervention group based on oral consent but failed to provide written consent were excluded from further data collection (n = 30).

All study participants were on sick leave and thus, obliged by law to participate in consultations with the social workers at the job centres. The social workers provide the usual social services at the job centres,
and in collaboration with the individuals on sickness absence benefit, they assess whether the individuals are ready to RTW. The social workers were not informed about the allocation of the participants. However, they could have been aware of it, which could have influenced the RTW outcome. Therefore, the social workers were asked to guess the allocation of the participants about 3 months after the randomisation.

Sickness absence data were assessed from registers in the job centres. A research assistant and two social workers collected the administrative data on RTW, but they were blinded for study allocation. At baseline and at 3 and 6 months of follow-up, the participants received a questionnaire to assess secondary outcomes.

Participation was voluntary, and the study was notified to and registered by the Danish Data Protection Agency (http://www.datatilsynet.dk). According to the Danish National Committee on Biomedical Research Ethics, the intervention did not need ethical approval as it did not include biomedical research. The study is registered at Clinical Trials.gov (NCT01637363).
A more thorough description of the method of the study and the ethical considerations has previously been published in a protocol paper [28].

Treatments

Psychoeducation

The intervention group was offered PE in group sessions, and an early start of the intervention had a high priority. Thus, the participants were offered PE shortly after they had orally accepted to participate, which was also the reason that open groups were applied. The intervention consisted of six 2-h sessions once a week and was held at two different locations. The open groups ran continually throughout the study period, and each session was conducted about nine times at each location. Participants who were unable to join a specific session had the opportunity to join the session next time. The number of participants in each session was on average 7 (SD 3.8), varying from 1–18.

The intervention was conducted and taught by four psychiatric nurses who were experienced in psychoeducation, a psychologist, a social worker, a physiotherapist, and a person previously on sick leave due to mental health problems. The psychiatric nurses were accustomed to practicing PE, and one of the psychiatric nurses was present at each session.

The sessions focused on stress and work life and consisted of a mixture of didactic lectures and group discussions based on problem-solving techniques and coping strategies. The purpose was to impart knowledge about psychiatric conditions in order to provide individuals on sick leave with qualifications to understand and improve their own situation. The focus was, to a high extent, on the general discomfort in everyday life caused by the symptoms and in particular on handling a job and to a less extent on diagnosis. The intervention followed structured slides that had been developed by the teachers and had the following content: information about the symptoms of adjustment disorders, depression, anxiety, and somatoform disorders; information about specific, useful, cognitive tools in regard to the barriers and difficulties they might experience when re-entering the work force; the interaction between physical exercise and mental health; the sickness absence legislation and the implication of it; experiences from a person previously on sick leave due to mental health problems. Furthermore, the relatives of the participants were invited to hear about mental health problems and sickness absence to further the understanding of their relatives’ situation [28].

Usual care

All the participants received usual care offered by the job centres, which typically comprises fitness workouts, stress and pain management, and a gradual RTW. The Danish sickness benefit law does not specify which kind of activities should be available. Consequently, a large variation exists across municipalities [12]. Because of the study’s natural setting, all participants were free to engage in any other treatment as well.

Outcome measures

RTW was operationalised as not receiving sickness benefits and measured by register data from the municipalities’ job centres.

Primary outcome

Time to full RTW was defined as the period (in days) between randomisation and not receiving any sickness benefits for at least 4 weeks without partial or full sickness absence recurrence.

Secondary outcome

Time to first RTW was defined as the period (in days) between randomisation and to partial or full-time RTW without partial or full sickness absence recurrence. Thus, the participants could still receive partial sickness benefits.

Psychological symptoms of psychopathologic status were assessed with the Symptom Checklist-90-Revised (SCL-90-R) [29], a 90-item self-rating instrument for assessing the discomfort, as described in each item, experienced during the past 7 days. The discomfort is assessed on a 5-point rating scale ranging from “not at all” (0) to “extremely” (4). The instrument is divided into nine scales; however, only six of these were of interest in this study: somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, and phobic anxiety. The Danish version of the questionnaire was used [30].

Mental health-related quality of life was assessed by the 36-item Short Form Health Survey (SF-36) [31], a self-administered health survey with 36 items grouped into eight scales. Only the four scales related to mental health were of interest in this study: vitality, social functioning, role limitations due to emotional problems, and mental health. A high score indicates a better level of functioning (range 0–100). Furthermore, the question “In general, would you say your health is...” was included. Answers were dichotomized as good (response options excellent, very good and good), and poor (response options fair and poor). The Danish version of the instrument was used [32].

Health locus of control was assessed by The Multidimensional Health Locus of Control (MHLC) scale Form C [33]. It can be defined as the degree to which individuals believe that their health is controlled by internal or external factors. The Form C is condition-specific and can be used when studying individuals with an existing health/medical condition. Participants were asked to
consider the condition responsible for the sickness absence. Form C consists of four subscales: “doctors” and “other people”, each with three items, and “chance” and “internal”, each with six items. For each item, a Likert scale ranging from 1 to 6 was applied (1 representing “strongly disagree” and 6 representing “strongly agree”).

A translation of the questionnaire into Danish was done for the present study, and it was tested in a pilot study.

Covariates
The screening questionnaire provided information on gender, age, the highest level of education, and employment. Moreover, the individuals were asked to state their own reasons for the sickness absence, a reason which had not necessarily been confirmed by a doctor. They could report several of the following reasons: anxiety, depression, other mental illness, stress and burnout, psychosocial working environment, musculoskeletal disorders and also cardiovascular or lung diseases, infection, chronic/diffuse pain, cancer, abdominal illness, personal problems, which were categorized as other reasons (Table 1). Furthermore, they were asked to report their recovery expectations, which were their own estimation in percentage (0–100 %) of the probability of not being on sick leave after 6 months.

The records from the job centres were used to retrieve information on whether the participants were fully or partially on sick leave.

In the questionnaire 3 months after randomisation, the participants were asked if they had participated in RTW activities (usual care) arranged by the job centres and co-interventions such as treatment by a general practitioner (GP), a psychologist, or a psychiatrist.

Statistical analysis
To evaluate the effectiveness of PE compared to usual care, the rates of RTW during the first 3 and 6 months after randomisation were compared by means of the pseudo values method [34, 35]. The relative risk (RR) of returning to work in the intervention group was compared to that in the control group. Furthermore, the cumulative incidence proportion (CIP) was calculated for the specific time points to show the percentages of individuals in each group who had returned to work. Analyses were performed for both full RTW and first RTW. Participants were right-censored if their sickness absence benefits had been suspended because they had moved to another municipality, the duration of sickness absence had reached the time limit (52 weeks during the previous 18 months), or the job centres reported that the individual did not cooperate. Individuals who had died or had been transferred to other benefits such as early retirement or supported job were treated as competing risk. However, in the analyses for first RTW, individuals who started in supported employment were considered as having returned to work as they were working a few hours a week. A total of 11 individuals were right-censored during the first 6 months, and one experienced a competing risk event. For the outcome full RTW, data for the first 12 months of follow-up were shown in a cumulative incidence probability plot adjusted for competing risk.

Analyses were performed according to the intention-to-treat principle. Moreover, per-protocol analyses were performed by comparing participants in the control group with participants in the intervention group who had attended at least four of the six sessions.

The differences in scores on psychological symptoms, mental health-related quality of life (QoL) and locus of control (LoC) between the groups were analysed at 3 and 6 months. As many of the items or subscales did not have a normal distribution, the Wilcoxon-Mann-Whitney test was used. No adjustment for the scores from the baseline questionnaire was performed, as some participants first filled out the questionnaire after they had started the intervention. Response rates to specific items were not below 94.5 %. Only complete cases were included in the analyses.

Participants were compared with those who were eligible but declined participation.

All point estimates are presented with 95 % confidence intervals. A two-sided probability of \( p < 0.05 \) was considered statistically significant for the primary outcome and \( p < 0.005 \) for the secondary outcomes. STATA/IC 11.2 (StataCorp LC, College Station, TX, USA) was used for all statistical analyses.

Results
Participants
A total of 1129 individuals were eligible for participation, and 430 (38 %) agreed to participate and were randomised to the intervention group \((n = 215)\) or the control group \((n = 215)\) (Fig. 1). The characteristics of the 430 individuals are given in Table 1. The groups did not differ with respect to background variables; however, individuals in the intervention group had a higher score on internal LoC and slightly more individuals from that group were on full-time sick leave. Mental health problems as reason for sickness absence were almost the same in the two groups. In the intervention group, 25 % reported anxiety, 40 % reported depression and 57 % reported stress and burn out as reason for the absence, while the frequencies were 21 %, 42 %, and 54 %, respectively, in the control group. The 4 job centres were of different sizes and thus did not include the same number of participants. The distributions of participants were 43 %, 28 %, 14 % and 15 %, respectively, from each
risk. However, in the analyses for first RTW, individuals or had been transferred to other benefits such as early had reached the time limit (52 weeks during the previ-
another municipality, the duration of sickness absence had been suspended because they had moved to
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care, the rates of RTW during the first 3 and 6 months To evaluate the effectiveness of PE compared to usual RTW activities (usual care) arranged by the job centres
the participants were asked if they had participated in
partially on sick leave.
information on whether the participants were fully or
recovery expectations, which were their own estimation (Table 1). Furthermore, they were asked to report their problems, which were categorized as other reasons
chronic/diffuse pain, cancer, abdominal illness, personal
could report several of the following reasons: anxiety,
the screening questionnaire provided information on
covariates
consider the condition responsible for the sickness ab-
strongly disagree
scale ranging from 1 to 6 was applied (1 representing
internal "...
and 6 representing"

<table>
<thead>
<tr>
<th>Variable</th>
<th>Intervention group (n = 215)</th>
<th>Control group (n = 215)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender (female), n</td>
<td>154 49.8</td>
<td>155 50.2</td>
</tr>
<tr>
<td>Age (years), mean</td>
<td>43.5 10.0</td>
<td>43.9 9.9</td>
</tr>
<tr>
<td>Length of sickness absence until randomization (days), mean</td>
<td>56.4 22.1</td>
<td>57.2 18.3</td>
</tr>
<tr>
<td>Highest level of education, n</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary school or high school</td>
<td>40 18.6</td>
<td>52 24.2</td>
</tr>
<tr>
<td>&lt;3 years</td>
<td>105 48.8</td>
<td>90 41.9</td>
</tr>
<tr>
<td>&gt;3 years</td>
<td>70 32.6</td>
<td>73 34.0</td>
</tr>
<tr>
<td>Employment, n</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student</td>
<td>16 7.4</td>
<td>6 2.8</td>
</tr>
<tr>
<td>Unemployed</td>
<td>37 17.2</td>
<td>33 15.4</td>
</tr>
<tr>
<td>Unskilled worker</td>
<td>33 15.3</td>
<td>34 15.8</td>
</tr>
<tr>
<td>Basic skilled worker</td>
<td>29 13.5</td>
<td>26 12.1</td>
</tr>
<tr>
<td>Wage-earning and salaried employees</td>
<td>86 40.0</td>
<td>104 48.4</td>
</tr>
<tr>
<td>Self-employed</td>
<td>11 5.1</td>
<td>10 4.7</td>
</tr>
<tr>
<td>Don’t know / not available</td>
<td>3 1.4</td>
<td>2 0.9</td>
</tr>
<tr>
<td>Reason for sickness absence, n a</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anxiety</td>
<td>54 25.1</td>
<td>46 21.4</td>
</tr>
<tr>
<td>Depression</td>
<td>85 39.5</td>
<td>91 42.3</td>
</tr>
<tr>
<td>Other mental illness</td>
<td>12 5.6</td>
<td>8 3.7</td>
</tr>
<tr>
<td>Stress and burnout</td>
<td>122 56.7</td>
<td>115 53.5</td>
</tr>
<tr>
<td>Psychosocial working environment</td>
<td>51 23.7</td>
<td>49 22.8</td>
</tr>
<tr>
<td>Musculoskeletal disorders</td>
<td>43 20.0</td>
<td>53 24.7</td>
</tr>
<tr>
<td>Other reasons</td>
<td>79 36.7</td>
<td>74 34.4</td>
</tr>
<tr>
<td>Number of symptoms (SCL-8 AD), mean</td>
<td>9.8 2.3</td>
<td>9.8 2.4</td>
</tr>
<tr>
<td>Recovery expectations, n</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0–50 % or don’t know/not available</td>
<td>81 37.7</td>
<td>90 41.9</td>
</tr>
<tr>
<td>60–90 %</td>
<td>67 31.2</td>
<td>53 24.7</td>
</tr>
<tr>
<td>100 %</td>
<td>67 31.2</td>
<td>72 33.5</td>
</tr>
<tr>
<td>Sick-leave, n</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full-time sick leave</td>
<td>214 a 99.5</td>
<td>208 a 96.7</td>
</tr>
<tr>
<td>Part-time sick leave</td>
<td>1 0.5</td>
<td>7 3.3</td>
</tr>
<tr>
<td>Locus of control, median b</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internal</td>
<td>22.0 18.0–26.0</td>
<td>20.0 15.0–25.0</td>
</tr>
<tr>
<td>Chance</td>
<td>14.0 11.0–18.0</td>
<td>14.5 11.0–18.0</td>
</tr>
<tr>
<td>Doctor</td>
<td>12.0 10.0–14.0</td>
<td>12.0 10.0–14.0</td>
</tr>
<tr>
<td>Other people</td>
<td>11.0 9.0–13.0</td>
<td>11.0 8.0–13.0</td>
</tr>
<tr>
<td>Psychological symptoms, median b</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Somatization</td>
<td>1.1 0.6–1.7</td>
<td>1.2 0.7–1.8</td>
</tr>
<tr>
<td>Anxiety</td>
<td>1.2 0.6–1.8</td>
<td>1.2 0.6–1.8</td>
</tr>
<tr>
<td>Interpersonal sensitivity</td>
<td>1.2 0.8–1.9</td>
<td>1.3 0.8–2.0</td>
</tr>
<tr>
<td>Depression</td>
<td>1.8 1.2–2.5</td>
<td>1.9 1.2–2.6</td>
</tr>
<tr>
<td>Phobic anxiety</td>
<td>0.4 0.1–0.9</td>
<td>0.4 0.1–1.1</td>
</tr>
</tbody>
</table>
job centre and were evenly distributed between the two groups, \( p = 0.67 \).

Compared to those who declined to participate, participants were more likely to be women, to have an education, to be on sick leave due to anxiety, depression, stress or burnout, or to have complained of a poor psychosocial working environment. They were less often on sick leave due to cancer or musculoskeletal disorders. Moreover, they had a higher SCL-8 AD score and lower recovery expectations.

A total of 15 individuals from the intervention group and 15 individuals from the control group provided only verbal consent and were excluded from the study. The questionnaires were completed by 189 (95 %) and 183 (92 %) at baseline, 155 (78 %) and 159 (80 %) at 3 months, and 127 (64 %) and 141 (71 %) at 6 months by participants from the intervention group and control group, respectively. There was no difference between those who completed the 6-months questionnaire and those who did not in relation to age, gender, education, and SCL-8 AD score.

**Psychoeducation**

Not all individuals from the intervention group participated in all of the PE sessions. A total of 176 individuals (88 %) participated in at least one of the sessions, 132 (66 %) participated four to six times, 44 (22 %) participated one to three times, and 24 (12 %) did not show up. Furthermore, 74 participants brought a relative.

On average, participation in the first session took place 16 days after randomisation (range: 2–91 days) and 73 days after the first day of sickness absence (range: 22–134 days).

The individuals who participated four to six times were on average older than those who participated less than four times (45.3 vs 40.2 years, \( p < 0.001 \)). The different participation levels were not related to gender, education, or SCL-8 AD score.

**Participation in usual care and co-interventions**

No differences between groups were found for participation in usual care or co-interventions. A total of 99 (64 %) individuals in the intervention group and 107 (69 %) in the control group received treatment for their mental condition 3 months after the intervention. In the intervention group, those who had received treatment had received it from a GP (72 (73 %)), a psychologist (78 (79 %)), a psychiatrist (14 (14 %)), or elsewhere (22 (22 %)). The corresponding numbers for individuals in the control group were 80 (75 %), 74 (69 %), 8 (7 %), and 18 (17 %), respectively. No significantly differences were found between the groups.

A total of 65 (42 %) vs. 57 (36 %) from the intervention group and control group, respectively, had participated in activities offered by the job centres. In both the intervention group and control group, the most frequent activities attended were physical training/exercise (44 (68 %) and 32 (56 %), respectively) and mindfulness therapy (12 (18 %) and 18 (32 %), respectively).

**Sick leave**

The two groups had almost the same relative chance of full RTW during the first 6 months after the randomisation (RR 0.97, Table 2, Fig. 2). Nearly half of the participants in both groups had fully returned to work at that time. However, during the first 3 months, the individuals in the intervention group had a statistically significantly higher risk of not having fully returned to work, as only 19 % of the individuals had returned compared to 28 % in the control group.

From randomisation to 12 months, the intervention group had a RR of 1.06 (95 % CI: 0.92–1.22) for having fully returned to work compared to the control group. A total of 74 % and 70 % had returned to work in the intervention group and control group, respectively (results not shown in Table).
In relation to first RTW, no significant differences were found between the groups at either time points; however, trends were similar to what was seen for full RTW.

The individuals in the intervention group who had participated in at least four of the six psychoeducational sessions returned to work (both full RTW and first RTW) considerably later at both time points than was the case in the control group (Table 2).

### Mental health

No significant differences in psychological symptoms were found between the two groups at any time point (Table 3). The participants in the intervention group reported a significantly higher score on internal LoC at both time points, but no differences were found for the other three LoC variables. Neither did we observe any differences between the groups for vitality, social functioning, role limitations due to emotional problems, or mental health at either time point.

A total of 94 (61 %) participants in the intervention group and 82 (52 %) participants in the control group reported a good general health at 3 months. At 6 months, the numbers were 80 (63 %) and 85 (63 %). No statistically significant difference was found at either time point ($p = 0.12$ and $p = 0.93$, respectively).

The social workers who assessed readiness to RTW and allocated job centre activities to the participants provided a guess regarding allocation group for 96 (55 %) randomly selected participants. They were able to guess the allocation correctly for two-thirds of the participants in the control group, but only guessed half of

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**Table 2** Chance of return to work according to participation in psychoeducation

<table>
<thead>
<tr>
<th></th>
<th>Control group</th>
<th>Intervention group</th>
<th>Intervention group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$n = 200$</td>
<td>Intention-to-</td>
<td>Per-protocol</td>
</tr>
<tr>
<td></td>
<td></td>
<td>treat $n = 200$</td>
<td>$n = 132$</td>
</tr>
<tr>
<td>Full RTW*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 mo</td>
<td>28 (22,33)</td>
<td>19 (14,25)</td>
<td>11 (5,16)</td>
</tr>
<tr>
<td>CIP % (95 % CI)</td>
<td>1 (ref)</td>
<td>0.68 (0.47,0.98)</td>
<td>0.38 (0.22,0.65)</td>
</tr>
<tr>
<td>RR (95 % CI)</td>
<td></td>
<td>45 (38,52)</td>
<td>44 (37,51)</td>
</tr>
<tr>
<td>6 mo</td>
<td></td>
<td>0.97 (0.78,1.21)</td>
<td>0.89 (0.68,1.15)</td>
</tr>
<tr>
<td>CIP % (95 % CI)</td>
<td>1 (ref)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RR (95 % CI)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>First RTW*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 mo</td>
<td>38 (31,44)</td>
<td>31 (25,38)</td>
<td>26 (19,34)</td>
</tr>
<tr>
<td>CIP % (95 % CI)</td>
<td>1 (ref)</td>
<td>0.83 (0.63,1.09)</td>
<td>0.69 (0.49,0.97)</td>
</tr>
<tr>
<td>RR (95 % CI)</td>
<td></td>
<td>52 (45,59)</td>
<td>49 (42,56)</td>
</tr>
<tr>
<td>6 mo</td>
<td></td>
<td>0.94 (0.77,1.14)</td>
<td>0.88 (0.70,1.11)</td>
</tr>
<tr>
<td>CIP % (95 % CI)</td>
<td>1 (ref)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RR (95 % CI)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

CIP (Cumulative Incidence Proportion) shows the percentages of individuals having returned to work

*Competing risk: death or other benefits such as early retirement or supported job

*bCompeting risk: death or other benefits (except supported job)

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**Fig. 2** Cumulative incidence probability of full work resumption and competing risk from randomisation until 1 year after. Intervention group ($n = 200$) and control group ($n = 200$)
the allocations correctly for the participants in the intervention group.

Discussion

Main findings

The aim of the study was to evaluate the effect of PE in individuals at risk of having a mental disorder. Participating in the PE sessions had no influence on the chance of full RTW during the first 6 months, but during the first 3 months, participants in the intervention group had a significantly higher risk of not having fully returned to work. The same pattern was seen for the outcome first RTW; however, no significant difference was observed during the first 3 months. The risk of not returning to work during the first 3 months was highest for individuals who had participated in four to six sessions compared to the control group.

The intervention did not decrease the level of symptoms of depression or anxiety or any other of the psychological symptoms. It did not improve mental health related QoL; however, individuals in the intervention group improved their scores on internal LoC at both 3 and 6 months.

Interpretation of outcomes

The significantly higher risk in the intervention group of not returning to work during the first 3 months might be due to an ambition to complete the PE programme before they went back to work. It is plausible since individuals who participated four to six times had an even higher risk of not going back to work compared to the risk of all participants in the intervention group. For all individuals allocated to the intervention group, the chance for first RTW was not significantly lower than in the control group. This, however, could be questioned whether the intervention started too late. That the course may have focused too much on knowledge and too little on discussions. Thus, the content of the course may have obstructed the natural progression of the course.

Strength and limitations

The study had a high completion rate, and few participants dropped out. The participants in the intervention group had a significantly higher risk of not having fully returned to work compared to the control group. The control group received usual care. The treatment was given in a research project and, therefore, wanted to finish the programme for several weeks may obstruct the natural progression of the intervention. The treatment was provided written consent; however, this did not seem to affect the final results. The course may have focused too much on knowledge and too little on discussions. Thus, the content of the course may have obstructed the natural progression of the course.

Table 3 Mental health at 3 and 6 months according to participation in psychoeducation

| Psychological symptoms | Intervention n = 152–155 | Control n = 157–159 | p-value* | Intervention n = 124–127 | Control n = 133–141 | p-value*
|------------------------|--------------------------|---------------------|----------|--------------------------|---------------------|----------
| Somatisation           | 0.7 (0.3–1.1)            | 0.8 (0.3–1.3)       | 0.09     | 0.6 (0.3–1.0)            | 0.7 (0.3–1.3)       | 0.20      |
| Anxiety                | 0.6 (0.2–1.1)            | 0.8 (0.3–1.3)       | 0.04     | 0.4 (0.2–0.9)            | 0.6 (0.2–1.2)       | 0.09      |
| Interpersonal sensitivity | 0.7 (0.4–1.2)            | 0.9 (0.4–1.6)       | 0.08     | 0.7 (0.2–1.2)            | 1.0 (0.3–1.4)       | 0.10      |
| Depression             | 1.0 (0.5–1.7)            | 1.3 (0.7–2.3)       | 0.02     | 0.8 (0.5–1.5)            | 1.1 (0.5–1.9)       | 0.19      |
| Phobic anxiety         | 0.1 (0.0–0.6)            | 0.1 (0.0–0.6)       | 0.29     | 0.1 (0.0–0.4)            | 0.1 (0.0–0.4)       | 0.27      |
| Obsessive-compulsive   | 1.0 (0.5–1.8)            | 1.2 (0.7–2.0)       | 0.12     | 0.8 (0.4–1.5)            | 1.0 (0.6–1.7)       | 0.05      |
| Locus of control       | Internal LOC             | 23.0 (19.0–28.0)    | 20.0 (16.0–25.0) | <0.001 | 24.0 (19.5–28.0)          | 21.0 (16.0–25.0)     | <0.001 |
| Chance                 | 14.0 (11.0–18.0)         | 14.5 (11.0–18.0)    | 0.23     | 14.0 (9.0–18.0)          | 14.0 (10.0–18.0)    | 0.43      |
| Doctors                | 12.0 (10.0–14.0)         | 12.0 (10.0–14.0)    | 0.50     | 12.0 (9.0–13.0)          | 12.0 (10.0–13.0)    | 0.76      |
| Other people           | 11.0 (9.0–13.0)          | 11.0 (8.0–13.0)     | 0.39     | 10.0 (8.0–12.0)          | 10.0 (8.0–12.0)     | 0.88      |
| Vitality               | 45.0 (30.0–60.0)         | 45.0 (25.0–60.0)    | 0.32     | 50.0 (30.0–65.0)         | 50.0 (25.0–65.0)    | 0.54      |
| Social functioning     | 75.0 (62.5–100.0)        | 87.5 (62.5–100.0)   | 0.98     | 87.5 (75.0–100.0)        | 87.5 (62.5–100.0)   | 0.58      |
| Role limitations due to emotional problems | 66.7 (33.3–100.0) | 66.7 (0.0–100.0) | 0.33 | 66.7 (33.3–100.0) | 66.7 (33.3–100.0) | 0.71 |
| Mental health          | 64.0 (52.0–76.0)         | 60.0 (44.0–76.0)    | 0.04     | 68.0 (56.0–80.0)         | 68.0 (52.0–78.0)    | 0.41      |

IQR interquartile range

*Wilcoxon-Mann-Whitney test, significance level <0.005
be aware of when implementing interventions. Maybe the risk is more pronounced when the intervention is offered close to the start of the sickness absence period. Most workers will return to work rapidly within the first months after reporting sick [37, 38]. Participating in interventions at an early stage could therefore prolong RTW. In individuals on sick leave due to low back pain, the optimum time window for the start of an effective structured intervention has been suggested to be approximately 8 to 12 weeks after start of the sickness absence [36]. Our intervention was, on average, provided 7–8 weeks after the start of sickness absence. However, it could be questioned whether the intervention started too early because participants in the control group returned to work significantly earlier than did the intervention group during the first 3 months after the intervention was initiated.

**Psychoeducation**

This specific type of PE was not effective in facilitating RTW and improving mental health. This could be due to the intervention not being specific and tailored to the participants’ individual needs. PE is usually applied to a group of patients with one specific diagnosis [17]. In this study, the participants could suffer from sub-clinical as well as clinical depression, anxiety, and somatoform disorder besides feeling distressed. Broad inclusion criteria were applied because we believed that the topics that were taught and discussed in the psychoeducation sessions would be relevant for sick-listed individuals with different mental health problems. Another reason for the broad inclusion criteria was to test an intervention that could be implemented by the social workers in the job centres without asking medical doctors for specific diagnostic information.

Another reason for not finding an effect could be the open groups, which were used in order to offer the intervention as rapidly as possible, as it has been shown to be important for RTW outcome [11]. This, however, resulted in a lack of continuity in the PE because participants had not all attended the same previous sessions. Furthermore, the participants were not well connected socially since they only took part in a few sessions together. This also limited their opportunity to exchange experiences with other participants.

Another reason for not finding an effect could be that the sessions might have been based too much on lectures and too little on discussions. Thus, the content of the sessions might not have been sufficiently aimed at the participants’ own challenges. It is possible that homework would have helped the participants to work with the topics and make them part of their daily lives. We did not measured how well they used what they had been taught.

Furthermore, the course may have focused too much on mental health and not enough on RTW. The nurses were not accustomed to working with individuals on sick leave or giving advice on RTW issues; however the physiotherapist, the social worker, and the psychologist were. Finally, PE was given in addition to the standard offers to individuals on sick leave in Denmark. Thus about 40 % of the individuals participated in activities offered by the job centres, and about 65 % received treatment for their mental health, mostly from a GP or a psychologist. Moreover, the social workers encouraged the participants to resume part time work partially, which may facilitate RTW [39]; however, the effect in individuals with mental disorders is inconsistent [38, 40].

In the analysis of the effect of the intervention in this study, the content of usual care must be considered. The effectiveness of the intervention, in this case PE, is a relative measure and depended on the effect in the usual care group, which may have been effective in itself.

**Strength and limitations**

The major strength of this study was the randomised design and the large group of participants. Register data were used to measure RTW, which is preferable compared to self-reported data in regard to receiving more accurate information on the sick leave period [41].

The social workers were not sufficiently blinded for the allocation and were able to correctly identify two-thirds of the individuals in the control group, which could introduce confounding. It is possible that they could have let participants in the control group return to work earlier than those in the intervention group.

The intervention was offered at an early stage in the sickness absence period. As a result, participants were randomised before they had given written consent. This could introduce possible risk of bias, but it did not seem to have affected the final results.

Thus the participants knew their allocation before they provided written consent; however, this did not seem to influence the relative participation rates because the same number of individuals from each group dropped out of the study after randomisation. The internal validity of the study does not seem to have been threatened because no differences were found between the dropouts in the two groups. Reasons for dropping out of the study and reasons for not attending the PE session as intended were not collected.

Some participants completed the baseline questionnaire after they had started the intervention. Analyses were not adjusted for baseline score as this could introduce information bias. However, scores on symptoms of depression and anxiety (SCL-90-R) at baseline and the score on SCL-8 AD were similar for the two groups. The SCL-8 AD consists of items on symptoms of
depression and anxiety and was completed by participants before they knew about their allocation. Moreover, the scores on the remaining baseline questions seemed to be similar between the two groups. However, the significantly higher score on internal LoC in the intervention group at both 3 and 6 months might be explained by the difference that was already present at baseline.

**Generalisation**
Effectiveness of RCTs depends on the context in which they are conducted. Effectiveness in RCTs in the field of RTW will differ due to heterogeneity in populations, characteristics of the workers and workplaces, and differences in the social system [42]. The study was performed in individuals on sick leave in a Danish setting, and all participants received the standard care from the job centres and health care system.

The present study was conducted in collaboration with the job centres, because the goal was to assess the effect of the intervention as it would work in a realistic setting. The participants were included based on a simple screening instrument (SCL-8 AD). Thus, considerable variation in reasons for sickness absence, symptoms, and diagnoses was allowed.

One-third of the eligible individuals participated in the study. The study population consisted of more women than men and of individuals who were intermediate to highly educated, on sick leave due to mental health problems, and had low recovery expectations, which is similar to another Danish study [43]. It is possible that those accepting to participate were more eager to return to work compared to those not accepting to participate. If the last two-thirds had participated, it is likely that the results would have been different from those in the present study.

PE was taught by different health professionals, which circumvents ascribing the effect to have been due to the influence of a single person.

**Conclusion**
Offering PE to individuals on sick leave at risk of having a mental disorder had no influence on the chance of full RTW during the first 6 months; however, it did result in a higher risk of not returning to work during the first 3 months after randomisation. Moreover, it did not decrease the level of psychological symptoms or improve mental health-related quality of life and internal locus of control. Based on this study, offering PE in this form in a municipal job centre setting in order to facilitate RTW cannot be recommended.

**Competing interests**
The authors declare that they have no competing interests.

**Authors’ contributions**
PP, HJS, EAN and CJ participated in the design of the study and PP and HJS designed the PE intervention. PP was responsible for the data collection and the coordination of the study. PP wrote the first draft and conducted the analyses and CJ significantly contributed to the interpretation of the data and writing of the paper. PP, HJS, ML, EAN and CJ contributed to revising it. All authors read and approved the final manuscript.

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**References**

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Based on this study, offering PE in this form in mental health-related quality of life and internal locus of control. Moreover, it did not de-creases the risk of not returning to work during the first 3 months after randomisation. It could be seen as an exploratory analysis on disability policies in a six-country context, covering return-to-work after long-term sickness absence. J Multidiscip Healthc. 2012;5:223-26.


Labour market trajectories following sickness absence due to self-reported all cause morbidity – a longitudinal study

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Count
Abstract: 272 - Article: 4,073 words - Tables: 5 - Figures: 2 - References: 43
Abstract

Purpose To investigate differences in return to work (RTW) and employment trajectories in individuals on sick leave for either mental health reasons or other health related reasons.

Methods This study was based on 2,036 new sickness absence cases who completed a questionnaire on social characteristics, expectations for RTW and reasons for sickness absence. They were divided into two exposure groups according to their self-reported sickness absence reason: mental health reasons or other health reasons. The outcome was employment status during the following 51 weeks and was measured both as time-to-event analysis and with sequence analysis.

Results Individuals with mental health reasons for sickness absence had a higher risk of not having returned to work (RR 0.87 (0.80;0.93)). Adjusting for gender, age, education and employment did not change the estimate, however, after adding RTW expectations to the model, the excess risk was no longer present (RR 1.01 (0.95;1.08)). In relation to the sequence analysis, individuals with mental health related absence had significantly higher odds of being in the sickness absence cluster and significantly lower odds for being in the fast RTW cluster, but when adjusting for RTW expectations, the odds were somewhat attenuated and no longer significant.

Conclusion Employees on sick leave due to self-reported mental health problems spent more weeks in sickness absence and temporary benefits and had a higher risk of not having returned to work within a year compared to employees on sick leave due to other health reasons. The difference could be explained by their lower RTW expectations at baseline. This emphasises the need to develop suitable and specific interventions to facilitate RTW for this group of sickness absentees.

Key words: return to work, mental disorders, sick leave, RTW-expectations, sequence analysis
Introduction

Sickness absence causes have different impact on the individuals’ chance of return to work (RTW) (1,2). Those with mental health conditions have a low RTW rate, whereas those with e.g. infectious diseases have a relatively high RTW rate (3). Compared to other health related diagnoses, individuals on sick leave due to mental disorders have an increased number of sick leave spells and sick leave days (4,5). Moreover, many mental disorders are persistent and have high recurrence rates (6), are associated with increased risk of early retirement (7), and of receiving disability benefits (6) and unemployment benefits (5). The reason for the lower RTW rate in that group may not solely be attributed to the disorder itself. It could also be explained by their lower RTW expectations (8), which are found to be a predictor for RTW (8-12).

Regardless of underlying conditions for sickness absence, the RTW process after sickness absence is complex and evolving as it covers a series of events, transitions and phases of employment status (13,14). The criterion of RTW is not straightforward and there are a number ways of defining a RTW outcome (15-17). Research findings can vary with the way that RTW is defined and measured. One way of defining “RTW” is to measure RTW status at a certain point in time after onset of sickness absence, for example after three months, six months or a year (i.e. a point prevalence measure). This is a convenient measure but one that may underestimate or overestimate the total effect of an employee’s work capacity, because RTW rates vary over time. Other criteria for RTW that are used in the literature include time from injury to first RTW, or the number of days lost from work after the injury. In addition to these differences, the measurement of the period until RTW may be based on actual days off work or a proxy measure such as compensation days until RTW (15,18).

The often adapted time-to-event approach does not cover the many possible states and transitions experienced by individuals on sick leave. Employment status transitions after sickness absence have recently been studied in the Nordic countries by using multi-state models (19-21); however sequence analysis has not previously been used to study transitions in sickness absence research. This study will evaluate the RTW measures in a Danish population on sick leave using both time-to-event analysis and sequence analysis with 51 weeks of follow-up. The aim of this study was to investigate differences in RTW and employment trajectories in individuals on sick leave for mental health reasons and individuals with other health-related reasons for sick leave.
**Material and methods**

**Participants and design**

From September 2012 to March 2014, all new cases of sickness absence exceeding 4 weeks (n=4,541) in the Western part of Denmark were registered. They received a questionnaire about social characteristics, RTW expectations and reasons for sickness absence. The questionnaire was originally used for an RCT study evaluating the effect of psychoeducation on RTW in individuals on sick leave (22). No difference in relative risk of RTW during the first 6 and 12 months after inclusion was found between the intervention group and the control group (23).

The questionnaire was completed by 2,788 individuals (61.4 %). Those who did not provide data on reason for sickness absence (n=20), information on education (n= 31), employment (n= 123) and RTW expectations (n= 126) were excluded. All participants were linked to The Danish National Labour Market Authority’s DREAM database (24), which provided information about economic compensation for unemployment, sickness absence, and other kinds of social transfer income. The type of transfer payment in DREAM is recorded for each week if the person has received the benefit for 1 day or more. Termination of registration occurs following the first full week of not receiving any type of transfer payment. If no transfer payment is registered for a specific week, the person is considered to be self-supporting and consequently as working. In Denmark, a citizen in the workforce (employed as well as unemployed) is entitled to sickness absence compensation (at the time of this study after 4 weeks), and if the employee receives normal salary during the sick leave period, the employer receives municipal reimbursement. Data from the DREAM database is increasingly applied in research and has been validated in research in individuals on sick leave (24-26).

A total of 452 participants were not registered as being on sick leave in the DREAM database when the questionnaire was distributed and consequently they were excluded from the study. It was done to avoid misclassification and that a difference in social benefits in the study could be attributed to a difference in social benefits at baseline. Thus, the final study population consisted of 2,036 individuals between 18 and 64 years of age (mean: 44.5, sd: 11.1). Data on registrations in the DREAM database was obtained from the week the questionnaire was sent and 51 weeks onwards.
**Outcome measures**

The outcome variable in this paper was employment status during the 51 weeks following the questionnaire and was recorded weekly.

In the time-to-event analysis, the outcome was return-to-work, which was defined as the period (in weeks) between inclusion and the first period of 4 consecutive weeks without receiving any social benefits.

In the sequence analysis, the outcome was extended to include five different categories for labour market participation and RTW: 1) sickness absence, 2) working 3) unemployment, 4) temporary support (other than unemployment and sickness benefits), and 5) permanent support. Working was defined as the weeks with no benefits, and unemployment was defined as receiving unemployment benefits. Temporary support was defined as social benefits that are given temporarily aiming at promoting subsequent employment, e.g. public education grant, social assistance or rehabilitation benefit. Permanent support was defined as social benefits that are given on a permanent basis, where regular employment is no longer possible e.g. early retirement, public retirement pension and supported job (the Danish labour market arrangement for people with reduced ability to work and wage is partly compensated).

**Exposure variables**

Self-reported reason for sickness absence was the main exposure. The participants could report several reasons for the absence, but if they had reported anxiety, depression, other mental illness or stress and burnout, they were categorised as having “mental health reasons”, while the rest of the individuals were categorised as having “other health reasons” (e.g. musculoskeletal disorders, cancer, or chronic pain [Table 1]).
Outcome measures

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Self-reported reason for sickness absence was the main exposure. The participants could report several reasons for the absence, but if they had reported anxiety, depression, other mental illness or stress and burnout, they were categorized as having "mental health reasons", while the rest of the individuals were categorized as having "other health reasons" (e.g. musculoskeletal disorders, cancer, or chronic pain).

Covariates

Information about education, employment, age, gender and RTW expectations was retrieved from the questionnaire. RTW expectations were estimated by the participants as the probability of not being on sick leave after 6 months (as a percentage in whole tens from 0 to 100%). The covariates were categorized as seen in Table 2.

Ethical considerations

Participation was voluntary, and the study has been registered and approved by the Danish Data Protection Agency (http://www.datatilsynet.dk). The participants did not provide consent, as the data were analysed anonymously.

Statistical analysis

Initially a comparison of the individuals from the two exposure groups was made in relation to age, gender, education, employment and RTW expectations by means of Chi2 or t-tests. Secondly, pseudo values were used to examine differences in the rates of RTW during the 51 weeks of follow-up (27,28). The relative risk (RR) of RTW in the mental health group was compared to the group with other health reasons. The cumulative incidence proportion (CIP) was calculated to show the percentages of individuals in each group who had returned to work. The allocation of the RCT study was adjusted for in all steps of the analysis (23) and thereafter, different adjustment strategies were carried out based on variables that were chosen a priori; 1) adjustment for gender and age, 2) plus education and employment and 3)

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Reasons for sickness absence in the two exposure groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reasons for sickness absence</td>
<td>Mental health reasons</td>
</tr>
<tr>
<td>n = 725</td>
<td>n (%)</td>
</tr>
<tr>
<td>Anxiety</td>
<td>218 (30.1)</td>
</tr>
<tr>
<td>Depression</td>
<td>405 (55.9)</td>
</tr>
<tr>
<td>Stress and burnout</td>
<td>516 (71.2)</td>
</tr>
<tr>
<td>Other mental illness</td>
<td>79 (11.0)</td>
</tr>
<tr>
<td>Personal problems</td>
<td>139 (19.2)</td>
</tr>
<tr>
<td>Psychosocial working environment</td>
<td>166 (22.9)</td>
</tr>
<tr>
<td>Cardiovascular or lung diseases</td>
<td>25 (3.5)</td>
</tr>
<tr>
<td>Infection</td>
<td>19 (2.6)</td>
</tr>
<tr>
<td>Chronic / diffuse pain</td>
<td>85 (11.7)</td>
</tr>
<tr>
<td>Cancer</td>
<td>16 (2.2)</td>
</tr>
<tr>
<td>Abdominal illness</td>
<td>32 (4.4)</td>
</tr>
<tr>
<td>Musculoskeletal disorders</td>
<td>74 (10.2)</td>
</tr>
<tr>
<td>Other / unclear reason</td>
<td>74 (10.2)</td>
</tr>
</tbody>
</table>

Percentages do not add up to 100 as people could report several reasons for sickness absence.
plus RTW expectations. Death, emigration and receiving permanent support were considered as competing risk.

Furthermore, sequence analysis was performed, which is a statistical study of successions of states or events. A sequence is defined as an ordered list of elements (e.g. labour market status) and episodes (identical successive elements) expressed on a time axis (29,30). In this study, sequences showed a complete event history of labour market participation in each particular week from baseline to follow-up. The relative proportion of each of the five employment status for every week was displayed in a status proportion plot (31). In the sequence analysis, further 18 participants were excluded due to death or emigration (4 from mental health reasons and 14 from other health reasons). Thus, in those analyses, the study population consisted of 2,018 participants.

In the sequence analysis, the mean duration in weeks within a given state and the mean number of episodes of different status for the exposure groups were calculated. Differences between exposure groups were performed by using the syntax ttesti in STATA by adding the n, mean and sd for each group. This syntax was used as sequence analysis was made in long format and thus regular tests were not possible to perform.

The distributions of the sequences were compared in the two exposure groups. All individuals were divided into four groups according to their sequences; 1) only sick leave, 2) moving to continuous work, 3) having at least one episode of work, and 4) sick leave and social benefits. The different distributions of sequences were tested in a chi2 test.

A volatility indicator was defined as the proportion of work and unemployment episodes in relation to total episodes. Episodes within work and unemployment reflected a positive status of RTW or readiness to RTW. The volatility indicator indicated that the higher the value of this indicator (range 0–1), the higher the quality of the transitions (32).

An integration indicator was measured as an indicator of how quickly and to what extent the individuals re-entered employment. It was assessed as the sum of number of sequence positions where status was work, which were weighted by their position within the sequence. This indicated that the longer or more episodes in work, the higher the quality of the integration process (range 0-1) (32).

Moreover, the sequences were grouped based on optimal matching algorithms and statistical cluster analysis to find and categorize observed sequences into a smaller number of clusters (29,33). Optimal matching was used to measure dissimilarities between sequences by applying
the Levenshtein distance measure, which measured the number of operations that were
needed to transform one sequence into another (29). Similar sequences were grouped
together using hierarchical cluster analysis with Ward’s linkage (32,33). On the basis of these
results, similar sequences were merged into eight clusters, which were named based on
employment status. Afterwards, the distribution of the clusters across the exposure groups
was tested by means of logistic regression. The same adjustment strategies were used as in
the pseudo value analysis.

Point estimates were presented with 95% confidence intervals. STATA/IC 11.2 (StataCorp LC,
College Station, TX) was used for all statistical analyses with the SQ-ADOS to perform the
sequence analyses.

**Results**

A total of 725 individuals (36%) reported mental health problems as reason for their sickness
absence while 1,311 (64%) reported other health reasons. The most frequent diagnoses in the
mental health group were stress and burnout, depression and anxiety, while in “other health
reasons”, musculoskeletal disorders, chronic / diffuse pain and unclear reasons were most
frequent (Table 1). The two exposure groups were significantly different in relation to all
baseline characteristics (Table 2). Individuals with mental health as reason for the sickness
absence were more often women, younger, more than 3 years of tertiary education, and had
lower expectations of returning to work within the next 6 months. Furthermore, they were to
greater extent white collar workers and less often unskilled or skilled workers.
A total of 56% (95% CI: 52;59) of those individuals who had reported mental health as reason for the sickness absence had returned to work at 51 weeks of follow-up, which was significantly lower than 67% (95% CI: 65;70) among those reported other health reasons (Table 3). During follow-up, individuals with mental health reasons had a significantly higher risk of not having returned to work. Even after adjusting for gender, age, education and employment, the difference was still present but somewhat attenuated. When adjusting for RTW expectations, the RR was the same in the two groups.

**Table 2** Baseline characteristics of the study population

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mental health reasons (n=725)</th>
<th>Other health reasons (n=1,311)</th>
<th>P-value*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender (female)</td>
<td>n/mean %/sd</td>
<td>n/mean %/sd</td>
<td></td>
</tr>
<tr>
<td>Gender (female)</td>
<td>481 66.3/10.6</td>
<td>679 51.8/11.2</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Age (years)</td>
<td>42.3</td>
<td>45.7</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Highest level of education</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary school/Secondary school</td>
<td>182 25.1/10.6</td>
<td>405 30.9</td>
<td></td>
</tr>
<tr>
<td>Tertiary education &lt;3 years</td>
<td>307 42.3/12.6</td>
<td>617 47.1</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Tertiary education &gt;3 years</td>
<td>236 32.6/12.2</td>
<td>289 22.0</td>
<td></td>
</tr>
<tr>
<td>Employment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supported jobs /early age pension</td>
<td>24 3.3</td>
<td>37 2.8</td>
<td></td>
</tr>
<tr>
<td>Student</td>
<td>43 5.9</td>
<td>36 2.8</td>
<td></td>
</tr>
<tr>
<td>Unemployed</td>
<td>105 14.5</td>
<td>130 9.9</td>
<td></td>
</tr>
<tr>
<td>Unskilled worker (e.g. cleaning)</td>
<td>100 13.8</td>
<td>263 20.1</td>
<td></td>
</tr>
<tr>
<td>Skilled worker (e.g. artisan)</td>
<td>93 12.8</td>
<td>293 22.4</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>White collar worker (e.g. nurse)</td>
<td>320 44.1</td>
<td>427 32.6</td>
<td></td>
</tr>
<tr>
<td>Self-employed</td>
<td>40 5.5</td>
<td>125 9.5</td>
<td></td>
</tr>
<tr>
<td>Recovery expectations</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-30%</td>
<td>87 12.0</td>
<td>90 6.9</td>
<td></td>
</tr>
<tr>
<td>40-60%</td>
<td>160 22.1</td>
<td>151 11.5</td>
<td></td>
</tr>
<tr>
<td>70-90%</td>
<td>180 24.8</td>
<td>211 16.1</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>100%</td>
<td>298 41.1</td>
<td>859 65.5</td>
<td></td>
</tr>
</tbody>
</table>

*P-values indicate tests of differences between exposure groups by Chi2 test or t-test

Reason for sickness absence | CIP% (95% CI) | Crude analysis * | Adj. model 1 | Adj. model 2 | Adj. model 3 |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Other health reasons n = 1,311</td>
<td>67 (65;70)</td>
<td>1 (ref)</td>
<td>1 (ref)</td>
<td>1 (ref)</td>
<td>1 (ref)</td>
</tr>
<tr>
<td>Mental health reason n = 725</td>
<td>56 (52;59)</td>
<td>0.87 (0.80;0.93)</td>
<td>0.89 (0.82;0.96)</td>
<td>0.92 (0.85;0.99)</td>
<td>1.01 (0.95;1.08)</td>
</tr>
</tbody>
</table>

RR: Relative risk. CI: confidence interval, CIP (Cumulative Incidence Proportion) shows the percentages of individuals having returned to work, *: Adjusted for effect of the psychoeducation intervention, Adj. model 1: Adjusted for effect of intervention, gender, and age, Adj. model 2: Adjusted as in model 1 and also for education and employment, Adj. model 3: Adjusted as in model 2 and also for RTW expectations.
The status proportion plot illustrated the differences in employment status in the two exposure groups (Fig 1). Individuals with mental health reasons had significantly more weeks of sickness absence and temporary support throughout the year compared to individuals with other health reasons (Table 4). Individuals with other health reasons had significantly more weeks of work compared to individuals with mental health reasons. No difference in the duration of unemployment and permanent support was seen between the two groups. The group with other health reasons had significantly more episodes of work, whereas individuals with mental health reasons had more episodes of unemployment and temporary support. No differences in the mean number of episodes in the five employment status or the mean number of different elements in the sequences were seen in the two exposure groups (Table 4). The range of episodes in the follow-up period was 1-23 in the group of mental health reasons and 1-26 in the group of other health reasons. Individuals with mental health reasons had a significantly lower volatility indicator and integration indicator compared to individuals with other health reasons.

Fig 1 Weekly share of status by exposure groups
Table 4 Characteristic of labour market sequences in exposure groups

<table>
<thead>
<tr>
<th></th>
<th>Mental health reasons n=721</th>
<th>Other health reasons n=1,297</th>
<th>Diff</th>
<th>p-value*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean (sd)</td>
<td>Mean (sd)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean duration in...</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sickness absence</td>
<td>27.50 (17.57)</td>
<td>22.53 (17.76)</td>
<td>4.97</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Work</td>
<td>15.96 (17.20)</td>
<td>22.45 (19.00)</td>
<td>-6.49</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Unemployment</td>
<td>3.38 (6.69)</td>
<td>2.80 (7.12)</td>
<td>0.58</td>
<td>0.07</td>
</tr>
<tr>
<td>Temporary support</td>
<td>4.18 (9.49)</td>
<td>2.91 (8.14)</td>
<td>1.27</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Permanent support</td>
<td>0.98 (5.42)</td>
<td>1.31 (6.23)</td>
<td>-0.33</td>
<td>0.24</td>
</tr>
<tr>
<td>Mean number of episodes in...</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sickness absence</td>
<td>1.32 (0.78)</td>
<td>1.37 (0.99)</td>
<td>-0.05</td>
<td>0.25</td>
</tr>
<tr>
<td>Work</td>
<td>1.02 (1.07)</td>
<td>1.17 (1.21)</td>
<td>-0.15</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Unemployment</td>
<td>0.62 (1.14)</td>
<td>0.50 (1.12)</td>
<td>0.11</td>
<td>0.03</td>
</tr>
<tr>
<td>Temporary support</td>
<td>0.52 (0.97)</td>
<td>0.38 (0.86)</td>
<td>0.14</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Permanent support</td>
<td>0.05 (0.22)</td>
<td>0.06 (0.25)</td>
<td>-0.02</td>
<td>0.17</td>
</tr>
<tr>
<td>Mean number of episodes (total)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean number of different elements in sequence</td>
<td>3.52 (2.90)</td>
<td>3.48 (2.93)</td>
<td>0.04</td>
<td>0.76</td>
</tr>
<tr>
<td>Mean number of different elements in sequence</td>
<td>2.32 (0.97)</td>
<td>2.27 (0.84)</td>
<td>0.05</td>
<td>0.20</td>
</tr>
<tr>
<td>Volatility indicator</td>
<td>0.37 (0.24)</td>
<td>0.40 (0.22)</td>
<td>-0.04</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Integration indicator</td>
<td>0.36 (0.38)</td>
<td>0.40 (0.40)</td>
<td>-0.13</td>
<td>&lt;0.0001</td>
</tr>
</tbody>
</table>

SD Standard deviation *p-values generated by means of the “ttesti” syntax in STATA

During the follow-up period, there were a total of 181 different sequences in the group with mental health reasons and 238 in the group with other health reasons. The most frequent sequence in both groups was going from sickness absence to continuous work, as it happened to 195 individuals (27.0%) from the group of mental health reason and 509 individuals (39.2%) from the group of other health reasons. The second most frequent sequence in both groups was staying in sickness absence throughout the study period. Thus, a total of 144 individuals (20.0%) with mental health reasons and 174 individuals (13.4%) with other health reasons were on sick leave for 51 weeks. In relation to the rest of the participants, a total of 279 individuals (38.7%) with mental health reasons had at least one episode of work compared to the 477 individuals (36.8%) with other health reasons. Moreover, 103 (14.3%) and 137 (10.6%) were on sick leave and social support in the group of mental health reasons and in the group of other health reasons, respectively. A chi2 test showed a significant difference between the exposure groups in the distribution of the sequences (p <0.0001).

The eight clusters, which were merged on the basis of similar sequences, displayed aggregated shares of employment status (Fig 2). Three of the clusters (5, 7 and 8) displayed work-oriented trajectories while two clusters (1 and 2) indicated continuous sickness absence or relapse into sickness absence. Only one cluster (6) showed a permanent withdrawal from the labour market while two clusters (3 and 4) displayed general or partial temporary support.
<table>
<thead>
<tr>
<th></th>
<th>Mental health reasons</th>
<th>Other health reasons</th>
<th>Diff</th>
<th>p-value*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mean duration in…</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sickness absence</td>
<td>27.50 (17.57)</td>
<td>22.53 (17.76)</td>
<td>4.97</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Work</td>
<td>15.96 (17.20)</td>
<td>22.45 (19.00)</td>
<td>-6.49</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Unemployment</td>
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<td>2.80 (7.12)</td>
<td>0.58</td>
<td>0.07</td>
</tr>
<tr>
<td>Temporary support</td>
<td>4.18 (9.49)</td>
<td>2.91 (8.14)</td>
<td>1.27</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Permanent support</td>
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<td>-0.33</td>
<td>0.24</td>
</tr>
<tr>
<td><strong>Mean number of episodes in…</strong></td>
<td></td>
<td></td>
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<td>0.25</td>
</tr>
<tr>
<td>Work</td>
<td>1.02 (1.07)</td>
<td>1.17 (1.21)</td>
<td>-0.15</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Unemployment</td>
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<td>0.11</td>
<td>0.03</td>
</tr>
<tr>
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<td>0.14</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Permanent support</td>
<td>0.05 (0.22)</td>
<td>0.06 (0.25)</td>
<td>-0.02</td>
<td>0.17</td>
</tr>
<tr>
<td><strong>Mean number of episodes (total)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.52 (2.90)</td>
<td>3.48 (2.93)</td>
<td>0.04</td>
<td>0.76</td>
</tr>
<tr>
<td><strong>Mean number of different elements in sequence</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
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<td>2.27 (0.84)</td>
<td>0.05</td>
<td>0.20</td>
</tr>
<tr>
<td><strong>Volatility indicator</strong></td>
<td></td>
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<td></td>
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SD Standard deviation
p-values generated by means of the “ttesti” syntax in STATA

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The eight clusters, which were merged on the basis of similar sequences, displayed aggregated shares of employment status (Fig 2). Three of the clusters (5, 7 and 8) displayed work-oriented trajectories while two clusters (1 and 2) indicated continuous sickness absence or relapse into sickness absence. Only one cluster (6) showed a permanent withdrawal from the labour market while two clusters (3 and 4) displayed general or partial temporary support.

Individuals with mental health reasons had significantly higher odds for being in the sickness absence cluster and significantly lower odds for being in the fast RTW cluster after adjusting for gender, age, education and employment; however, when adjusting for RTW expectations, the odds were somewhat attenuated and no longer significant (Table 5). Moreover, the individuals with mental health reasons had significantly higher odds for being in the relapse cluster, although the number of observations was rather small. Also, the individuals with mental health reasons had marginally lower odds for being in the slow RTW cluster; however, after adjusting for RTW expectations the OR was close to 1.
Table 5  Sickness absence reason and risk of being in eight different clusters

<table>
<thead>
<tr>
<th>Clusters</th>
<th>Mental health reason n=721 (%)</th>
<th>Other health reason n=1,297 (%)</th>
<th>Crude analysis* OR (95% CI)</th>
<th>Adj. model 1 OR (95% CI)</th>
<th>Adj. model 2 OR (95% CI)</th>
<th>Adj. model 3 OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Sickness absence</td>
<td>317 (44.0)</td>
<td>422 (32.5)</td>
<td>1.35 (1.10;1.65)</td>
<td>1.30 (1.06;1.59)</td>
<td>1.31 (1.06;1.60)</td>
<td>1.05 (0.85;1.31)</td>
</tr>
<tr>
<td>2. Relapse</td>
<td>17 (2.4)</td>
<td>15 (1.2)</td>
<td>2.69 (1.31;5.52)</td>
<td>2.69 (1.29;5.59)</td>
<td>2.65 (1.27;5.52)</td>
<td>2.77 (1.31;5.87)</td>
</tr>
<tr>
<td>3. Sickness absence / temporary support</td>
<td>39 (5.4)</td>
<td>35 (2.7)</td>
<td>1.92 (1.17;3.16)</td>
<td>1.60 (0.97;2.65)</td>
<td>1.55 (0.94;2.56)</td>
<td>1.32 (0.80;2.18)</td>
</tr>
<tr>
<td>4. Temporary support</td>
<td>37 (5.1)</td>
<td>47 (3.6)</td>
<td>1.45 (0.91;2.32)</td>
<td>1.12 (0.70;1.82)</td>
<td>1.11 (0.68;1.79)</td>
<td>1.12 (0.69;1.82)</td>
</tr>
<tr>
<td>5. Unemployment</td>
<td>32 (4.4)</td>
<td>66 (5.1)</td>
<td>0.83 (0.52;1.32)</td>
<td>0.80 (0.50;1.27)</td>
<td>0.77 (0.48;1.23)</td>
<td>0.79 (0.49;1.27)</td>
</tr>
<tr>
<td>6. Permanent support</td>
<td>17 (2.4)</td>
<td>40 (3.1)</td>
<td>0.91 (0.50;1.66)</td>
<td>1.74 (0.90;3.39)</td>
<td>1.61 (0.83;3.12)</td>
<td>1.43 (0.73;2.80)</td>
</tr>
<tr>
<td>7. Slow RTW</td>
<td>104 (14.4)</td>
<td>197 (15.2)</td>
<td>0.87 (0.66;1.14)</td>
<td>0.93 (0.70;1.24)</td>
<td>0.92 (0.69;1.23)</td>
<td>1.03 (0.77;1.38)</td>
</tr>
<tr>
<td>8. Fast RTW</td>
<td>158 (21.9)</td>
<td>475 (36.6)</td>
<td>0.63 (0.50;0.78)</td>
<td>0.66 (0.52;0.82)</td>
<td>0.67 (0.53;0.84)</td>
<td>0.84 (0.66;1.07)</td>
</tr>
</tbody>
</table>

Reference group: Other health reasons, OR: Odds ratio. CI: confidence interval, *: Adjusted for effect of the psychoeducation intervention, Adj. model 1: Adjusted for effect of intervention, gender and age, Adj. model 2: Adjusted as in model 1 and also for education and employment, Adj. model 3: Adjusted as in model 2 and also for and RTW expectations

Discussion
Main results

Individuals on sick leave due to mental health reasons spent more weeks on sickness absence and in temporary support and less weeks on work compared to individuals with other health reasons for sick leave. Moreover, fewer of the individuals on sick leave due to mental health reasons had returned to work during the 51 weeks of follow-up, compared to the individuals with other health reasons.

Also the chance of having returned to work was lower for individuals with mental health reasons when adjusting for gender, age, education and employment status but after adjusting for RTW expectations, the chance was the same in the two groups. Moreover, individuals with mental health reasons had higher odds of being in the “sickness absence” cluster and a lower odds of being in the “fast RTW” cluster, but the difference was attenuated after adjusting for RTW expectations.
RTW expectations

The results show that RTW expectations can be considered a confounder in the effect of health reasons for RTW. Individuals with mental health reasons returned to work later than individuals with other health reasons, but after adjusting for RTW expectations both exposure groups were found to return to work at the same time. Other studies have also found RTW expectations to be a predictor of RTW in both individuals on sick leave due to mental and physical disorders i.e. a positive RTW expectation predict a shorter time to RTW (8-12). It has been speculated that positive RTW expectations represent the self-efficacy of the employee, i.e. the belief an individual has in his/her own capacity to perform a specific behaviour successfully, in this case in relation to RTW (8,10). Furthermore, bad mental health and low RTW expectations could be influenced by the same problems, i.e. problems meeting demands at work or at home, social problems at work or other work-related factors may have triggered both mental health problems and low RTW-expectations if the prospects of solving these problems seem low.

Individuals with other health reasons had a higher level of RTW expectations than individuals with mental health reasons. This has also been confirmed in a study by Huijs et al. (8). Another possible explanation could be that the stigmatization of mental health problems in the workplace is high, and therefore the employees might avoid their workplace and receive less support from their colleagues and supervisor, making it seem less likely to return to work. A third explanation of the lower RTW expectations among individuals with mental health reasons could be influenced by their psychological symptoms like hopelessness, discourage and reduced self-confidence. These symptoms likely reduce the belief of RTW.

Transitions in the RTW process

The maximum number of episodes for one individual was 23 in the group of mental health reasons and 26 in the group of other health reasons. This shows that the RTW process for individuals on sickness absence benefits may be long and complex (14,34), which is in line with previous Nordic studies using multi-state models (19-21). It also emphasises the need to analyse RTW as a process (13,14), and not only at a single point in time (35,36). The advantage of this approach is that it provides a more complete picture of RTW and employment trajectories and therefore, a more complete understanding of the impact of disability on the employee’s life and well-being (34,37).

During the last 10 years, transitions of states have been used in the research of sickness absence by means of multi-state models (19-21). Pedersen et al. showed the transitions for
Danish individuals on sick leave and with 4 year follow-up (21). They included the states; work, unemployment, sickness absence, and disability pension, and identified predictors for each of the different transitions. Two Norwegian studies have used multi-state models to analyse the transitions of states (19,20). Lie et al. applied three different states that low back pain patients could be in after an intervention; recovery (RTW), sick leave benefits, or disability pension (19). Oyeflaten et al. extended the model to include eight different categories for social benefits or return to work over a 4 year period (20). Only Oyeflaten et al. included categories on varying types of social benefits, whereas Pedersen et al. and Lie et al. mostly looked at disability benefits besides work and sickness absence. To be able to show a more realistic picture of the transitions, it is relevant to include all types of social benefits.

**Strength and limitations**

The prospective design of the study and the record linkage of the cohort data with sickness absence data from DREAM added to the strengths of this study. The study had complete follow-up of weekly employment status due to full coverage of registers of social benefits and the information is considered valid (24). Moreover, this study included sequence analysis to look at transitions besides the more traditional time-to-event outcome. Using the method has given an overview of the life course after the start of the sickness absence period. Sequence analysis is considered an exploratory method rather than a method for hypothesis testing, which means that sequence analysis cannot answer the question of causality. Due to this, sequence analysis is best used in combination with other methods, and cannot replace methods like event history models (38).

There is no clear agreement about how long a follow-up period is needed to get the best measurement of the effect on work and benefits after sick leave (15,39). Previous studies using process analyses have used a longer follow-up period, i.e. 3-4 years (19-21). In this study, only 51 weeks of follow-up was applied which reduces the complexity of the sequences as e.g. 20% with mental health reasons and 13% with other health reasons were still on sick leave and thus, had not changed states. Thus, a longer follow-up period would have been preferable, as Oyeflaten et al. concluded that several years are needed to get an adequate picture of the RTW outcome (20).

The frequency of mental disorders in RTW research has been found to be underestimated (4,40,41). Therefore, the grouping of exposure may cause misclassification if the individuals are not true about reporting the sickness absence reason. However, as the questionnaire was sent in relation to an RCT study for individuals with mental health problems, it is considered a
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Some studies have divided the sickness absence reasons into mental, physical and co-morbidity and found that co-morbidity was associated with longer time until RTW than only reporting physical or mental problems (8,42). In this study, individuals with co-morbidity were not categorized separately, as it was not the aim of the study. Moreover, only co-morbidity that was due to the sickness absence was reported. Therefore, the degree of co-morbidity in this study is unknown.

Another limitation derives from the relatively low response rate (61.4%). The relationship between sickness absence reasons and employment status may have been different in non-responders, and thus could change the estimates. But we have no reason to believe that is the case. Therefore, a higher participation rate would not have changed the conclusion, but have made the estimates stronger.

Generalization

Comparison between studies may be difficult due to the large variation between countries in the regulation of sick leave compensation and social benefits. Within the Nordic countries, the social security systems are relatively similar and make comparisons feasible (43). Our findings may, therefore, be generalized to the Nordic countries. However, we see no reason why the longer sickness absence periods and lower RTW expectations for those with mental health problems than for those with other health problems should not be similar in other Western countries.

Conclusion

Employees on sick leave due to self-reported mental health problems spent more weeks in sickness absence and temporary benefits and had a higher risk of not having returned to work within a year compared to employees on sick leave due to other health reasons. The difference could be explained by their lower RTW expectations at baseline. This emphasises the need to
develop suitable and specific interventions to facilitate RTW for this group of sickness absentees.

References


(20) Oyeflaten I, Lie SA, Ihlebaek CM, Eriksen HR. Multiple transitions in sick leave, disability benefits, and return to work. - A 4-year follow-up of patients participating in a work-related rehabilitation program. BMC Public Health 2012 Sep 6;12:748-2458-12-748.


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