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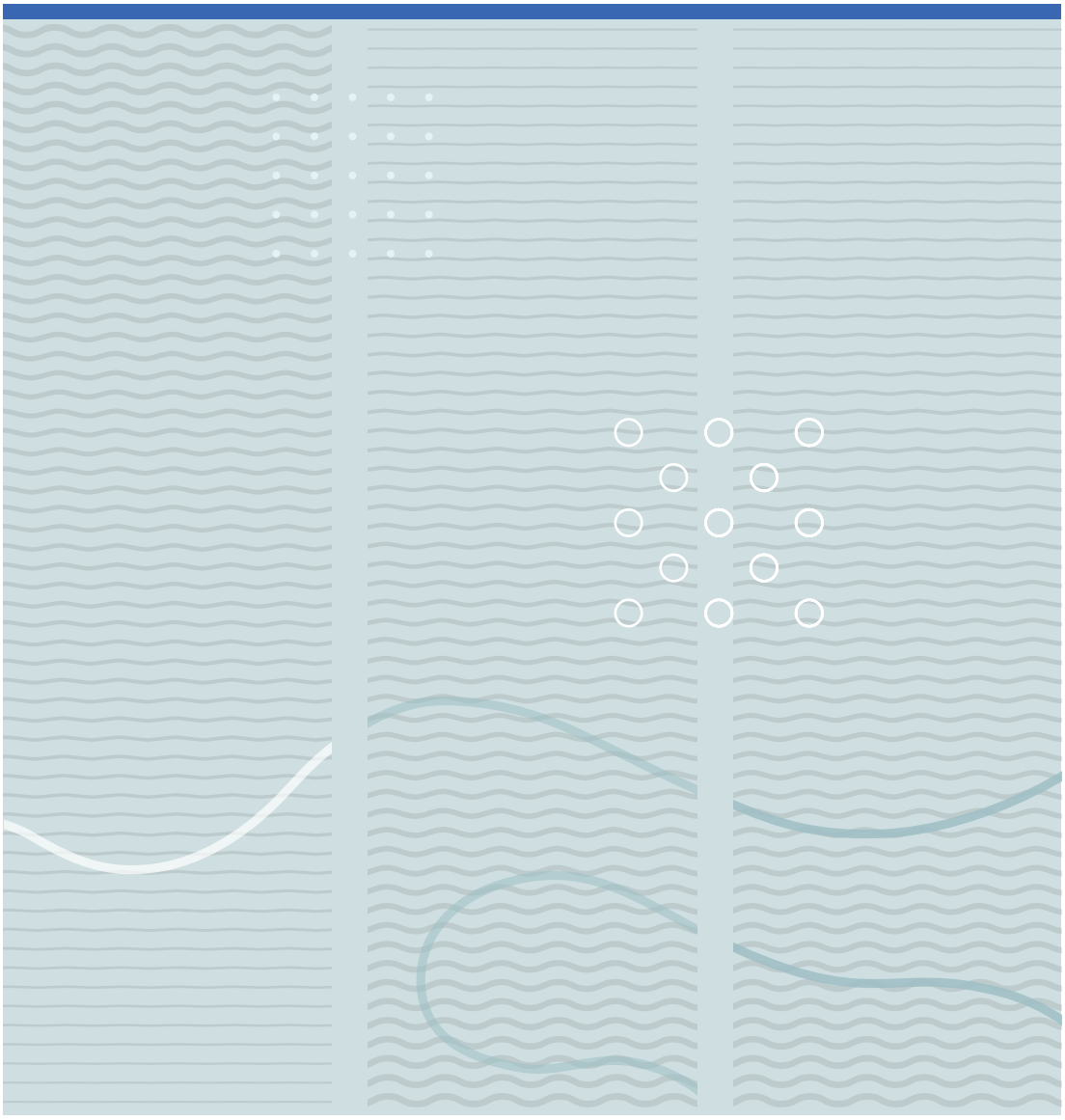
Tone Langjordet Johnsen

Work and Subjective Health Complaints

Exploring the role of knowledge, expectancies and social support



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Exploring the role of knowledge, expectancies and social support

A PhD dissertation in
Person-centred Health Care

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Preface

This thesis is a work originating from, and motivated by, my years of working with both clinical and workplace interventions targeting non-specific musculoskeletal complaints and in the later years also mental health complaints. My work has primarily involved leading different courses and sessions for employees. The main purpose of these sessions has been to distribute evidence-based knowledge about health complaints most of us encounter during life and thereby reduce uncertainty and increase coping expectancies. My work experience has given rise to several questions motivating me to further explore this field.

My work in this area started in 2007, at an outpatient clinic established through The National Return to Work program, “Raskere tilbake” (RT). RT was a scheme initiated by the government, together with the employer and worker organizations. The aim of this scheme was to reduce sick leave through prevention and early intervention, and musculoskeletal and mental health complaints were prioritized areas. The outpatient clinic where I worked initially targeted musculoskeletal complaints, but was in 2008 co-located with a new RT intervention for employees experiencing common mental disorders. This allowed for close collaboration between clinics targeting health complaints with a high degree of comorbidity. Together we developed a joint course for all persons referred, regardless of diagnosis. The course comprised evidence-based information about both musculoskeletal and mental health complaints, emphasizing that these health complaints are a part of life, frequently co-occurring, and in most cases naturally subsides.

The close collaboration between one clinic rooted in physical medicine and one clinic rooted in psychiatry contributed to new and interesting experiences, but also revealed

some challenges. Generally, employees referred with a mental disorder as the primary diagnosis had more complex problems and a longer sick leave duration than employees referred primarily due to musculoskeletal complaints. Knowing that long-term sick leave usually have a negative impact on the return to work process and that work generally is good for our mental health; this observation was the origin of my main research question. Can we, by addressing mental health complaints at an even earlier stage, reduce some of the negative consequences and help employees stay at work? atWork, an intervention using the workplace as an arena for health promotion, had shown positive results on sick leave and health beliefs when targeting musculoskeletal complaints. Would adding information about mental health complaints to the intervention increase the positive effects?

In my master thesis, I started to explore this question. With a randomized controlled pilot trial I investigated if distributing evidence-based knowledge about mental health complaints at the workplace could change participants' beliefs about mental health complaints. Also, the aim was to evaluate how this type of group workplace intervention was perceived by employees. Compared to the control group, there were positive changes in participants beliefs about mental health complaints in the intervention group, in line with the message distributed in the intervention. The majority of the participants was satisfied with the intervention, had learned something new and would recommend the intervention to other workplaces. At this point, clinical experience and the pilot study indicated that this type of intervention was perceived as useful by many people. However, we lacked knowledge about the effect of such an intervention on sick leave and other important health and social outcomes, investigated through a study with a robust design. This is the main aim of my doctoral thesis.

Acknowledgements

The years as a PhD-candidate is certainly something out of the ordinary, and there are many people I would like to thank for making these years into the most rewarding, and challenging, ones of my career. Without your help, support, and generosity, this thesis would not have seen the light of day.

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would not have had this opportunity if it wasn't for you! Thank you for introducing me to Torill, Hege, and everyone else in the research group "Stress, health and rehabilitation" at Uni Research Health, and for ensuring a robust research environment for me to grow.

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Abstract

Subjective health complaints (SHC) are common in the working population, with prevalence rates as high as 90 % during the past month. The intensity of SHC ranges from normal and tolerable complaints to more severe complaints that may affect our ability to function as usual at work, and musculoskeletal and mental health complaints are the most frequent reasons reported for sick leave in Norway. Back pain is the largest single cause, but in the last decade, sick leave due to mild and moderate mental disorders has had a rapid increase. Generally, sick leave periods for mental disorders tend to last longer than for musculoskeletal disorders. Furthermore, mental disorders account for one-third of all disability benefits, with anxiety and depression being the diagnostic groups contributing to most of the lost working years. To be excluded from the workforce seems to have a general negative impact on health, especially on mental health. Preventing workplace exclusion due common health complaints is an important goal, and the workplace is an important arena for prevention.

The high prevalence rates of SHC indicate that we should accept these health complaints as a part of our normal life. Our longstanding efforts to prevent the occurrence of SHC have not produced the desired effects. It could be argued that our endeavor to understand and explain these health complaints, mostly within a biomedical perspective, has led to a medicalization of normal health complaints. The course of medicalizing common health complaints may disempower individuals and decontextualize experiences, and further be harmful and costly for both individuals and societies. Thus, there is a need to transfer more knowledge to the public about the normal presence of health complaints in healthy people and focus on interventions aiming to reduce the *negative consequences* of common health complaints.

Reducing the negative consequences of non-specific musculoskeletal complaints, such as uncertainty, negative response outcome expectancies, maladaptive beliefs, and workplace exclusion, was the idea behind atWork. atWork is an intervention using the workplace as an arena to distribute evidence-based information about commonly experienced health complaints. The development of atWork was based on years of research and clinical experience, which indicated that the information given to back pain patients in a clinical intervention based on a non-injury model could be beneficial for people at a much earlier stage. In the first atWork trial, the intervention was effective in reducing sick leave and maladaptive beliefs about back pain. atWork has subsequently been modified also to target mental health complaints, aiming to increase the positive effects. A new trial was designed to explore if the Modified atWork intervention (MAW) could increase the effects on sick leave and other health-related outcomes compared to the Original atWork intervention (OAW).

The main purpose of this thesis was to investigate the role of expectancies, beliefs, and social support for health and sick leave. The Cognitive Activation Theory of Stress, which emphasizes the role of individual experiences and expectancies for health outcomes, was used as the main theoretical framework. The thesis comprises three papers, containing quantitative data retrieved from two cluster randomized controlled trials ("The first atWork trial", clinicaltrial.gov: NCT00741650 and "The second atWork trial", clinicaltrials.gov: NCT02396797). The first atWork trial was conducted from 2008-2010, in two Norwegian municipalities. Baseline questionnaire data from this trial (n=1722) was used in paper I. The second atWork trial has been the main research project in this thesis and was conducted from 2014-2016. Baseline questionnaire data (n= 957) from this trial was used in paper II. Paper III includes both register data (n=92) and baseline and follow-up questionnaire data (n=637) from the second atWork trial.

In paper I, the association between substantial anxiety and/or depression and different work and health variables were examined. Having a high number of substantial SHC and a high degree of no and negative response outcome expectancies (feelings of helplessness and hopelessness) were associated with anxiety and depression among municipal employees. Experiencing a high number of SHC was consistently the factor having the strongest relationship with anxiety and depression.

In paper II, the aim was to explore if directive and nondirective social support were associated with different health and work variables. To obtain this aim, the psychometric properties of the Norwegian version of the Social Support Inventory (SSI) were explored. The Principal Component Analysis confirmed that SSI loaded on two factors, representing directive and nondirective social support. This allowed us to explore if this distinction in social support was relevant for health and work variables. Nondirective social support from coworkers was associated with reporting lower scores on musculoskeletal and pseudoneurological complaints, higher job satisfaction, lower job demands, and higher job control. Directive social support from coworkers had the opposite relationship with all outcome variables. However, this relationship was not statistically significant for pseudoneurological complaints.

In paper III, the possible difference between the MAW and the OAW on sick leave and other health related outcomes was examined. The MAW did not have a different effect on sick leave compared to the OAW in kindergarten employees. Both groups had a reduction in faulty beliefs about back pain, but compared to the OAW group, the MAW group had a smaller reduction for two of the statements. This was the statements concerning slipped discs and imagining identifying the cause of back pain. Compared to the OAW group, the MAW group had a more positive change for one of the statements concerning depression, where participants in the MAW group believed less in the

hereditary nature of depression after the intervention year. Only the MAW group received a workplace session where the topic was mental health complaints, but both groups had some positive changes in beliefs about mental health complaints. However, the OAW group also had some negative changes, moving in the direction of more stigmatizing beliefs. Participants in the OAW group reported receiving more nondirective social support from coworkers after the intervention year. The MAW group also reported receiving more nondirective social support, but the change was not statistically significant.

The findings of this thesis demonstrate that expectancies and social support are important for health. It further demonstrates that both versions of the atWork intervention are effective in changing employees' beliefs about common health complaints. atWork also seems to encourage more nondirective social support of coworkers. However, modifying the intervention to also include mental health complaints did not have a different effect on sick leave and other health related outcomes compared to targeting only musculoskeletal complaints. The two intervention groups had near equal sick leave rates for the year after the intervention was introduced, indicating that targeting mental health complaints at the workplace did not lead to more exclusion from work either. Both versions of the intervention were feasible in the workplace.

Keywords: Subjective health complaints, mental health complaints, workplace intervention, health promotion, coping, social support, randomized controlled trial

List of papers

Paper I

Johnsen, T. L., Indahl, A., Eriksen, H. R. and Tveito, T. H. Work and mental complaints: are response outcome expectancies more important than work conditions and number of subjective health complaints? Journal of Occupational Rehabilitation, 2016. 27(2): p. 218-227.

Paper II

Johnsen, T. L., Eriksen, H. R., Indahl, A. and Tveito, T. H. Directive and nondirective social support in the workplace – is this social support distinction important for subjective health complaints, job satisfaction, and perception of job demands and job control? Scandinavian Journal of Public Health, 2017. doi:10.1177/1403494817726617

Paper III

Johnsen, T. L., Eriksen, H. R., Baste, V., Indahl, A., Odeen, M. and Tveito, T. H. Effect of reassuring information about musculoskeletal and mental health complaints at the workplace: a cluster randomized trial of the atWork intervention. Accepted for publication by Journal of Occupational Rehabilitation.

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Central abbreviations

SHC – Subjective Health Complaints

PCHP – People-Centred Health Promotion

BI – Brief Intervention

NAV – Norwegian Labor and Welfare Administration

RCT – Randomized Controlled Trial

CATS – Cognitive Activation Theory of Stress

SDT – Self-determination theory

MAW – Modified atWork intervention

OAW – Original atWork intervention

Contents

1. Introduction and definitions

This thesis focuses on health complaints commonly experienced among employees, which frequently interfere with our ability to function optimally at work. In Norway, the main reasons reported for sick leave are health complaints without clear pathophysiological explanations [1, 2], and we struggle with how and where best to handle these health complaints [3]. Sick leave due to mental health complaints have especially emerged as an increasing challenge [1, 4], although studies examining prevalence find limited evidence to suggest an increase in mental disorders [5-9]. The workplace may be an important arena to target these health complaints, both in regards to influencing employees' beliefs and expectancies at an early stage, and to influence general understanding and support at the workplace. This thesis explores the role of employees' response outcome expectancies, their beliefs about common health complaints, and the characteristics and delivery of social support from coworkers, for health and sick leave.

The topic of this thesis is health complaints without a clear pathophysiological explanation, and in the literature, such health complaints have several different labels. Frequently used terminology is 'somatization disorders', 'medically unexplained symptoms' (MUS), 'medically unexplained physical symptoms' (MUPS), 'complex symptoms syndrome' (CSS), 'functionally somatic syndromes' (FSS), 'bodily distress syndrome' (BDS), or 'subjective health complaints' (SHC). This thesis will use the term 'subjective health complaints'. SHC is a neutral term aimed to avoid the assumption of disease, causality, and diagnoses [10]. It accentuates the unavoidable subjectivity of the complaints, thereby acknowledging pain and complaints as real even when they do not have a direct medical explanation [11]. Furthermore, SHC includes both somatic and mental health complaints, health complaints which frequently co-occur [12].

This thesis is centered on both somatic and mental health complaints and the combination of these. Among different SHC, the emphasis will be on musculoskeletal and pseudoneurological complaints. Pseudoneurology is a term used by the American Psychiatric Association and refers to distressing physical health complaints not explained by specific neurological or medical disorders, as well as feelings, thoughts, and behaviors in response to these health complaints [13]. Within musculoskeletal complaints, the focus is mostly on back pain, and within pseudoneurological complaints, the focus is on anxiety and depression. The main research project in this thesis involves exploring the effect of a workplace intervention modified to include mental health complaints, in addition to back pain. Thus, the thesis has mental health complaints as the most central topic.

1.1. Health

Health is defined and operationalized in different ways, and the word health may mean different things in different cultures, situations, and to different people. When developing interventions aiming to influence health in any way, it is thus important to decide on a definition of health, and also describe how one aims to influence and measure health.

The World Health Organizations (WHO) have agreed on the following definition; *"Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity"* [14 p1]. This definition was formulated in 1948, immediately after World War II, and was groundbreaking at the time. WHO's health definition has however not been altered since and is much debated. One might argue that one should not confuse the vision of the health definition with objectives, but the definition has been broadly criticized for the absoluteness of the word 'complete' in relation to well-being. Some claim this requirement suggest that most of us are unhealthy for the lager

part of our lives, and that it leads to a medicalization of conditions not previously viewed as health problems [15, 16]. It may also affect health policies as the definition of health determines the outcome measures of healthcare and interventions [15].

There have been many attempts to redefine the WHO's definition of health. The Ottawa Charter [17], an international agreement signed in Ottawa at The First International Conference on Health Promotion, is the most known proposal [15]. The Ottawa Charter's description of health also includes the physical, mental, and social domain, but furthermore describes health as a resource for everyday life, not the objective of living. It views health as a positive concept emphasizing social and personal resources as well as physical capacities, focusing on the individual's ability to adapt to and cope with everyday life [17]. Hence, the Ottawa Charter's definition of health corresponds well with the topic of this thesis.

In this thesis health is viewed as a subjective construct, based on individual experiences and life situations, and health complaints are measured by the Subjective Health Complaint Inventory [18]. A person's health, especially those dimensions of health reaching beyond curative medicine, is defined by the individual and not by the doctor. Health is not fixed, but varies in time and for every individual, and can be influenced through learning, coping, adaptation and support. This thesis incorporates the physical, mental and social domain of health, and acknowledges the interaction between theses domains. Even though health is viewed as a subjective construct, individual health may be enabled or inhibited by social context. Our health and health choices are commonly influenced by the culture, environment, and circumstances in which we find ourselves. Furthermore, health is viewed as a positive and holistic concept. A positive health view refers to a focus on the individual's personal resources and well-being, despite potential health complaints, illness, or disease. A holistic health view refers to a focus emphasizing

the connection and mutual influence between body and mind, as opposed to unilaterally concentrating on specific body parts. This view is different from the biomedical perspective, which has dominated healthcare for the past century. The biomedical model is relevant in the management of specific diseases and strengthened by a wealth of supporting biological findings. However, the biomedical model can also be criticized as biological reductionism [19]. There are clearly health perspectives the biomedical model do not reflect, and situations where other models are more appropriate.

1.2. Disease and illness

Health complaints and disorders are commonly explained as a result of illness or disease. As with health, there is no complete consensus on the definitions of either disease or illness, and the words are often used interchangeably. Conceptually, they are not the same. Disease comes from a biomedical perspective, and is generally viewed as a biological event occurring as a result of physiological, bacteriological, biochemical, or anatomical changes, or a combination of these [20]. Illness, on the other hand, may be described as a human event and not a biological one, where the environment plays an important role [20]. Barondess defines illness as an *"array of discomforts and psychosocial dislocations resulting from interaction of a person with the environment. The environmental stimulus may be a disease, but frequently is not"* [20 p375].

The emphasis of this thesis is on illness, and not on disease. Illness may be explained as a person's experience of being ill, where the complaints and discomfort cannot be explained by directly objective medical findings. Such health complaints do not fit into the biomedical perspective [21-23], but the biomedical discourse is nevertheless frequently interfering with the way we understand and respond to health and illness. When the intensity of health complaints is high, and provokes fear, uncertainty or impairment, it is natural to seek help and comfort. But when the healthcare system is

rooted in a biomedical paradigm, and the presented health complaints have no or too little pathology to explain them, healthcare services struggle with how to handle these cases [3, 24]. This may result in patients experiencing that their credibility is at stake [25, 26]. A recent review suggests that the understanding of these health complaints may be supported by increased awareness to the context in which complaints emerge and to the dialogue where complaints are communicated and interpreted [11]. This underpins the importance of a people-centred approach to practice [11].

1.3. People-centred practice

In the later years, there has been an increased focus on the healthcare user's perspective of care and how the health system better can respond to healthcare needs. In a policy framework for people-centred healthcare, the WHO states that the global burden of disease, in larger parts of the world, is shifting from infectious diseases to chronic conditions. This is altering population health patterns and outcomes, and challenging today's health systems [27]. WHO claims that the major challenge is that most health services operate within a biomedical paradigm, which is disease-oriented and doctor driven. Therefore the health services do not optimally meet the requirements originating from the shift in disease burden [27]. The policy framework for people-centred healthcare stresses that health systems need to change. It highlights people-centredness as a key attribute for healthcare quality, and people-centredness has accordingly become an important global issue [27]. The vision of people-centred healthcare incorporates health systems serving individuals and communities with trusted care, meeting people's needs in a humane and holistic way, and involving the healthcare user in decisions regarding their own health. It is characterized and underpinned by values of respect for persons and their right to self-determination, and enabled by cultures of empowerment [27].

The WHO further emphasize that there is a need to go beyond patient-centredness and the clinical setting. This is because high quality and holistic healthcare do not meet the broader challenge of recognizing that people need to be informed and empowered to protect and promote their own health even before they find themselves in a patient setting [27]. Reaching out to inform and empower persons to prevent them from becoming patients, captures the essence of this thesis. The explored interventions use the workplace as an arena for health promotion. They are based on clinical practice and research, but moved out of the clinical care setting, and are aimed at informing and empowering persons at an early stage.

The Ottawa charter describes health promotion as *"the process of enabling people to increase control over, and to improve, their health"* [17 p1]. In addition to health literacy, WHO states that *good governance for health* and *healthy cities* are key elements of health promotion [28]. This implies that policy makers across all government departments make health a central part of government policy and that strong leadership and commitment are present at all levels down to the municipal level [28]. This is without question a crucial element for the ability to develop and implement good health promotion interventions. However, Raeburn and Rootman argue that health promotion should begin from the perspective of people's experiences [29]. They state that health promotion, above all other actions, is an intensely human and personal area [29]. With this viewpoint, they promote a more people-centred approach to health promotion.

People-centred health promotion (PCHP) means that health promotion is driven by a perspective that starts with the subjective experience of ordinary people, in people's everyday life and ordinary context [29]. What people do, how they think, feel, and interact with others, profoundly affects health [29]. A person's health, and experienced health complaints, has an impact on one's ability to work, be with family and friends,

and to participate in a range of other activities. This again adds up to the everyday environment and functioning of the communities we operate in, such as the workplace. The concept of empowerment is a fundamental principle in PCHP [29]. There is no consensus on how to define empowerment and the term can be interpreted both at the psychological, community, and societal level. But essential in this principle is the notion that people build their own sense of personal strength through determining their own destiny, and have the material and personal resources to do so in a supportive environment [29]. This emphasizes the need to focus on individual factors (personal resources), in addition to structural factors (supportive environments).

This thesis focuses on SHC among employees. When reviewing the literature for risk factors for SHC among employees, it is obvious that organizational factors (e.g. psychological demands) play an important role [30, 31]. However, this thesis will mainly be centered on individual beliefs and coping expectancies, in addition to social support. The intervention explored in this thesis is aimed at improving health literacy and decision-making skills to promote independence, empowering persons and workplaces, creating supportive environments, and supporting persons to make informed decisions about their own health and healthcare needs. The focus is on doing 'with' people rather than 'to' or 'for'. By using a nondirective approach and seeing each person as an expert on their own health, the aim is to help employees and workplaces to cope with SHC.

2. Background and problem area

2.1. Subjective health complaints

The prevalence of SHC is high in the general population. During a 30 day period, approximately 90 % of the population in Norway report one or more SHC [18, 32]. The prevalence is also high in other parts of the world [33-36], and SHC are the most frequent reasons reported for encounter with the general practitioner [37-39]. Contrary to popular beliefs, SHC are not unique to industrialized societies characterized as fast-paced, and filled with modern life stressors. These health complaints are also highly prevalent among people living in rural primitive areas practicing a lifestyle described as "close to nature" [35, 36]. In a confined medical context the notion of health complaints as a normal phenomenon is often neglected [11], but research indicates otherwise. Experiencing health complaints seems to be a normal part of everyday human life, regardless of different societies and living conditions [22, 35, 36, 40]. Preventing SHC from occurring is thus also difficult, and may not even be possible. Interventions aiming to prevent *the negative consequences* of SHC, such as work exclusion [41], have shown promising results [42-45]. A focus on the prevention of negative consequences may be more helpful and beneficial than the focus on prevention of SHC itself [46, 47].

SHC comprise a broad range of health complaints, such as musculoskeletal complaints (e.g. back and neck pain), pseudoneurological complaints (e.g. anxiety and depression), gastrointestinal complaints (e.g. stomach pain and gas discomfort), allergy (e.g. asthma and eczema) and flu (colds and coughing) [18]. The following sections will primarily be centered on mental health complaints, but also includes musculoskeletal complaints. Together, musculoskeletal and mental health complaints account for over 50 % of the sick leave in Norway [1].

The global burden of mental disorders is large [9, 48], and increasing attention is paid towards this area. In the Organization for Economic Co-operation and Development (OECD) countries, a key issue in social policies and for the well-functioning of labor markets is the burden of mental health complaints [49]. In addition to the direct healthcare costs, mental disorders generate high rates of sick leave, disability benefits, and unemployment, and leads to reduced productivity at work and loss of potential labor market resources [49]. The relationship between work and health extends far beyond the economic consequences, and the burden of mental disorders affects the well-functioning of societies, workplaces, and individuals. The high load of mental disorders is a consequence of their high prevalence. However, little is known about the underlying reasons for why mental disorders have become one of the leading new social and labor market challenges [49]. A straightforward explanation would be an increase in the prevalence of mental disorders. However, that does not seem to be the case. Most studies examining prevalence find limited evidence to suggest an increase in mental disorders over time [2, 5-9]. An alternative explanation may be that the tolerance towards accepting differences in social skills, work productivity or reduced productivity has decreased [49]. It may also be that an increased individual, societal, and medical awareness of health complaints that have always been there but previously not really been acknowledged or recognized, has led to more exclusion from the workforce [49].

At any given moment, approximately 20 % of the working population suffers from a mental disorder [49], and the lifetime prevalence has been estimated to be close to 50 % [50]. The high incidence rates imply that the risk of experiencing a mental disorder during working life is high and likely to touch all of us, whether we face direct challenges ourselves or are impacted through our coworkers, families, or friends. However, it is important to note that most people experiencing mental disorders are affected in a mild-to-moderate degree [51]. Depression and anxiety disorders are the most prevalent mental disorders [50], thus also referred to as common mental disorders [52]. Common

mental disorders often affect a person's emotional, social, and cognitive functioning, and hence are likely to have negative impact on both work and other life domains for the individual affected [49, 53, 54]. Negative individual consequences include reduced quality of life [53], negative affect [55], perceived stigma [56] and work exclusion [57]. Identified risk factors for anxiety and depression among employees include stressful life events [58], irrational beliefs [59], poor health [31], high psychological job demands, low social support, job insecurity and job overload [30, 31].

There has been a major change in the treatment of, and openness about, mental disorders in the last decades, but stigma and self-stigma are prevalent across the OECD countries [49]. There is evidence that psychoeducational treatment and cognitive behavioral therapy for risk groups and individuals in the early stages of common mental disorders may be effective [60-63], but some studies argue that it is common not to seek help before mental disorders are well advanced or not to seek help at all [64, 65]. Stigma and lack of knowledge may be contributing factors. Providing information about mental health and disorders presents an opportunity to overcome stigma and fears, and create greater confidence in seeking help if needed and also reaching out to others [66, 67]. Workplace interventions are considered to be useful because of their potential to reach a large part of the population. Systematic reviews of workplace interventions aimed at reducing or preventing anxiety and depression symptoms conclude with small but overall positive effects in the workplace [68-70]. There is, however, a large variability in the content of reviewed workplace interventions, but generally, there is stronger evidence for the effect of interventions based on cognitive behavioral techniques [68, 69]. With regards to organizational outcomes, such as sick leave, Harvey et al. [71] conclude in their meta-review that the impact of workplace interventions in this area is unclear. In a Cochrane review of workplace interventions to prevent work disability, van Oostrom et al. [72] note that significant methodological limitations in primary research

limit the ability to draw valid conclusions for the overall effectiveness of workplace interventions on mental health.

Even though mental health complaints is considered to be a major new health and social challenge, musculoskeletal complaints are still the most commonly reported SHC [2, 73], and the prevalence seems to be rather stable over time [74]. Up to 85 % of musculoskeletal complaints are of a non-specific nature [75]. Non-specific musculoskeletal complaints refer to pain and discomfort where there is identified no specific cause or pathological explanation for the pain, and back pain is the most commonly experienced non-specific musculoskeletal complaint [76, 77]. In Norway, musculoskeletal complaints are the most frequent reasons reported for sick leave, and back pain is the largest single cause [1]. A multitude of treatments have been developed for the prevention of non-specific back pain, but without good results [76]. In the European guidelines for management of non-specific back pain, it is recommended to give adequate information and reassurance to stay active despite the pain [78]. This is the foundation of a non-injury model, a framework developed for the understanding and treatment of non-specific back pain [42]. In a non-injury model, as opposed to the biomechanical perspective of an injury model [79], the focus is on coping with the consequences of back pain [42]. Where the traditional injury model is based on the assumption that one should avoid specific activities because it may injure the spine, a non-injury model views the spine as a robust structure, more than capable of handling the loads of everyday activity [42, 80]. Back pain can be very painful and troublesome, but will in most cases naturally subside [81], and fear of pain has been found to be more disabling than the pain itself [82]. A brief clinical intervention (BI), advocating confidence in the robustness of the spine and the ability to resume normal activity (a non-injury model), has been among the most successful approaches in increasing return to work for employees with back pain [42, 43, 83-86]. Cognitive workplace interventions based

on a non-injury model have also produced promising results in reducing sick leave [44, 45, 87].

There is often a co-occurrence between back pain and common mental disorders, and the comorbidity of these conditions is well recognized [12, 88-91]. Persons experiencing back pain are found to be more likely to report common mental disorders than persons without back pain [91, 92], but the causality in this relationship is not clear, and it seems to work both ways. Back pain may precede common mental disorders, and common mental disorders may precede back pain [93]. Additionally, it should also be considered that musculoskeletal and mental health complaints are very common and might occur at the same time without the one necessarily being the cause of the other. The relationship between back pain and common mental disorders are in other words multifactorial by nature, including shared neurobiology, genetics, cognitive influences, and environmental factors [88, 94]. The consequence of the overlap between back pain and common mental disorders is important to consider as it may increase symptom load, worsen prognosis and increase the risk of disability [95]. Generally, the co-occurrence of back pain and common mental disorders is associated with a greater burden for both society and the individual than either condition alone [96, 97]. When developing interventions one should consider the high comorbidity between these common health complaints [12].

One possible explanation for the high degree of comorbidity between different SHC is a sensitization of psychobiological mechanisms, maintained by sustained activation [98, 99]. The biological component in this mechanism refers to an increased efficiency in neural circuits, due to a change in the synapses from repeated use [100]. Sustained high levels of arousal may lead to this sensitization process, where the same signals can produce more and more amplified perceptions [99]. The cognitive analogue also

involves an attentional bias, where thoughts, information, and uncertainty related to experienced health complaints are given priority [101, 102]. The latter is referred to as the “night and day watch”, where constant rumination and worry leads to a sustained stress activation and thereby becomes a threat to both physical and mental health [101]. A sensitized person may constantly scan the environment for information related to experienced health complaints, and thereby detect fear-related stimuli at a lower threshold than others [101]. Targeting people’s fears, uncertainty and maladaptive illness perception may be a central aspect of hindering unnecessary rumination and worry in regards to SHC.

In order to understand and cope with experienced health complaints, individuals form cognitive models based on common-sense beliefs concerning their own illness [103, 104]. The cognitive models are based on current knowledge, previous personal experiences, or experiences of others having similar complaints (e.g. coworkers) [105], and commonly referred to as illness perceptions. The formation of illness perceptions is an individual process and persons with the same illness can have widely different perceptions about their condition and thus also different coping strategies [105]. Illness perceptions may furthermore be adaptive or maladaptive, guiding us towards advantageous strategies for recovery or leading to more disadvantageous strategies [106]. If a person’s knowledge about experienced health complaints is scarce, or based on false information, this limits the accuracy and complexity of the cognitive model they build and lead to maladaptive illness perceptions [105]. In back pain, maladaptive illness perceptions are associated with poorer clinical outcomes [107]. In people sick-listed due to common mental disorders, maladaptive illness perceptions are associated with uncertain and negative return-to-work expectancies [108], which again are predictors for benefit recipiency [109]. Generally, maladaptive and negative illness perceptions are related to negative health and work outcomes [110-112]. However, there is a large potential to influence peoples’ illness perceptions, because the process of actively trying

to understand health complaints is dynamic [105]. Changes in information, symptoms, experiences, and diagnosis may change the illness perceptions, and consequently alter emotional responses and coping [105, 113].

The high prevalence, and the large negative health and social consequences of musculoskeletal and mental health complaints are arguments for targeting these health complaints broadly. Furthermore, it can be argued that there is a need for a general demedicalization. Medicalization is a concept that has received much attention, and the large body of literature on this topic has loosely been called the “medicalization thesis” [114]. The medicalization thesis may be interpreted differently by various authors, but there seems to be a general agreement that medicalization refers to the process where more and more aspects of normal life become defined as medical problems, described using medical terms, understood through the adaptation of a medical framework, or treated with a medical intervention [115, 116]. In the last decades, there has been a widespread expansion of medical jurisdiction, an expansion of thresholds for existing diagnostic categories and a large increase in new diagnoses [117, 118]. A testimony to this trend is the massive increase of diagnoses in the American Psychiatric Association’s Diagnostic and Statistical Manual of Mental Disorders [13]. However, medicalization does not specify if the changes are good or bad, but a commonly expressed concern is “overmedicalization” [119]. Medicalization and overmedicalization is furthermore not strictly a medical procedure but describes a social process that also is influenced by culture and social conditions [120]. It is context dependent and involves actors like the media, the pharmaceutical industry, and insurance companies [121]. When healthcare becomes subject to market forces, the consumers of healthcare also become influential players [121]. The society’s norms and values influence our perception of health, interpretations of problems as medical, and which professionals to consult with problems perceived as medical [120]. Overmedicalization, where normal behavior and common health complaints are medicalized, is considered to be harmful and costly for

both individuals and societies and may disempower people and decontextualize personal experiences [122]. Barksy and Borus argue that health professionals should greet the process of medicalization with considerable caution and educate the public more about the normal presence of health complaints and bodily distress in healthy people [123].

2.2. Work and health

Having a job gives us an entrance to the communities we live in and allows us to contribute to those communities. It provides social contact, meaning, and purpose in life, gives status, identity, and the resources we need to do other things we value [124]. In other words; work is more than an income, and if you lose your job it may also have an impact on your health or wellbeing. Work provides opportunities for personal growth, development, and participation in a social network. Several studies have concluded that work is generally good for our health, and especially for our mental health [125-130]. The recognition of work as an important positive factor in people's life and health is not new; the Greek philosopher and physician Claudius Galen, dated as far back as 192 AD, claimed that nature's best physician was work and that work was crucial to human happiness [127]. Sigmund Freud (1961) argued that people need two things, love and work [131], and Thomas Szasz (1974) referred to work as the closest thing medical science had to a genuine panacea [132]. The significance of work is, in other words, a thing clinicians from very different theoretical standpoints have agreed upon [133]. However, the relationship between work and health is influenced by many factors and is not at all straightforward.

Work is generally good for our health [125, 129], but it is also important to acknowledge that not all work conditions are health promoting, and that some workplaces may be

harmful [134]. In most workplaces, situations having a possible negative effect on the health of employees may occur. WHO divide workplace health hazards into physical hazards, like chemical exposure or occupational injuries, and psychosocial hazards [134]. Traditionally, the focus of workplace health and safety has been on physical hazards, but in industrialized countries, those hazards have in time become more controlled [134]. Also, the majority of work tasks have shifted from manual towards non-manual work [134]. Consequently, the psychosocial work environment has grown into a more pressing issue than before [135]. Physical hazards are still a large challenge in some workplaces, but the psychosocial workplace hazards are the focus of this thesis.

Psychosocial workplace hazards, commonly referred to as work stressors, are related to the psychological and social conditions at the workplace. A vast amount of research has shown that certain psychosocial job factors may increase the risk of illness and disease [136, 137]. High job demands [138], low job control [138], lack of social support and autonomy [138, 139], and an effort-reward imbalance [140] are the most recognized conditions having a negative impact on employees' health, including increased risk of common mental disorders [136, 141]. Job insecurity, imbalance between work and family, atypical working hours, role stressors, temporary employment status, bullying, low organizational justice, organizational change and poor quality leadership are other aspects of work where there is evidence for the negative impact on mental health [136, 142, 143]. Factors such as a supportive work environment, economic security, job satisfaction, success at work, social justice and high job control may promote mental health and wellbeing [144-147]. As concluded by Grzywacz and Dooley, "bad jobs" may lead to reduced health, while "good jobs" may lead to improved health [148].

Even though some workplace factors may contribute directly to mental distress, repeated research demonstrates that the stress of being excluded from the workforce

is more harmful to health and wellbeing than the exposure to work-related stress [149, 150]. In their systematic review, Van der Noordt et al. found strong evidence that employment reduced the risk of depression and improved general mental health [129]. Work participation is also associated with lower mortality rates [151, 152]. We do not know if there is a causal relationship between not working and poor health. A person may for instance experience optimal health and wellbeing after retirement, but some of the factors promoting health among employees may need to be present. A good social network, financial security, and the ability to participate in rewarding and meaningful activities, may maintain or even enhance health after leaving the workforce [153]. In some studies, relief from work stressors, or the burden of working with a long-lasting illness, are found to improve mental health and fatigue among retirees [154, 155]. However, the difference between exiting the labor force by choice or being involuntary exclude is probably significant for health outcomes [153].

The relationship between employment and health may be bi-directional, meaning that the positive health effects of employment may be affected by healthier people being more likely to get and stay employed [129]. A recently published cohort study, from a large and representative sample of Norwegian men, showed that men with mental health problems at military enrollment (18 to 20 years old) had increased probability of both sick leave and disability benefits compared to men not having mental health problems [156]. This supports the hypothesis that healthy people are more likely to stay employed. However, the causality in the direction between mental disorders and unemployment probably works both ways. Pre-existing mental disorders may affect employment status, and labor market exclusion may affect mental health. This underpins the importance of focusing both on interventions to reduce the negative effects of mental disorders on work ability and on interventions to increase inclusion of persons with mental disorders in the labor market [157]. Treatment alone, and improvement in its availability, have not resulted in a corresponding decline in work

exclusion [124, 158]. To promote inclusion it may be necessary to move beyond just treating individuals and towards creating workplaces where one is not excluded despite experiencing mental health complaints. Because work may be an important factor in recovery for persons with mental disorders, employment should be seen as a priority for health [159]. Traditionally, when people experience mental health complaints, the focus has been on changing people to fit in [124]. This is done by trying to reduce symptoms that may pose an obstacle for work and by strengthening the affected person's confidence before returning. However, for people with physical challenges, there is a tendency to change the environment by providing support and adjustments to accommodate the person affected. With regards to mental health complaints, much may be learned from the success in promoting work participation and inclusion for people with physical impairments [124, 159]. Individual Placement and Support (IPS) is an example of a model where persons with mental disorders are given individual help and services to find work and participate in the competitive labor market [160]. IPS has produced promising results in the American context [161, 162]. However, this model is dependent on a labor market that is willing to include individuals with mental health complaints, emphasizing the need to also focus on decreasing stigmatizing attitudes among managers and employees.

2.3. Sick leave

The sick leave rates in Norway are considered to be high compared to other western countries [163], but this statement is debated. Comparing sick leave rates between countries using different social security systems and ways of recording prevalence, incidence, and length of sick leave are problematic [164]. The prevalence of employees receiving sick leave benefits in Norway has been rather stable over the last decade, ranging between 5 and 7 % [165]. In Norway, a large proportion of the working age citizens is employed, indicating that people with health challenges and impairments to a large degree are a part of the workforce. A general high work participation rate, where

people with health challenges are a part of the workforce, may again influence the proportion of sick leave [166]. However, the economic cost of sick leave is high. Norway spends 4.8 % of its Gross Domestic Product on costs related to sick leave and disability [167], which is one of the reasons why reducing the sick leave rates is important. Reducing sick leave rates is however a comprehensive undertaking, as sick leave is a multifactorial phenomenon. Several explanatory models have been constructed to understand sick leave and the trajectories between work and work exclusion [168-171], but it is beyond the scope of this thesis to elaborate on these models.

The employment rate for people with mental disorders in Norway is similar to other OECD-countries [157]. However, the gap between work participation for healthy individuals and individuals with mental disorders is much higher than other countries also having high employment rates (e.g. Switzerland) [157]. In Norway, individuals with severe mental disorders are nine times more likely to be unemployed, and individuals with moderate mental disorders are three times more likely to be unemployed, compared to healthy individuals. This indicates that the inequalities in labor market participation because of mental health status are rather large in Norway. In the last decade, sick leave due to mild and moderate mental disorders have had a rapid increase, and the duration of periods of sick leave are also generally longer for mental disorders than for musculoskeletal disorders [1, 4, 172].

The majority of days lost to sick leave are due to diagnoses that are based on subjective reports from the patient, and musculoskeletal and mental health complaints are the major reasons reported for sick leave in Norway [1, 2, 173]. Persons with SHC are an important target group when aiming to reduce sick leave, and may also be the group where the possibilities of influencing sick leave decisions are the greatest. However, the sickness certification process is considered to be challenging when medical assessments

and tests do not indicate a disease [174, 175]. In these situations, the decision regarding sick-listing and diagnosis is often affected by the physicians' beliefs, attitude, and personality [176]. Maeland et al. found that one patient's condition might be classified as a psychological problem by one physician, as a musculoskeletal problem by another, or as a social problem by a third physician, consequently resulting in different recommendations for treatment and sick leave [176]. However, none of these classifications were wrong, which underlines the complexity, comorbidity and multifactorial nature of SHC [176].

Sick leave may in some cases be necessary for treatment and/or recovery. A focus on sick leave reduction is not the same as advocating that employees should be pressured to go to work no matter what. On the other hand, work may be an important part of a recovery process, and should not be avoided due to uncertainty or social anxiety. There may be negative health consequences of sick leave itself, especially if the sick leave period is long-term [149, 150]. The longer a person is off on sick leave, the smaller are the chances of that person ever returning to work [125, 177]. Being absent from the workplace could be a contributing factor in maintaining or aggravating SHC, especially mental health complaints, by encouraging avoidant behavior. Sick leave due to SHC is often patient-driven [175], and avoiding work, or other social arenas, may initially reduce symptoms or make health complaints feel less burdensome. However, it is important that the short-term positive effect of avoidance does not become more dominant in the sick leave decision than the negative long-term effects.

2.3.1. Legislation and actions for sick leave in Norway

Norway is known for its generous benefit system and has one of the most comprehensive sick leave compensation schemes in the world. Through this system, employees may receive 100 % of their salary in sickness compensation from day one of

sick leave and up to one year. There is, however, an upper limit to this compensation. Employees are entitled to a compensation of up to 6 G, which in 2017 totals 561 804 NOK (approximately 59 000 EUR). Employees who have participated in paid work during the last 4 weeks, and are members of the National Insurance Scheme, are entitled to such sickness compensation. The first 16 calendar days of sick leave are paid by the employer (employer's period). From day 17, and for the rest of the sick leave period, NAV covers the wage loss. If an employee is ill and unable to attend work, he or she is required to notify the employer of the absence as soon as possible. The employee is however not required to disclose medical information, meaning that the employer not is entitled to know the sick leave diagnosis.

During the employer's period, sick leave may be documented by a self-certification. The number of days an employee can use self-certified sick leave during a year varies from workplace to workplace. Generally, self-certified sick leave can be used for three consecutive days, four times during a 12-month period. If the workplace is a part of the Inclusive Working Life Agreement, self-certified sick leave may be used for eight consecutive days. A total of 24 self-certified sick leave days may be used during a 12-month period, and there are no rules concerning how many times during this period these days may be used. For sick leave reaching beyond the number of permitted self-certification days, a sick leave certificate from a healthcare professional, usually a physician, is needed to warrant economical compensation.

When writing a medical certification, the healthcare professional needs to provide a medical diagnosis from either the International Classification of Primary Care (ICPC-2) or the International Classification of Diseases (ICD-10). The primary diagnosis provided is the one written on the sickness certificate. However, it is common to have several health complaints at the same time, and secondary and tertiary diagnoses may be

provided, but this complexity is not visible in the statistics [176]. As earlier mentioned, the primary diagnosis appearing on the sick leave certificate may also be influenced by healthcare professional's beliefs, attitudes, and personality, emphasizing that sick leave statistics with a diagnosis focus should be interpreted with caution.

Sick leave compensation is generally provided to persons having impaired work function due to their own disease or injury. This means that not all diagnoses in the ICPC (e.g. Z – social problems) gives the right to sick leave compensation. There may, however, be cases where the right to sick leave is preserved even though the patient does not have a disease. When a person is hospitalized in an approved health institution, gets treatment where the physician states that sick leave is crucial for treatment effect, or participates in a work rehabilitation program, he or she will still have the right to sick leave compensation [178]. Rules may be necessary to prevent exploitation of the system, but these political decisions may also lead to employees seeking treatment for conditions that would have eventually disappeared on its own [11].

2.3.2. Recommended initiatives

In the report named "Mental health and work: Norway" [157], one of the recommendations from OECD is that Norway should take action to avoid sick leave for persons with mental health problems and instead solve the problems at the workplace. The Norwegian government, led by The Ministry of Health and Care Services and The Ministry of Labor and Social Affairs, increased the effort in this area through "The follow-up plan for Work and Mental Health (2013-2016)" [179]. This was a continuation of "The National Program for Mental Health (1999-2008)" and "The National Strategic Plan for Work and Mental Health (2007-2012)". Together, the programs from 1999-2012 contributed to improved services for people with mental disorders, greater openness, and better interaction and coordination of services between the work and healthcare

sector [179]. Nevertheless, the evaluation also showed that the challenges in this area still were large and that many people still encounter prejudice because of their mental health complaints [179]. “The follow-up plan for Work and Mental Health (2013-2016)” states that it is an important public health initiative to facilitate inclusion of persons with mental health complaints in the labor force, and further emphasize the importance of early intervention and prevention of sick leave [179]. A newly published strategic document from The Norwegian Directorate of Health and The Norwegian Directorate of Labor stresses the importance of developing interventions and collaborative methods underpinning the importance of work participation despite having health complaints [180].

2.4. The workplace as an arena for health promotion

As work is the activity occupying the main part of most peoples’ waking time, and work influence the physical, mental, social, and economic wellbeing of workers, the workplace is considered to be a priority setting for health promotion [181-183]. The workplace is also a setting where it is possible to reach a large part of the population. Population-based interventions are useful because they are provided to everyone at risk, including those with no risk, and are found to be the most cost-effective interventions [184]. In addition to reaching a large population, using the workplace as an arena for health promotion is considered to be advantageous by giving opportunities for providing social support and reinforcement to help maintain behavior change [185, 186]. The workplace is furthermore a practical arena, as it contains a concentrated group of people, usually at few geographical sites, who share a common purpose and culture. Individual and organizational goals are also generally aligned with each other [186].

There are conflicting results regarding the measurable impact of workplace health promotion interventions [70, 186-189]. This may be a result of the large variability in workplace health promotion programs, target areas, target levels and designs of studies. It seems to be a tendency that studies with poor methodological quality report larger effect-sizes than good-quality studies, and thus there is a need for more well-designed studies [188, 189]. Nevertheless, the conclusion based on the cited reviews [70, 186-189] is that workplace health promotion interventions provide a general but small positive effect on health variables and/or costs. Key factors for effective workplace health promotion practices are integrating programs into the organization's central operations, addressing individual, environmental, policy, and cultural factors affecting health and productivity, targeting several health issues simultaneously, tailoring programs to address specific needs of the population, attaining high participation rates, and rigorously evaluating outcomes [186, 190].

2.4.1. The atWork intervention

atWork is an intervention using the workplace as an arena for health promotion, and the effect of atWork is investigated in this thesis. The fundamental part of the atWork intervention involves the distribution of knowledge about common health complaints, to all employees in the workplace. The aim of the intervention is to enable employees and the workplace to cope with the consequences of common health complaints, by providing updated scientific knowledge. The atWork intervention acknowledges the combined influence of personal, social, and environmental factors on employees' health.

The atWork intervention origins from the Coastal Hospital (Kysthospitalet) in Stavern, Norway. This hospital has offered treatment to patients with back pain since the 1970s. For the last decades, this offer has primarily been based on a BI and a non-injury model

[42, 43, 80, 191]. In the BI, a "therapeutic examination" of the patient is conducted. It starts with a screening for red flags (e.g. recent history of trauma or fever [78]), before a physical examination. The physical examination is thoroughly explained to the patient, in layman's terms. Its purpose is to increase confidence in the robustness of the spine, and explain that pain is not a sign of injury or of "inappropriate" use. If a person has the perception that back pain is caused by an injury to the spine and that the spine may deteriorate with activity, inactivity is a rational choice. BI challenges this illness perception by presenting back pain as a painful, but benign and usually self-limiting condition. This approach is in line with the European guidelines for prevention and treatment of back pain [75, 76], and is recognized as a successful approach to increase return to work for employees with back pain [42, 43, 83-86]. This research, in addition to clinical experience with patients' wishing that they had the knowledge they got through the BI at an earlier stage, motivated the "Active Back" research project.

The "Active Back" research project was conducted from 2002-2005. Active Back was initiated to investigate if the knowledge from the BI could effectively be communicated through other channels. The main aim of the project was to reach out to people at an earlier stage, and thereby prevent some of the negative consequences that back pain may produce. Active Back was organized in four sub-projects, i.e. four different arenas for distribution of the message from the BI. Intervention arenas were the workplace, the social security office, the healthcare service and a media campaign [44]. The workplace intervention, which consisted of workplace information sessions and peer support, showed a small decline in the use of healthcare services and significant improvements in beliefs about back pain [44, 192]. There was also a reduction in both the general and spine-specific sick leave in the intervention group [44]. Based on the results from the Active Back project, the atWork project was initiated.

The atWork intervention was developed in 2007 and consisted of three information sessions about back pain presented to all employees, and availability of peer support, at the workplace. The content of the intervention is described in section 5.2. An effect-evaluation of atWork targeting back pain was conducted from 2008-2010. The results from this large cluster randomized controlled trial (RCT) showed a reduction in sick leave and myths about back pain [45]. Similarly, a newly conducted RCT in Denmark showed increased odds of work participation among employees who received a comparable intervention to atWork, based on the same BI-principles [87]. Positive clinical experiences with targeting musculoskeletal and mental health complaints in the same course have resulted in a modified version of the atWork intervention. This modified version comprises mental health complaints, in addition to musculoskeletal complaints, aiming to increase effect on health-related outcomes. An effect-evaluation of this modified intervention is the main project of this doctoral thesis.

The main goal of the modified atWork intervention is the same as for the original atWork intervention; enable employees and the workplace to cope with the consequences of common health complaints. The atWork intervention is not developed to reduce sick leave by trying to influence all factors affecting sick leave decisions or the return to work process. atWork is designed to be an effective way of distributing knowledge about health complaints most people encounter. By doing this at an early stage, one might be able to prevent some of the negative consequences these common health complaints have on work and health, including sick leave. Furthermore, the message in the intervention does not to convey that employees should push themselves to go to work despite having severe health complaints. The aim is to empower employees by providing knowledge and increase confidence to try to work if they think it is okay. Being conscious of not asserting an expert role or having a top-down attitude is an important element in the role as a facilitator for the sessions in the intervention.

Health communication is an essential part of the intervention. As health communication may promote both health and illness, and make a system run at optimal or marginal effectiveness [193, 194], the emphasis should be on *effective* health communication. Health communication needs to be people-centred and informative, and promote trust and confidence [195, 196]. In the atWork intervention, the didactic approach used is based on a nondirective social support model [197]. The information given at the sessions are presented in a nondirective manner, meaning it does not prescribe any change in lifestyle but aims at establishing an understanding of common health complaints. By using a nondirective communication approach the aim is to facilitate coping and leave it up to the participants to draw their own conclusions and decide what to do when pain and health complaints occur. Nondirective communication is used to demonstrate respect for employees' autonomy and to reinforce confidence in their own capacity to discover and implement solutions on how to deal with health complaints and challenges. In contrast, directive support and communication, where helpers tell people what to do and assert their own agenda on the course of coping, may convey to people that they are perceived as helpless or dependent [198]. One could argue that coping is important regardless of the type of disease or illness, but it might be of higher importance when we are dealing with SHC. This is because healthcare professionals in these cases can produce few medical findings, definitive answers, and recommendations. Thus, one's own ability to cope with experienced health complaints is highly important. This again highlights the importance of empowering employees' to believe in their own resources and thereby building positive response outcome expectancies.

3. Theoretical framework

3.1. The Cognitive Activation Theory of Stress

The atWork intervention has a theoretical foundation in the Cognitive Activation Theory of Stress (CATS) [199], which also serves as the theoretical framework for this thesis. In CATS, and in this thesis, the concept of "response outcome expectancies" is central [199]. Related concepts are "locus of control" [200], self-efficacy [201], toughness [202], hardiness [203], mastery [204] and "sense of coherence" [205]. However, it is beyond the scope of this thesis to elaborate on all these concepts.

Individuals generally cope when they are faced with a stressor, and stress is thus essential for the understanding of coping [206]. CATS is a general theory for understanding how a person's reaction to a stressor or a challenging situation is related to coping and health, or helplessness, hopelessness, and illness or disease [199]. CATS also incorporates how new experiences and learning may influence and change our response to a challenge, which again may alter the outcome [199]. CATS is focused on the individual person and responses happening in his or her brain. However, environmental and social aspects are also important for a person's reaction to a stressor or a challenging situation.

In CATS the term stress is operationalized in four aspects. All aspects can be measured separately, but are related and in context to each other. The four aspects are as follows; 1) Load (stress stimuli), 2) Stress experience (filtering of the load in the brain), 3) Stress response (non-specific general activation) and 4) Experience of stress response (feedback from the stress response/activation) (see figure 1). A thorough elaboration of these aspects have been presented in a comprehensive theoretical paper [199], and will only be briefly described here.

1) Load is defined as stimuli that are new, challenging, or not as one expected it to be [199]. Non-threatening stimuli that a person experience every day are not likely to be consciously registered [207]. However, if something deviates from these normal everyday events, or is experienced as challenging, it triggers a general activation response and constitutes a load [199, 208]. When this increase in arousal occurs, the brain will start to process the information. What makes this process very complicated is the fact that there is no such thing as a specific and clearly defined load or stress stimulus.

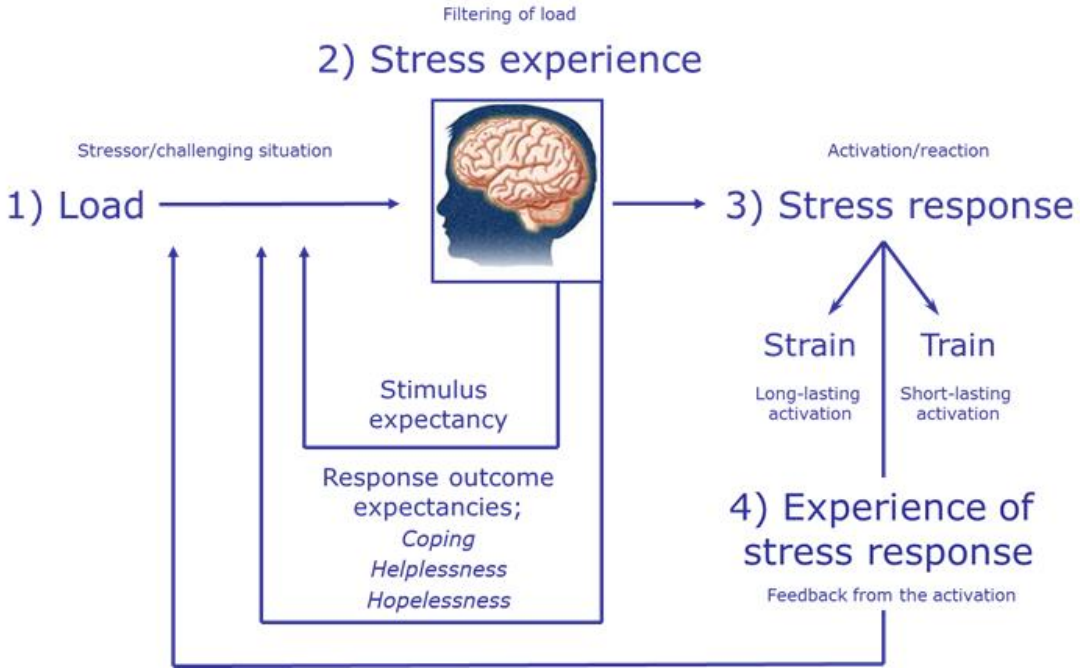

Figure 1. The Cognitive Activation Theory of Stress, modified from Ursin and Eriksen (2004)

2) The stress experience refers to how a person interprets a specific load or stress stimulus, and this is why there is no such thing as a well-defined stress stimulus [199]. The stress stimulus will be filtered by the individual brain before it gets access to the response system. Whether the stimulus is perceived as pleasant or threatening depends

on the person's appraisal of the situation, previous experiences and previous learning [199]. In CATS there are two defined filters, where one is related to the stimulus expectancy and one to the response outcome expectancies. Stimulus expectancy refers to what a person thinks a specific load will lead to. The human brain registers and stores information, and learns that one stimulus precedes another stimulus. When the brain has established that one event precedes another, the brain will simply expect the second stimulus when the first one has occurred. Response outcome expectancies refer to the meaning a person adds to their own response, which is formed by previous experience with a stimulus or a situation [199]. For instance, if you encounter a challenge which you previously successfully have resolved, the belief in your own ability to solve the same challenge again will, based on your previous positive experience, be strengthened. Within CATS there is a distinction between three different response outcome expectancies; positive response outcome expectancies (coping), no response outcome expectancies (helplessness) and negative response outcome expectancies (hopelessness). Positive response outcome expectancy refers to the belief that your actions will produce a desired result; no response outcome expectancy refers to a belief that your action will have no impact on the outcome, and negative response outcome expectancy refers to the belief that your actions will have a negative impact on the outcome [199]. When your own actions have a negative impact on the outcome (hopelessness), the feeling of guilt may also be present. It is crucial for the CATS theory that coping and non-coping (i.e. helplessness and hopelessness) are defined as response outcome expectancies. Only then will it have a predictive value on arousal, the experience of stress and health outcomes [199]. This means that the belief in the outcome of the strategies we chose is more important than the actual strategy itself.

3) The stress response simply refers to an increase in arousal or increased activation in brain and body, resulting in physiological, biochemical and behavioral changes [199]. The CATS explains two kinds of activation responses; a short anabolic response and a

sustained catabolic response [199]. A short stress response will produce a training effect, while a sustained stress response will have a strain effect and may result in illness or disease [199] This is also comparable to what McEwen refers to as allostatic overload [209].

4) The experience of the stress response refers to the feedback our brain gets from the body's arousal or activation [210]. The brain reacts to the feedback and this loop is important for our experience of the stress response. The interpretation of this feedback is possible to influence and alter, which again may have an impact on the outcome. To think of arousal as functional, and not threatening, increases the perception of available resources and decreases threat-related attention bias [211]. According to CATS, a person's response outcome expectancies are crucial for whether the stress response will be short-lasting or long-lasting [199].

Response outcome expectancies are formed through learning and previous experience with a stimulus or a situation, and according to CATS generalized across areas and time [199]. This again means that a person's response outcome expectancies may be altered with new learning experiences. When dealing with SHC, CATS provides a basis for optimism through the ability to reduce helplessness and/or hopelessness and increase peoples positive response outcome expectancies. If we, through new learning, can produce or strengthen a positive expectancy of recovery from SHC, this may influence a person's behavior and again reduce the risk of long-term negative consequences. The atWork intervention is based on the assumption that negative illness perceptions, developed from faulty beliefs concerning SHC and recovery, may lead to maladaptive behaviors, slower recovery, and sick leave. By changing maladaptive beliefs and strengthening employees' positive response outcome expectancies regarding SHC and the recovery process, positive effects on sick leave and the management of SHC may

occur. Furthermore, uniform knowledge about SHC at the workplace may increase the capacity for social support, which again may increase positive response outcome expectancies and positive health effects. However, SHC are challenging as they are frequently occurring health complaints without consistent causal explanations or explanatory pathology. Therefore, they are generally also without specific recommended treatment options. When distributing this knowledge to employees or patients, which in a sense conveys that "shit happens and shit may happen again", there is a delicate balancing act between giving people no response outcome expectancies (a feeling of helplessness) and positive response outcome expectancies (a feeling of mastering). Presenting the message in a nondirective manner is probably essential for creating positive response outcome expectancies and thereby positive intervention effects.

3.2. Other relevant theories/models

In this thesis, it is argued that the employees' response outcome expectancies may be the most important modifiable risk factor for preventing stress and negative consequences of SHC. However, organizational and environmental factors are also significant for employees' wellbeing, health, and sick leave decisions. Sustained psychosocial stress at work, produced by high demands, low control, and lack of social support and autonomy, are other modifiable risk factors for adverse health and sick leave. Influential models and theories in these areas are the "demand-control-support model" and the "self-determination theory". With different perspectives, these theories or models emphasize the interplay between the individual and work factors in explaining adverse health and will be used as complementary theories/models to CATS in this thesis. Brief descriptions of the "demand-control-support model" and the "self-determination theory" are presented below.

3.2.1. The demand-control-support model

The demand-control-support model aims to take a structural and organizational approach to explaining work stress. The model focuses on the characteristics of work tasks, specific combinations of these and their relation to health, illness, and disease. Psychological demands are in this model a function of workload, conflicting demands and work pressure [138]. Job control involves both skill discretion and decision authority. Skill discretion includes variability in work tasks, repetitiveness, use of creativity and opportunities to learn new things. Decision authority includes the employees' ability to influence how to carry out and do their job [138]. The model proposes that a work environment characterized by a combination of high psychological demands and low control constitutes a high risk for illness and disease among employees [138]. This combination of specific work characteristics may inhibit employees' experience of autonomy and is labeled "high-strain" jobs. Social support from coworkers and managers is suggested to buffer adverse health effects of a stressful work environment, while a lack of social support may aggravate the stressful work experience [212].

There is conflicting support for the hypothesis that the combination of high demands and low control result in high job strain, but there is good evidence for the causal effect of these work characteristics on health [213-216]. Within the demand-control framework, an employee's perception of control over his or her work tasks is essential. Having high demands at work is not harmful as long as employees feel they are in control of the situation. This feeling of control, referred to as decision latitude in this model, may be largely subjective and not necessarily positive. Within the framework of CATS, both coping and hopelessness introduce the concept of control. They both involve how the individual expect that his or her actions will influence the result. He or she has the perception of control, but the outcome may be positive (coping) or negative (hopelessness). In a study among Norwegian employees, the combination of

demands and coping were found to have more impact on SHC than the combination of demands and control [217]. Employees who reported high demands and low coping had most SHC, while those with low demands and high coping had the lowest level of SHC. Employees reporting high demands and high coping reported high job stress, but did however not report high levels of SHC [217].

3.2.2. Self-determination theory

The self-determination theory (SDT) suggests that the impact of different work conditions on employees health, wellbeing, and effective functioning at work largely is mediated by three psychological needs; competence, relatedness, and autonomy [139, 218]. Competence refers to the need to feel effective in the interaction with one's social environment and being able to exercise and express one's capacities [219]. Relatedness refers to the need to experience caring from other people and through daily activities feel a sense of belonging [220]. Autonomy concerns the need for acting from one's own interests and integrated values and not being coerced or controlled by others [221]. Hence, social support emerges as a crucial concept in this theory. To characterize the quality of social environments, the SDT framework uses the concept of autonomy support versus control. SDT hypothesize that autonomy-supportive environments tend to fulfill the three mentioned basic psychological needs and thereby facilitate healthy development, learning, self-determined motivation, and optimal functioning. In contrast, controlling environments reflects a general tendency of being provided with little opportunity to choose for oneself and a feeling that one's own perspective is of little importance [221].

Autonomy support at work can be defined as the process of providing coworkers with a choice whenever choices are possible, presenting a meaningful rationale for engaging in a behavior or for not being able to provide a choice, and acknowledging negative

feelings associated with engaging in difficult tasks [218]. Autonomy-supportive environments also include the provision of informational feedback [222] and shared decision-making [223]. Workplaces that are autonomy-supportive have been associated with less psychological distress [224], better mental health [225], greater work satisfaction and trust towards organizations [226]. A mastery-oriented environment at work emphasizes individual autonomy support and is thus an important factor in order to create positive response outcome expectancies among employees [227]. Positive response outcome expectancies may furthermore be a prerequisite for motivation. Nondirective social support and communication is a way to show respect for people's autonomy and provide employees with a choice rather than controlling their thoughts, feelings, and behavior.

4. Aims of the thesis

There is a need for more knowledge about effective interventions to reduce workplace exclusion, especially due to mental health complaints. We know there are individual differences in the tolerance for and management of SHC and workplace stressors. Some of this variance may be explained by a difference in the interpretation of experienced health complaints and diverse perception of work conditions. This may again result in a difference in expectations of outcomes, influencing individual health and decisions regarding sick leave. In addition to individual beliefs and expectancies, influencing general understanding and social support at the workplace may also be important factors in the management of SHC and workplace stressors.

4.1. Main aim and hypothesis

The main aim of this thesis was to assess the role of response outcome expectancies, workplace social support, and beliefs about common health complaints, in sick leave and health. The main hypothesis was that an increase in evidence-based knowledge about common health complaints at the workplace would strengthen employees' positive response outcome expectancies, increase nondirective social support at work, and reduce sick leave. The overarching aim was operationalized into three specific research aims and research questions, and investigated in three different papers.

4.2. Specific research aims and hypotheses

4.2.1. Research aim 1

Research aim 1 was to investigate the prevalence of, and factors associated with, anxiety and depression among Norwegian municipal employees. The hypothesis was that

employees' response outcome expectancies were more important for anxiety and depression than job characteristics and number of SHC. This hypothesis was explored in paper I.

Research question 1: What is the prevalence of, and which factors are associated with, anxiety and depression among Norwegian municipal employees?

4.2.2. Research aim 2

Research aim II was to investigate if the distinction between receiving directive and nondirective social support at work was of significance for SHC, job satisfaction, job demands and job control. The hypothesis was that nondirective social support would be more positive for health and job variables than directive social support. This hypothesis was explored in paper II.

Research question 2: Is the distinction between receiving directive and nondirective social support from coworkers reflected in the amount of SHC reported, and in the perception of job demands, job control and job satisfaction?

4.2.3. Research aim 3

Research aim 3 was to investigate the effect of a workplace intervention, providing reassuring information about SHC, on sick leave and other health-related outcomes. To obtain this aim we modified an existing workplace intervention, originally targeting musculoskeletal complaints, to also target mental health complaints. The hypothesis was that the modified intervention, comprising a management session and targeting

both musculoskeletal and mental health complaints, would increase effect on sick leave and other health-related outcomes. This hypothesis was explored in paper III.

Research question 3: Will modifying the atWork intervention to also comprise a management session and information about mental health complaints improve effects on sick leave and other health-related outcomes?

5. Material and methods

This thesis includes data retrieved from two large cluster randomized controlled trials and consists of three papers. Both trials explored the effect of a cognitive workplace intervention; atWork. The first atWork trial (clinicaltrial.gov: NCT00741650) was conducted from 2008-2010, and baseline data from this trial was used to explore the research question in paper I. The second atWork trial (clinicaltrials.gov: NCT02396797) was conducted from 2014-2016 and has been the main research project in this doctoral thesis. Data from this trial was used to explore the research questions in paper II and III.

5.1. Design

Papers I and II investigated different associations and had cross-sectional designs. A cross-sectional design is useful to study the prevalence of health complaints at a defined place and time, and to explore associations between a variable of interest, e.g. depression, and related factors [228]. Large datasets collected at a single point in time are also suitable for factor analysis [229]. A cross-sectional design was thus appropriate to explore both research questions I and II. In paper I, the prevalence of anxiety and depression among Norwegian municipal employees was explored, in addition to its association with different health and work variables. In paper II, the association between receiving either directive or nondirective support from coworkers, and health complaints and different job variables was explored. Also, the psychometric properties of an instrument measuring directive and nondirective social support were examined.

In paper III, the research question asked about intervention effects, and a randomized controlled design was thus chosen. The methodological rigor of a RCT makes it a superior method in evaluating the effect of health interventions, also outside a carefully controlled clinical setting [230]. The trial had two groups, both receiving an active

intervention during the project period. The interventions were conducted at group level, and a cluster randomization of participating workplaces was therefore performed. Blinding of participants was not possible, due to the nature of the interventions.

5.2. Sample and procedure

In paper I, the sample consisted of 1722 employees working in two municipalities located in eastern Norway. The majority of respondents were female (81 %), mean age was 44 years, and mean years of education were 14. The data was retrieved from the first atWork trial [45]. The two municipalities participating in this trial had a total of 135 work units, which were cluster randomized to one of the trials three study groups. Approximately 3500 employees worked in these 135 units. A consent form and a survey were distributed to all employees, either by paper or by using electronic survey software. Before distribution of the questionnaire, information about the study was given to managers and employees. A total of 1746 employees chose to answer the baseline questionnaire, yielding a response rate near 50 %. There was a variety of occupations in the sample; some had administrative tasks, some had manual work and some were shift workers. Baseline questionnaire data from the trial was analyzed in paper I. Employees with missing data on the relevant outcome variables were excluded from the analysis (n=24). A full description of the trial procedure has been published elsewhere [45].

In paper II and III, the sample consisted of employees working in private kindergartens, located in four Norwegian counties in Eastern Norway (Telemark, Vestfold, Buskerud, and Akershus). Paper II used baseline data from the trial, and the sample consisted of 957 employees from 114 different kindergartens. The majority were female (92.8%), mean age was 40.7 years and 51 % had higher education. Paper III used baseline and follow-up data, and the sample consisted of 93 kindergartens. Register data on sick leave

was collected for 92 of the kindergartens. A total of 637 employees answered both the baseline and follow-up questionnaires.

The first atWork trial investigated effects of the intervention on workplaces in the public sector [45]. In the new trial, it was desirable to implement and investigate intervention effects on workplaces from the private sector. Kindergartens in Norway have a high percentage of women employed, and women have both a higher sick leave rate and a higher prevalence of SHC than men [1, 231]. For these reasons, private kindergartens were chosen as the target sample. The choice of implementing and conducting the trial in the mentioned four counties was based on convenience and economic reasons. In this area, the necessary collaboration for implementing atWork was already established and the outpatient clinics, where the healthcare professionals performing the interventions worked, are located here. During the project planning phase, we established contact and collaboration with "The National Association of Private Kindergartens". They helped with recruitment by recommending the research project to its members. Kindergartens were also recruited with help from the Inclusive Workplace Support Centers (Arbeidslivsentra) at NAV and by direct contact with employees at Vestfold Hospital Trust. Totally, 430 private kindergartens were invited to participate in the trial.

A total of 114 kindergartens, with approximately 1312 employees, was recruited to the trial. The baseline questionnaire was sent out to all 114 kindergartens and answered by 990 of the employees. This gave a response rate of 75 % (paper II). Fourteen of these kindergartens withdrew from the trial before randomization.

One hundred kindergartens were cluster randomized after completion of the baseline questionnaire. Unfortunately, seven of those withdrew from the study when we

contacted them to arrange a time for the intervention implementation. Five of the kindergartens who withdrew from the study had been randomized to the Modified atWork intervention (MAW) and two to the Original atWork intervention (OAW) (content of intervention groups are described below). This left us with a sample of 93 kindergartens. Figure 1 shows the distribution of the 100 randomized kindergartens per county, and number of kindergartens receiving the two interventions.

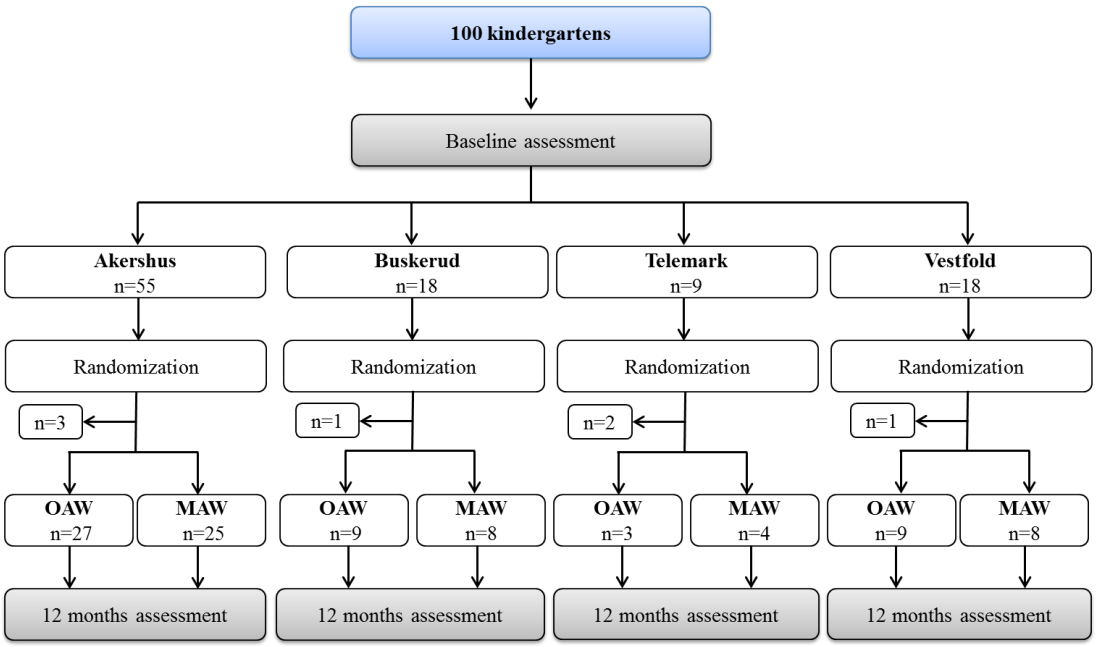

Figure 2. Flow chart of trial design and distribution of kindergartens per county and intervention

All managers reported the number of employees working in each kindergarten, and for the 93 participating kindergartens this totaled 1011 employees. All employees in the kindergartens were included in the sick leave records used as the primary outcome in the trial. For one of the kindergartens we were not able to obtain register data. This kindergarten was registered as a part of a larger unit, and it was thus not possible to collect sick leave data from only the kindergarten employees. Survey data was collected electronically from participants at baseline and 12 months follow-up. At baseline, 893

out of the 1011 individual employees working in the participating kindergartens chose to answer the questionnaire, giving a response rate of 88 %. Half of the participants had higher education, mean age was 40.7 years, and the majority was female (92.7 %). We did not have information on the employees choosing to not respond to the baseline questionnaire. The baseline questionnaires were administrated by email to the manager in each kindergarten. The email contained detailed information on the study processes and purposes and a link to the study survey. The manager then distributed the study information to all employees and gave them access to the survey link. At the start of the questionnaire, all employees were asked to enter their email address, and follow-up questionnaires were administered electronically to participants who provided a valid email address at baseline. Follow-up questionnaires were distributed to 860 employees and answered by 637 (74 %) of the employees. Calculated from the total sample group (1011 employees), this gives a response rate of 63 % for follow-up questionnaires. The employees who chose to not respond to the follow-up questionnaire were significantly different in gender, age and education compared to respondents. Respondents were older, had higher education, and consisted of more women.

The trial had two study groups, and both groups received a workplace intervention aiming to increase participation in working life and prevent sick leave. One group received the OAW and one group received the MAW. The content of the two interventions is displayed in figure 2, and described in detail below.

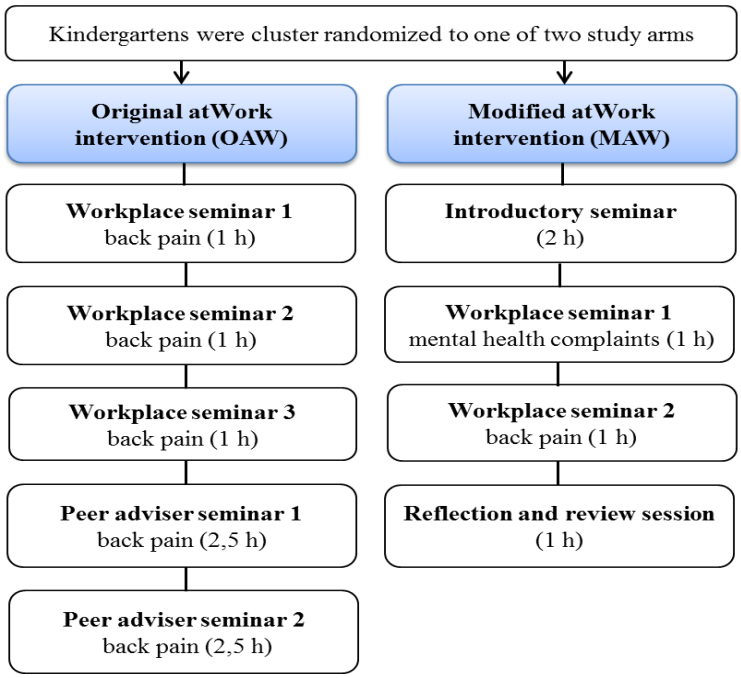

Figure 3. Content of the two interventions

The Original atWork intervention (OAW)

The OAW intervention consisted of three workplace sessions and peer support for all employees. In this group, all sessions targeted back pain and were conducted by healthcare professionals from Vestfold Hospital Trust. The first workplace session was mainly focused on the prevalence of back pain and the distinction between specific and non-specific musculoskeletal complaints. In addition, the aim was to give participants an understanding of why the atWork intervention was developed. A peer adviser was also recruited from each kindergarten (see the description of the peer adviser below). The second workplace session presented evidence-based information on spine and pain physiology. The information was based on a non-injury model and emphasized the importance of staying active despite having pain. In the third workplace session the quite widespread myths about back pain were discussed [232]. Questions from participants were encouraged in all parts of the intervention. Each workplace session

lasted for approximately one hour, and they were held with one to three months intervals. A total of 143 workplace sessions were conducted. One kindergarten did not complete the third workplace session.

Peer support involved selecting a peer adviser in each kindergarten. The peer adviser was a fellow worker with no former training in the medical field, recruited among employees during the first workplace session. Recruitment took place either by volunteering or agreeing after being suggested by coworkers. All peer advisers were invited to participate in two peer adviser sessions at an outpatient clinic. The sessions were arranged so that peer advisers from different kindergartens participated together. The sessions focused on guidance on how to function as a peer adviser at the workplace and more in-depth knowledge about the spine and back pain. The peer advisers' role was to give social support and to use their local knowledge of the workplace and the work environment to help coworkers stay at work despite having back pain. The peer advisers were instructed not to recommend treatment options or provide any medical advice to coworkers. If an employee had persistent back pain, was unsure about the nature of his or her back pain or reported any red flags, the peer adviser would precede by guiding the employee to make an appointment with his or her general practitioner. All peer advisers were also given contact information to the outpatient clinic, and could at any time contact healthcare professionals for help with specific cases or general questions. All peer advisers received a booklet with information, and a book explaining back pain in layman's terms [233]. A total of 31 peer adviser sessions were conducted. In one kindergarten the peer adviser did not attend any of the peer adviser sessions. In another kindergarten the peer adviser was on maternity leave during the second peer adviser sessions.

The Modified atWork intervention (MAW)

The MAW intervention included one introductory session, two workplace sessions for all employees, and one reflection and review session. In this group, both musculoskeletal and mental health complaints were targeted. The introductory session was for managers at all organizational levels, health and safety representatives, and local union representatives, and provided an introduction to the atWork intervention. Participants were informed about the theoretical foundation of the intervention and what would be presented to all employees at the workplace sessions. A discussion on how to create a health-promoting workplace perceived as welcoming to workers with health complaints was also encouraged. The main aim was to contribute to a thorough understanding of, and agreement with, the message distributed in the intervention among persons in positions that may function as facilitators for a good psychosocial work environment. This might support the use of the knowledge distributed at the workplace to all employees. In this session, managers and workplace representatives from different kindergartens participated together, and a total of 16 introductory sessions were conducted. Each time, two facilitators lead the session. In addition to one healthcare worker from Vestfold Hospital Trust, a consultant from the Inclusive Workplace Support Center at NAV also contributed. The purpose of this collaboration was to more thoroughly incorporate organizational knowledge about how to cope with health complaints in a work setting into the intervention.

The two workplace sessions were for all employees at the workplace, including managers and workplace representatives. The first workplace session focused on mental health complaints. It started with presenting work as a contributing factor for health, and went on to include information about prevalence, stress, anxiety, depression, comorbidity, rumination, and coping. It was emphasized that mental health complaints to some extent are experienced by most of us, and in most cases will pass. Back pain was the main theme in the second workplace intervention. Evidence-based information

about spine and pain physiology was presented. This included the difference between specific and non-specific musculoskeletal complaints, prevalence, comorbidity, myths, and coping, as in the OAW. Questions and discussions on how the workplace may accommodate employees with health complaints were encouraged in both workplace sessions. Each workplace session lasted for approximately one hour and was held with one to three months intervals. A total of 90 workplace sessions were conducted, 45 targeting mental health complaints and 45 targeting back pain.

The reflection and review session was for the same employees who attended the introduction session, i.e. managers and workplace representatives. The session was led by two facilitators, one from Vestfold Hospital Trust and one from NAV, and conducted in each kindergarten. The purpose was to discuss how each workplace, in their specific setting, could support employees experiencing SHC at the workplace.

In addition to including information about mental health complaints in the MAW intervention, some changes were also made to the part of the intervention targeting back pain. In the MAW group, the number of sessions targeting back pain was reduced compared to the OAW group. This reduction was mainly based on participants' feedback. Managers and employees from other workplaces have reported that three sessions targeting back pain lead to a great deal of repetition and overlap, and this was experienced as a waste of time in a busy work schedule. Also, the attendance rate on the last workplace sessions in the first RCT was low [45]. For those reasons, the three workplace sessions focusing on back pain was reduced to one. However, the main message in the workplace sessions targeting back pain was the same for both interventions, and the one session targeting back pain in the MAW group contained essential information from all three sessions in the OAW group. Another important change was removing the peer adviser from the MAW intervention. In the first RCT [45]

the peer adviser was not frequently used. Companies have also reported that the peer adviser role interferes with the management structure in the organization, that the two days of qualification involves too much time off from work, and that some of the tasks assigned to the role have been perceived to collide with management responsibilities. It was therefore decided to remove the peer adviser from the MAW intervention, and instead add two sessions for managers and workplace representatives. These two sessions were conducted in close collaboration with NAV. Involvement of several stakeholders may be an important factor for the success of workplace interventions in reducing sick leave [234, 235], and interdisciplinary collaboration should thus be an important priority [236].

5.3. Data sources

In this thesis, two different data sources were used. Papers I and II used data from self-reported questionnaires. Paper III used data from public registers, in addition to self-reported questionnaire data. A description of measures used to explore the research questions follows below.

5.3.1. Questionnaire data

The Subjective Health Complaint (SHC) Inventory (papers I, II and III)

The SHC inventory [18] was used to measure common subjective somatic and mental health complaints, experienced during the last 30 days. The selection of items are based on frequently reported health complaints and reasons for encounter with the general practitioner [237]. The inventory records health complaints without asking for attributions or medical diagnosis and yields five subscales (musculoskeletal complaints, pseudoneurology, gastrointestinal problems, allergy and flu). The severity of complaints were rated on a four point scale ranging from 0-3, where 0 represents no complaints

and 3 represents severe complaints [18]. In paper I, all 29 items were used. The items measuring anxiety and depression were used as outcome variables, while the remaining items were used to count number of experienced SHC during the last month. In paper II, all five subscales were used. In paper III, the two first subscales were used, since these were health complaints targeted in the interventions.

The Theoretically Originated Measure of the Cognitive Activation Theory of Stress (TOMCATS) (papers I and III)

Coping, helplessness and hopelessness were measured using TOMCATS [238]. TOMCATS is based on CATS [199], and designed to measure the three defined response outcome expectancies (coping - positive response outcome expectancy, helplessness - no response outcome expectancy, and hopelessness - negative response outcome expectancy). The instrument aims at measuring generalized beliefs about one's own ability to cope with encountered challenges or problems. It included nine items, representing the three response outcome expectancies. Two items represented coping (e.g. I can solve most difficult situations with a good result), four items represented helplessness (e.g. I really don't have any control over the most important issues in my life) and three items represented hopelessness (e.g. All my attempts at making things better just make them worse). Items were rated on a five point scale ranging from 1~ "not true at all" to 5~ "completely true". In a previous study of a representative sample (n=11 441) of the Swedish population [238] the scale yielded the expected three factors. TOMCATS is however a newly developed scale and not extensively used. In paper I, a factor analysis was performed before computing subscales. In this sample, helplessness and hopelessness loaded on the same component. Hence, the seven statements representing helplessness and hopelessness were treated as one single factor. Items were computed into a variable ranging from 0-28, a high score representing a high degree of helplessness/hopelessness. The two statements measuring positive response outcome expectancies loaded clearly on one single factor. Items were computed into a

variable ranging from 0-8, a high score indicated a high degree of coping. In paper III, the same solution as presented in the articles of Odeen et al. [45, 238] was used. This included one item representing coping, two items representing helplessness and three items representing hopelessness, recoded from a five to a four point scale. This was done in order to directly compare the results from the first atWork trial with the results from the second atWork trial. As earlier described, presenting the information in the atWork intervention might be a delicate balancing act between giving employees no response outcome expectancies (helplessness) and positive response outcome expectancies (coping). Thus, separating helplessness and hopelessness in paper III also had practical relevance.

Satisfaction with work (papers I, II and III)

Participants' satisfaction with work was assessed in all three papers. However, different questions were used. In paper I, work satisfaction was measured using two questions. The wording of the questions were "Do you enjoy your work?" and "How satisfied are you with your work when you take in to consideration the work routines, management, salary, opportunity for advancement and work colleagues?". The first question had three response categories (0~ "no", 1~ "sometimes", 2~ "yes") and the second question was rated on an eleven point scale (0~ "not satisfied" to 10~ "very satisfied"). Both variables were dichotomized before analyses were performed. The categorical variable was dichotomized into 0~ "no'' or ''sometimes'' and 1~ "yes'', and the continuous variable was dichotomized using a median split. In paper II and III, a single item from Quinn and Shepard's global job satisfaction scale [239] was used. The wording of the question was "All things considered, how satisfied are you with your current job?". It was rated on a five point Likert scale ranging from 1 ~ "very dissatisfied" to 5 ~ "very satisfied".

Physical and mental work strain (paper I)

Physical work strain was measured with the question "Do you have heavy/repetitive work?", and was rated on an eleven point scale ranging from 0~ "not at all" to 10~ "very heavy/repetitive". Mental work strain was measured with the question "Do you experience your current work as stressful?" and was rated on an eleven point scale ranging from 0~ "not stressful at all" to 10~ "very stressful". Both variables were dichotomized using a median split before analyses were performed.

The Social Support Inventory (SSI) (papers II and III)

A Norwegian version of the SSI [197, 198, 240] was used to measure directive and nondirective social support. The inventory consisted of 16 statements, and the participants were asked to indicate how typical each statement was for the way coworkers provided help and support. Eight items were designed to measure directive social support (e.g."Tell you what to do") and eight items were designed to measure nondirective social support (e.g. "Cooperate with you to get things done). Items were rated on a five point scale ranging from 1~ "not at all typical" to 5~ "very typical". The internal consistency of the SSI is found to be adequate in other samples, but most studies using SSI are performed in samples from the USA [197, 198, 241]. One study has previously investigated the internal consistency of the SSI in a Norwegian sample [240], and a two-factor solution reflecting the distinction between directive and nondirective social support was found. In paper II, we investigated if this distinction was maintained in our sample of Norwegian kindergarten employees. A Principal Component Analysis (PCA) was performed (see section 5.5). The PCA showed that 7 items loaded on the nondirective factor ($\alpha = 0.88$), and 3 items loaded on the directive factor ($\alpha = 0.51$). The 6 remaining items did not meet the predefined criteria for factor loading and were not included when mean scores were computed for the two factors. In paper III, the same subscales as computed in paper II was used.

The Demand Control Support Questionnaire (DCSQ) (paper II)

The short Swedish version [242] of the Demand Control Support Questionnaire (DCSQ) [138] was used to measure demands and decision latitude. DCSQ is based on the Demand–Control Model by Karasek and Theorell [138], and consists of three subscales; demands, decision latitude and support. Demands represent the psychological stressors in the work environment. Decision latitude refers to employees' perceived control over work tasks and how these tasks are executed. Support was in this paper measured using SSI (described above), and only the demand and decision latitude subscales were thus used in the analysis. The demand subscale consists of five items and the decision latitude subscale consists of six items. Examples of items are; "Does your job require that you work very fast?" (demands) and "Do you have the possibility to decide for yourself how to carry out your work?"(decision latitude). However, a low Cronbach's alpha value on the decision latitude scale made us investigate the correlations between items more thoroughly. An inspection of the correlation matrix revealed one item (repetitive work) that correlated poorly with the other items measuring decision latitude. This item was thus removed from the subscale. Each item was scored on a four-point scale (1~ "yes, often", 2~ "yes, sometimes", 3~ "no, rarely", 4~ "no, almost never"). Scores on items formulated in the opposite direction from the main direction in the inventory, were reversed. Subscales scoring from 5 (minimum score) to 20 (maximum score) were computed for both demands ($\alpha = 0.70$) and decision latitude ($\alpha = 0.64$). Low or high scores indicated low or high levels of demands and decision latitude (control).

Beliefs about back pain (paper III)

The participants' beliefs about back pain were measured by Deyo's "back pain myths" [232, 243]. The inventory consisted of 7 statements representing untrue and maladaptive beliefs about back pain, beliefs that have been invalidated through scientific studies [232] The statements addressed restrictions, herniated/ruptured discs,

imaging, heavy lifting and bed rest. The myths are rooted in a biomedical paradigm and a biomechanical perspective on back pain. Participants were asked to score their beliefs on a five point scale, from 1~ “totally disagree” to 5~ “totally agree”. Our main interest was how many of the participants who believed in the statements. All variables were thus dichotomized into 0~not believing in the statement (”totally disagree”, ”disagree” and ”neither disagree nor agree”) or 1~believing in the statement (”agree” and ”totally agree”).

Beliefs about mental health complaints (paper III)

To measure the participants’ beliefs about mental health complaints, we constructed nine statements. The statements were based on clinical experience and research concerning common beliefs and worries concerning mental health complaints. One item addressed the belief that people do not recover from mental health complaints [49], one item addressed embarrassment about mental health complaints [244], two items addressed the belief that mental health complaints only affect a small part of the population [245], two items addressed the belief that mental health complaints are purely genetic in nature [246], two items addressed the belief that the best treatment for mental health complaints is medication [247], and one item aimed at addressing the belief that people experiencing depression are weak and thus have themselves to blame for their problems [248]. Participants were asked to rate the statements on a five point scale, from 1~ “totally disagree” to 5~ “totally agree”. As for back pain beliefs, all variables were dichotomized into 0~not believing in the statement (”totally disagree”, ”disagree” and ”neither disagree nor agree”) or 1~believing in the statement (”agree” and ”totally agree”).

5.3.2. Register data

Number of days lost to sick leave was measured using register data from NAV. Sick leave data was clustered by kindergarten, and not reported for individual employees. The data on sick leave were from all the employees in the participating kindergartens, and not only from those responding to questionnaires. The data used was physician-certified sick leave, for any diagnosis. Self-certified sick leave is paid for by the employer and is not included in the register data from NAV. The data file comprised the sum of the total agreed work days for all employees in each kindergarten and how many of these days were lost due to sick leave. Agreed work days are based on the employment contract, meaning the number of days employees are expected to come to work.

5.4. Ethics

The research projects in this thesis followed the principles of the Declaration of Helsinki [249]. All participants were given information about the study aims and procedures and their right to withdraw from the studies at any time without any explanation. A declaration of informed consent was collected from all participants.

Data used in paper I was obtained in the first atWork trial [45]. This trial was approved by The Regional Committee for Medical and Health Research Ethics for Western Norway (REK-vest, ID 6.2008.117), the data protection officials (NSD, ID 18,997) and the privacy authority of Oslo University Hospital (Rikshospitalet, ID 08/2421).

Data used in paper II and III was obtained in the second atWork trial. The trial was approved by the Regional Committee for Medical and Health Research Ethics for South-Eastern Norway (Registration 2014/162/REC South East). Information about the study

was given to the participants through their manager and through information at the start of the electronic survey used to collect questionnaire data. At the first page of the survey, employees who decided to participate gave their informed consent before getting full access to the questionnaire. All participating kindergartens were thoroughly informed about the random allocation to either MAW or OAW, and both groups received an intervention during the project period. The OAW has been effective in reducing sick leave. The MAW contained crucial elements from the OAW, and the modification was aimed at increasing the positive effect on health-related outcomes. If desired, the kindergartens receiving the OAW during the project period could receive the sessions unique to the MAW after project termination.

5.5. Statistics

Paper I

To investigate the relationship between the predictor variables and the dichotomized outcome variables (anxiety and depression), we used hierarchical logistic regression analyses. We started by performing a series of simple logistic regression analyses to assess if any of the predictor variables were associated with the outcome variables. Multivariate models were then constructed, with demographic variables (age, gender, and education) being the first variables to be entered into the model. This was done to adjust for demographic variables when examining the association between the predictor variables of interest and anxiety and/or depression. To test the hypothesis that response outcome expectancies were associated with anxiety and/or depression, the two variables measuring coping and helplessness/hopelessness were entered in the second step. In the third step, the variables measuring work satisfaction and work strain were entered. Finally, number of substantial SHC was included. The full model contained 10 predictor variables. The analyses were conducted using SPSS version 16.0.

Paper II

To investigate if there was a distinction between directive and nondirective social support in our sample of Norwegian kindergarten employees, we used a PCA with Kaiser Oblimin Rotation to assess the latent structure of the SSI items. If items loaded greater than 0.4 on the primary factor, and the secondary loading was at least 0.3 less than the primary loading, items were considered to load on a factor. When refining the measure of directive and nondirective socials support in other samples, similar procedures have been used [240, 250]. Items that did not meet these criteria were removed. A new PCA was performed without the eliminated items to ensure that remaining items did not cross-load on factors. Two new subscales, labeled directive social support and nondirective social support, were constructed by taking the mean score of the items loading on each factor. To determine the internal consistency of the new subscales, Cronbach's Alfa and the inter-item correlation was used.

To assess the relationship between directive social support, nondirective social support, SHC, and job variables, a series of hierarchical regression analyses were performed. Our main interest was the unique variance explained by directive and nondirective social support. Thus, separate analyses using the five subscales of SHC, job satisfaction, job demands, and job control as outcome variables were performed. In all eight regression models, age, gender, and education were entered as one block in the first step of the regression analysis. This was done to adjust for demographic variables, before investigating if directive and nondirective social support had a significant association with the outcome variable of interest. By constructing these eight models, we were able to assess the unique contribution of directive and nondirective social support on each outcome variable. All analyses were conducted using SPSS version 21.0.

Paper III

To investigate if the MAW had a different effect on sick leave compared to the OAW, we used a generalized estimating equation (GEE) model with exchangeable correlation structure for kindergarten and robust standard errors. For each kindergarten, the rate of days lost to days agreed, for all quartiles, were estimated in the model. To account for overdispersion compared to the simple Poisson model, total days lost were modeled using a negative binomial distribution. Log of days agreed were included as offset in the model. For all kindergartens, the baseline variable included the four quarters before the intervention was initiated. The year follow-up included the next four quarters, measured from the quarter the intervention was started in each kindergarten. Between groups, change in sick leave in the MAW group relative to the OAW group was estimated as the interaction between intervention and time (one year before/the following year). Results from the GEE were presented as incidence rate ratios (IRR) with 95% confidence intervals (CI). Within groups, changes in sick leave between baseline and the intervention year were analyzed. We applied for but did not get ethical approval to collect sick leave data for the seven kindergartens who withdrew from the study (see appendix). An intention to treat analysis was thus not possible to perform.

To investigate if MAW had an effect on continuous secondary outcomes, we used a generalized linear model (GLM) with robust variance estimator to account for clustering of data. In the between groups analyses, follow-up measures were adjusted for clusters and baseline score. For within-group analyses a mean change score from baseline to follow-up was calculated before entering it in the regression model. For beliefs about common health complaints (dichotomized measures), a McNemar test was used within groups to test the difference between baseline and 1 year follow-up. Between-group difference was tested using multinomial logistic regression with robust variance estimator to account for kindergarten clusters. All analyses were performed using STATA IC V.14.2.

6. Summary of results

In this section, a short summary of the most important findings from the three papers comprising this thesis will be presented. Further details are elaborated in the respective papers.

6.1. Paper I

Johnsen, T. L., Indahl, A., Eriksen, H. R. and Tveito, T. H.
Work and mental complaints: are response outcome expectancies more important than work conditions and number of subjective health complaints?
Journal of Occupational Rehabilitation, 2016. 27(2): p. 218-227.

The findings in paper I showed that anxiety and depression, measured by two items form the SHC inventory, were relatively common health complaints among Norwegian employees. Among the 1722 respondents, 15 % reported anxiety and 24 % reported depression. Of these 12 % reported both anxiety and depression. Most of the employees reporting anxiety and depression were affected to a small degree, and participants were categorized to have "substantial complaints" if they responded "some" (score 2) or "severe" (score 3) in regards to "degree" on the SHC inventory.

Having a high number of substantial SHC was the only variable having an association with substantial anxiety in the full model. Substantial depression had an association to both a high number of substantial SHC and a high degree of no and negative response outcome expectancies (feelings of helplessness/hopelessness). For respondents with comorbid anxiety and depression, the same two associations were found. The results showed that personal factors were more related to anxiety and depression than work-

related factors. These findings were used to tailor the workplace intervention being evaluated for effect in paper III.

Paper I did not comprise data on workplace social support. It was hypothesized that social support at work, provided in a nondirective manner, would be related to positive outcomes on SHC. This was investigated in paper II.

6.2. Paper II

Johnsen, T. L., Eriksen, H. R., Indahl, A. and Tveito, T. H.

Directive and nondirective social support in the workplace – is this social support distinction important for subjective health complaints, job satisfaction, and perception of job demands and job control?

Scandinavian Journal of Public Health, 2017. doi:10.1177/1403494817726617

The findings in paper II showed that nondirective social support from coworkers was associated with reporting lower scores on musculoskeletal and pseudoneurological complaints, higher job satisfaction, lower job demands, and higher job control. Directive social support from coworkers had the opposite relationship on all outcome variables, but was not statistically significant for pseudoneurological complaints. The Social Support Inventory had a two factor solution, distinguishing between directive and nondirective social support.

As musculoskeletal and pseudoneurological complaints are frequent reasons reported for sick leave, low job satisfaction is associated with higher sick leave proportions, and high job demands and low job control are predictive of later sick leave, focusing on the

way social support is provided may be of importance when aiming to improve the psychosocial work environment and prevent sick leave. Paper III examined if the atWork intervention could increase nondirective social support at work, in addition to intervention effects on sick leave and other health related outcomes.

6.3. Paper III

Johnsen, T. L., Eriksen, H. R., Baste, V., Indahl, A., Odeen, M. and Tveito, T. H.
Effect of reassuring information about musculoskeletal and mental health complaints at the workplace: a cluster randomized trial of the atWork intervention.
Accepted for publication by Journal of Occupational Rehabilitation.

The findings in paper III showed that the MAW did not have a different effect on sick leave compared to the OAW in private kindergarten employees. For the year of the intervention, there was a reduction in sick leave of 5.7 percent in the MAW group and an increase in sick leave of 7.5 percent in the OAW group. This gave a relative difference in sick leave of roughly 13 percent, about one percentage point. This difference between groups was not statistically significant in the GEE model. No change was detected within groups either.

For beliefs about health complaints, three statistically significant differences between groups were detected. Compared to the OAW group, the MAW group had a smaller reduction for two of the back pain myths. This was the myths stating that slipped discs must be handled surgically and that imaging always can identify the cause of back pain. The MAW group had a reduction in employees believing that depression to a great extent is hereditary, while the OAW had an increase in employees believing in the same statement, resulting in a statistically significant difference in change between groups.

Within the MAW group, there was a reduction for three of the back pain myths. Positive changes in beliefs were also found for three of the statements concerning mental health complaints. Within the OAW group, there was a reduction in five of the back pain myths. For beliefs about mental health complaints, positive changes in beliefs were found for three of the statements and negative changes in beliefs, moving in the direction of more stigmatizing beliefs, were found for two of the statements.

For substantial low back pain, there was a minor difference in change between groups. Compared to the OAW, there were more of the employees in the MAW group who reported being better after the intervention year, but also more employees who reported being worse. This resulted in a statistically significant difference in change between groups. For the rest of the secondary outcomes, there was no difference between groups. Within groups, one statistically significant change was detected. This was in the OAW group, where participants reported an increase in nondirective social support. A similar change was observed in the MAW group, although not statistically significant (p-value of 0.06).

7. Discussion

In this section, the research aims and findings of this thesis are discussed. It starts with a discussion of the main aim and findings and further provides a discussion of the specific research aims and the results from each paper. For each research aim, the respective methodological concerns are discussed. The methodological strengths and limitations of this thesis as a whole are covered in a separate paragraph. Finally, this section provides a discussion of practical implications and some suggestions and recommendations for future research.

7.1. Research aims and findings

7.1.1. Main aim and findings

Taken together, the results from this thesis indicate that response outcome expectancies matter for employees' health. This is supported by previous findings [238, 251]. There were no changes in employees' response outcome expectancies after participating in the atWork intervention, even though the intervention was aimed at increasing employees' positive response outcome expectancies in regards to SHC. This is also consistent with previous findings [45]. atWork targets a healthy population, and it is likely that most of the participants did not perceive SHC as a substantial problem during the intervention year, and most of the participants were not on sick leave. Thus, it may not be reasonable to expect significant changes in employees' positive response outcome expectancies after participating in the intervention. Furthermore, the instrument used measures *general* response outcome expectancies and will capture other aspects than employees' responses to experienced SHC.

This thesis furthermore indicated that social support matters for employees' health and for work factors found to be predictive of sick leave. However, for social support to be associated with positive outcomes on health, job satisfaction, job demands and job control, it may need to be provided in a nondirective manner. Nondirective social support can be viewed as a characteristic of social interaction, but shares important features with empowerment and self-determination [252]. After participating in the atWork intervention, participants reported receiving more nondirective social support from coworkers. After the intervention year, there was also a positive change in employees' understanding of common health complaints, but there were no observed changes in sick leave or health. This thesis cannot conclude that employees' response outcome expectancies, beliefs about common health complaints and nondirective social support at work matter for sick leave.

In conclusion, the main hypothesis in this thesis was only partly supported. Response outcome expectancies and the characteristics of workplace social support seem to matter for employees' health. The atWork intervention showed positive effects on employees' health beliefs, and seemed to encourage participants to support coworkers in a more nondirective manner. However, there were no observed changes in positive response outcome expectancies or sick leave. The RCT had a comparative effectiveness design, where both study groups received a version of the atWork intervention. It may be that our study groups had stable sick leave rates in the study period while kindergartens not receiving the atWork intervention had an increase. However, due to the lack of a "treatment as usual" control group, we were not able to investigate this possibility.

7.1.2. Research aim 1: to examine individual and work factors associated with anxiety and depression

The results in paper I demonstrated that substantial anxiety and substantial depression were associated with reporting a high number of substantial SHC during the last 30 days. Having a high degree of no and negative response outcome expectancies was associated with anxiety and depression in four out of the five models including all predictor variables. These were the four models including depression in the outcome variable. No and negative response outcome expectancies were not significantly associated with anxiety on its own. Thus, it may be that depression explained most of the relationship found in the models including both anxiety and depression in the outcome variable. In the model including all employees reporting anxiety and/or depression, high mental work strain also remained a significant factor in the model including all predictor variables, but had a weaker association with anxiety and depression than both number of SHC and no and negative response outcome expectancies. In the other four models, none of the work-related factors were associated with reporting substantial anxiety and substantial depression.

In all models, number of SHC was the variable having the strongest association with anxiety and depression. As described in section 2.1, there is a high degree of comorbidity between the different SHC. The causality in this relationship is unclear, and it probably works both ways. It may be that experiencing a high number of SHC makes employees feel more anxious and more depressed. It is a reasonable assumption that experiencing a lot of health complaints may affect your mood. Conversely, being anxious or depressed may heighten the awareness of other SHC. Another plausible explanation is that several of the remaining health complaints on the SHC inventory are common symptoms of both anxiety and depression. The variable named “number of SHC” was constructed based on the simple method of counting complaints. Tschudi-Madsen et al. found an almost linear relationship between number of non-musculoskeletal health complaints and

number of musculoskeletal complaints, indicating that there are common characteristics and shared underlying factors between different SHC [253]. The authors [253] suggested that the amount of health complaints reported could be looked upon as a phenomenon in itself, independent of diagnosis, and the results of our study support this suggestion. Reporting a high number of health complaints is furthermore strongly associated with low self-reported overall health, receipt of social security benefits, and unemployment [254-256], and may be prognostically useful in determining the risk of work disability [256].

In addition to number of SHC, no and negative response outcome expectancies were related to anxiety and depression in four out of five models. No response outcome expectancy (helplessness) is the expectancy that your actions will not influence the result, while negative response outcome expectancy (hopelessness) is the expectancy that your actions will lead to a negative result [199]. This means that hopelessness introduces the element of guilt. There is control, but your responses produce a negative outcome. Such generalized negative expectancies make hopelessness a relevant cognitive model for depression [199]. Helplessness introduces the element of uncertainty, where the perceived probability of an unattractive event is at chance level, and uncertainty is one of the characteristics of anxiety [199]. Accordingly, we expected no and negative response outcome expectancies to be associated with anxiety and depression. As discussed below, we were not able to distinguish between no and negative response outcome expectancies in this sample, and our analyses could not verify if helplessness was more related to anxiety and if hopelessness was more related to depression. The collapsed variable was more related to depression than to anxiety.

No and negative response outcome expectancies are associated with sustained arousal, meaning persistent high levels of stress, and more health complaints [99, 257]. The

inability to cope (i.e. feeling helpless and hopeless) with stressful situations and health complaints may furthermore aggravate and reinforce the perception of complaints [99]. The transition from normal and tolerable SHC to substantial SHC may thus partly be explained by sustained arousal leading to psychobiological sensitization [99]. Sustained arousal may contribute to sensitization in neural loops by interfering with the activity in neural pathways, but also to a cognitive emotional sensitization where information related to fears and complaints are given priority in the cognitive processing [99, 101]. Rumination and worry are central factors in anxiety and depression [258], and health worries are found to predict the occurrence of health complaints [259]. Thus, cognitive emotional sensitization may contribute to explain why employees having a high degree of no and negative response outcome expectancies report more anxiety and depression, and furthermore why employees reporting substantial anxiety and substantial depression also report a higher number of other SHC.

In this study, personal factors were more related to anxiety and depression among employees than work-related factors. This finding may be explained within CATS, where a person's response outcome expectancies are more important for health than objective measures of demands or of the psychosocial environment. However, the measures of work satisfaction and work strain were designed for this study, and have not previously been validated. The use of validated questionnaires (e.g. DCSQ [242]) would have provided more reliable conclusions regarding the relationship between anxiety, depression and the different work characteristics. The only way to know if it would influence the results is to replicate the study, using other measures of work satisfaction and work strain.

This study focused on *substantial* SHC (some or severely affected). We were interested in looking into individual and workplace factors associated with health complaints that

are likely to affect employees' function. Thus, we differentiated between employees who were a little affected and employees who were substantially affected. Ursin and Eriksen [98] emphasize that there are no obvious cut-off points between "normal" and "pathological" SHC. Objectively separating normal and endurable SHC from intolerable SHC that need medical or social interventions (e.g. sick leave) is thus difficult [98]. However, the high prevalence found in several surveys indicates that most people experience SHC during a month [73, 231]. Being a little affected by SHC is usually tolerable and accordingly paid little attention to by most people. Having substantial health complaints is more likely to affect our ability to function as usual [260, 261]. When looking only at substantial complaints prevalence rates drop considerably [231]. Of the 478 employees reporting anxiety and/or depression in our sample, 23 % reported being substantially affected. Of the total sample, 6.4 % reported having substantial anxiety or substantial depression.

Anxiety and depression were in this study measured using two single items from the SHC inventory. The sensitivity of these two items has previously been explored in a sample of employees sick-listed due to non-specific low back pain, where a structured diagnostic interview for assessing psychiatric disorders (MINI) was used as a gold standard comparator [262]. For the cut-off used in our study (0~"not at all" and 1~"a little" vs. 2~"some"and 3~"severe"), the depression item showed both high sensitivity (i.e. correctly identified persons with verified depression) and high specificity (i.e. correctly identified persons without depression) when compared with MINI [262]. The anxiety item, using the described cut-off, had lower sensitivity but higher specificity. The overall accuracy of both items was higher than for the Hospital Anxiety and Depression Scale (HADS) and the Hopkins Symptom Checklist–25 (HSCL-25), which are two widely used screening questionnaires for anxiety and depression [262]. The authors [262] suggest that the two questions from the SHC inventory may be suitable for epidemiological studies, to replace longer and more time-consuming questionnaires.

However, the items have not been validated in a "healthy working population" (i.e. not sick-listed) and we did not have data to investigate if the same accuracy could be found in our sample. When comparing our sample with the sample used to test the sensitivity of these two items, there were no considerable deviations on demographic variables, but a larger part of the sick-listed employees in the study of Reme et al. reported experiencing anxiety and depression compared to our sample of municipal employees [262, 263]. In a previous study, Reme and Eriksen found the highest concordance between the depression item from the SHC and HSCL-25 in the sample who reported most depression symptoms [264]. It may be that a higher prevalence of anxiety and depression symptoms could result in a higher concordance between the two items and the longer scales. However, using the stricter cut-off (some or severely affected) limits the classification of false positives [262, 264]. Thus, we found this cut-off appropriate to use in our non-clinical samples. This cut-off furthermore limits the overestimation of prevalence rates, but it is important to note that the two questions used from the SHC-inventory are not equivalent to clinical diagnoses. Our study demonstrates associations between self-reported anxiety and depression and other individual and work-related factors, not necessarily associations between clinical diagnoses and these variables.

Helplessness and hopelessness were measured using TOMCATS. TOMCATS has been used in a few studies only. In a large sample of the general Swedish population, TOMCATS showed a clear three-factor structure, distinguishing between the three defined response outcome expectancies in CATS [238]. In our sample of municipal employees, we were however not able to distinguish between helplessness and hopelessness. A factor analysis of TOMCATS revealed that the items constructed to represent helplessness and the items constructed to represent hopelessness loaded on the same component. Based on these results, we decided to collapse the two theoretical subscales and treat them as on single factor in our analysis. The inability to distinguish between helplessness and hopelessness may be explained by less variance in our sample

compared to the Swedish sample. In a “healthy” working population most respondents are copers, and few report feelings of helplessness and hopelessness. This means we are dealing with non-normal and skewed distributions. This may again make it difficult to reveal enough variance to distinguish between helplessness and hopelessness in such samples. The Swedish sample was very large (n=11 441). Consequently, there was more variance in demographics, occupations, and also work participation among the respondents. Fifteen percent (n=1624) of the Swedish sample was outside the labor marked [238], and labor marked exclusion often has a negative effect on mental health. More respondents reporting feelings of helplessness and hopelessness may contribute to more variance, making them load on two components in the factor analysis. Even so, our sample of municipal employees was quite large, and it could be argued that a sufficiently developed questionnaire would have been able to detect differences also in this sample. Theoretically, it makes perfect sense to discriminate between helplessness and hopelessness. However, the wording of the items measuring helplessness and hopelessness in TOMCATS might make this distinction difficult. Even though they are formulated to capture if non-coping is your fault (hopelessness) or not (helplessness), they might all generate a negative perception. The feeling of not being able to cope is generally not good, even if it is your fault or not. Negative affect might thus make the same respondent score high on both helplessness and hopelessness. A factor analysis regroups variables into clusters based on shared variance [229], and if there is no or a little variance between the theoretical helplessness and hopelessness constructs, they will load on the same component. If general negative affect, which is a common feature of depression, is the reason for not being able to distinguish between helplessness and hopelessness, this may explain why we found no relationship between the helplessness/hopelessness variable and anxiety.

In conclusion, our hypothesis was not supported. Employees’ response outcome expectancies were significantly associated with anxiety and/or depression in four out of

five models, but number of substantial SHC was consistently the variable having the strongest association with anxiety and depression. Nevertheless, we suggest that workplace interventions targeting anxiety and depression may consider influencing employees' response outcome expectancies. There is limited evidence for prevention of the occurrence of SHC through specific interventions. Knowledge about SHC may increase coping and influence perceptions of SHC, thereby also alter some of the negative consequences SHC often have. Learning about health complaints does not change the health complaint itself but may inhibit the sensitization process by hindering unnecessary rumination. The results from this study were used in the planning and tailoring of the workplace intervention explored in paper III.

7.1.3. Research aim 2: to examine the relevance of distinguishing between directive or nondirective social support in a workplace setting

The findings in paper II verified that nondirective social support and directive social support were differently related to SHC, job satisfaction, job demands and job control. The Norwegian version of SSI loaded on two components, differentiating between nondirective social support and directive social support, and allowed us to examine whether the distinction between directive and nondirective social support was important for the employees' health and perception of different job characteristics. The results showed that nondirective social support was associated with lower scores, and directive social support was associated with higher scores, on musculoskeletal complaints. Nondirective social support was also associated with lower scores on pseudoneurological complaints, but there was no statistically significant association between pseudoneurological complaints and directive social support. For the work-related variables, nondirective social support was associated with reporting higher job satisfaction, lower job demands, and higher job control. Conversely, directive social

support was associated with lower job satisfaction, higher job demands, and lower job control.

The distinction between directive and nondirective social support was proposed by Fisher and coworkers [197]. Directive social support refers to support where the support provider takes the responsibility by telling the support receiver what he or she should do, think, or feel [198, 250]. Nondirective social support refers to support where the support provider cooperates with the support receiver, and the support provider acknowledges the support receiver's feelings and thoughts [198, 250]. This conceptualization of social support focuses on the way the support provider interacts with the support receiver, and has previously been examined in studies were family members [197, 198, 240], friends [197, 198, 240] or healthcare professionals [240, 241] have been the support providers. To our knowledge, this is the first study examining the distinction between directive and nondirective social support in a workplace setting, measuring perceived support from coworkers.

The importance of the distinction between directive and nondirective social support for health outcomes has previously been studied in both clinical and non-clinical samples. In non-clinical samples, nondirective social support is found to be positively related to health outcomes (e.g. less depressive symptoms) and directive social support to have no or a negative relationship with the same variables [198, 250]. These results are comparable to the results found in our sample of kindergarten employees. In clinical samples, nondirective support is similarly associated with positive health outcomes [197, 252, 265]. However, some studies also conclude that directive social support may be beneficial. This is seen in situations where the circumstances are acute, individuals lack the necessary skills to handle a challenge, or individuals are initiating a behavior change [197, 241]. In these situations, it may be more helpful, or even necessary, to pay

attention to immediate solutions rather than the support receiver's psychological needs. Furthermore, Harber et al. found support satisfaction to be related to both the relationship the support receiver had with the support provider (family or friends) and type of support provided (directive or nondirective) [198]. Nondirective support from family members was strongly related to support satisfaction, while nondirective social support from friends did not have the same strong relationship with support satisfaction. Directive social support from family members was unrelated, while directive social support from friends was negatively related to support satisfaction. Drawing on the results from this study, it may be that the provision of directive social support in relation to health complaints is more accepted from health professionals and in a clinical setting. In some healthcare situations, the support receiver may expect healthcare professionals to take control and behave in a more directive manner, simply because they are educated experts in the field. Receiving the same advice from family, friends, or coworkers may be experienced more inappropriate, consequently leading to aversion or a feeling of disempowerment. For health outcomes, it seems that both directive and nondirective social support may be beneficial, but differ based on the characteristics of the stressor, the setting, and the expectancy the support receiver has to the support provider. Our study showed that nondirective social support from coworkers was beneficial for musculoskeletal and pseudoneurological complaints. As described in previous sections, these health complaints are prevalent among employees and when the intensity of complaints gets high, they often interfere with our ability to stay at work. Even though the explained variance by type of social support was small, nondirective social support from coworkers was significantly associated with reporting less musculoskeletal and pseudoneurological complaints. Thus, increasing nondirective social support at work may provide a small, but relevant, contribution to the management of SHC in a workplace setting.

We found no other studies examining if the distinction in directive and nondirective social support is of relevance for employees' job satisfaction or the perception of job demands and job control. However, social support is frequently studied in relation to these work characteristics and is an important component in the demand-control-support model. In their meta-analytic review of the interrelationship between job demands, job control, and social support, Lunchman and González-Morales [266] found a negative relationship between job demands and social support from coworkers. Furthermore, they found a positive relationship between job control and social support from coworkers. This means that social support from coworkers was significantly related to perceptions of lower job demands and perceptions of higher job control [266]. Our study adds to this literature by showing that the way coworkers provide social support is of significance for this relationship. Nondirective social support had the same relationship with job demands and job control as found in the study of Lunchman and González-Morales [266]. However, directive social support had the opposite relationship and was associated with perceptions of higher job demands and perceptions of lower job control. Social support is generally also positively related to job satisfaction [267], and in our study, the regression model using job satisfaction as the outcome variable was the one with the highest explained variance by type of social support. As for job demands and job control, our findings indicate that distinguishing between directive and nondirective social support is of significance also for job satisfaction. Since nondirective support involves a collaborative relationship between the support provider and the support receiver, it is plausible that nondirective support at work may increase employees' perception of their own ability to perform particular work tasks and also increase job control. When employees feel empowered in their work situation, feel listened to, and are comfortable with asking questions and sharing concerns, it may increase commitment and job satisfaction. Nondirective support may have much in common with autonomy support, which in a workplace setting have been associated with less psychological distress [224], greater job satisfaction, and trust towards organizations [226]. These are factors characterizing good psychosocial work environments [134]. In contrast to nondirective social support, directive social support

has a more prescriptive nature, and may consequently lead to employees feeling that their input does not matter, lower commitment, and lower satisfaction. However, as noted before, directive support does not equal negative or unwanted support. In clinical interventions, directive social support has been beneficial in certain circumstances [197, 241]. This may be transferable to a workplace setting. When employees lack the necessary skills to handle a work task, or when the burden or stress level at work is high, directive social support may be preferred or even protective against adverse work and health outcomes.

Social support fluctuates along several other dimensions than the directive and nondirective dimension [268], and social support is operationalized in various ways. The measure of directive and nondirective social support is based on the way support is provided and each distinction in support function (e.g. instrumental and emotional) can be delivered in either a directive or a nondirective manner. In our study, both the directive and the nondirective component included items of an emotional and an instrumental character. For example, "Push you to get going on things" is directive emotional support, and “Tell you what to do” is directive instrumental support; “Asked how you are doing" is nondirective emotional support and "Cooperated with you to get things done" is nondirective instrumental support. There is inconsistency in the literature regarding which support function (i.e. emotional or instrumental) that is most important for health [269-271]. Semmer et al. [272] propose that this inconsistency may be a result of instrumental support sometimes having an emotional meaning. In their study on hospital patients, they found support to be perceived as useful only when the communication of care and understanding was present. This was regardless of support function and also applied for instrumental support. However, the emotional meaning a person attributes to provided instrumental support may be hard to anticipate, and may furthermore be context specific. Being told what to do may be perceived as very helpful (i.e. communicating care) in a patient setting where you lack the necessary knowledge

to handle your newly diagnosed disease. In a workplace setting, where you feel knowledgeable and empowered, being told what to do may be perceived as offending. Nevertheless, our factor analysis did not propose an additional distinction in support function and items were therefore divided only by type of support (i.e. directive and nondirective).

The directive and nondirective social support instrument measures perceptions of received social support and not perceptions of available support. This allowed us to empirically study how directive and nondirective support received from coworkers were more or less beneficial for our outcome variables. There are conflicting findings in the literature, but perceptions of available social support seems to be more consistently related to positive health outcomes [273] than received social support [274]. It has however been argued that this inconsistency is produced by received social support most commonly being operationalized as the quantity of received support and that this dimension of social support is closely linked to need for support [275]. Quantity of support may thus not accurately reflect the support system a person has, and it has been suggested that studies measuring the quantity of received support also should consider respondents' need for support [276]. In our study, received social support was not operationalized as quantity of support, but as employees' perception of type of support received from coworkers. As discussed in previous paragraphs, this dimension of support seems to be of significance for health. Also, measures of received social support may be less likely to capture other features, such as mood and personality characteristics, than measures of perceived available support [277, 278].

It may be argued that the items in the directive social support factor may capture more negative affect than the nondirective social support factor. The wording of the item "Point out harmful and foolish way you view things" may intuitively lead to a negative

interpretation, viewing this item as unhelpful social support. To point out harmful ways a person view things is clearly a direct approach, but such confrontations may lead to changed perspectives and possibly result in positive changes. Consequently, it could just as well be helpful support.

The results of the principal component analysis (PCA) in this study revealed seven items loading on the nondirective social support component and three items loading on the directive social support component. Please see paper II for results and interpretation of the PCA. A study limitation may be the low Cronbach's alpha value (α =0.51) of the directive social support construct. Generally, Cronbach's alpha values between 0.5-0.6 suggest poor internal consistency [279]. The Cronbach's alpha value is directly related to inter-item correlation but is also a function of the length of the test, and quite sensitive to the number of items in the scale [279]. The low alpha value of the directive social support scale may thus be a function of only three included items. Briggs and Cheek [279] suggest that inter-item correlation is a clearer measure of item homogeneity, as it is not influenced by scale length. For the directive social support scale, the mean inter-item correlation was 0.26, which is within the recommended optimal length of 0.2-0.4 [279], suggesting reasonably homogeneity. The distinction between directive and nondirective social support is furthermore conceptually meaningful and as discussed above, empirically useful. The content coverage of the directive social support scale is also near, or identical to, other studies examining the relevance of this social support distinction [240, 250]. Additionally, some may critique this study's use of fairly simple regression models. However, the aim of the study was to investigate the unique variance explained by nondirective and directive social support. In other words, we were interested in exploring if this distinction in support was of significance for the outcome variables, not to examine if they could explain the variance over and above other predictors.

In conclusion, nondirective social support was more positive for health and job variables than directive social support, and our hypothesis was supported. The findings suggest that nondirective social support may be an important component of workplace support. SHC, job satisfaction, job demands and job control are strongly related to sick leave and health. Musculoskeletal and mental health complaints are the main reasons for sick leave in Norway [1], and nondirective social support from coworkers was associated with reporting fewer of these complaints. High job demands, low job control, and low job satisfaction often have a negative influence on health and sick leave [280-283], and nondirective social support from coworkers was associated with lower reports of job demands and higher reports of job control and job satisfaction. Therefore, focusing on providing support in a more nondirective manner in the workplace may be of significance for health and sick leave. When the circumstances and the nature of the challenge suggest that nondirective social support is beneficial, interventions provided in a nondirective manner, focusing on self-determination and empowerment, may result in most favorable outcomes. In a workplace setting, such interventions may furthermore increase nondirective social support between employees. A workplace where coworkers support each other in a nondirective way may promote health through facilitating self-development, learning, self-determined motivation, and a feeling of being appreciated for one's competence.

7.1.4. Research aim 3: to examine if modifying a workplace intervention will improve effects on sick leave and other health-related outcomes

The results in paper III demonstrated that the MAW did not have a different effect on sick leave compared to the OAW. There was a miner difference in substantial low back pain between groups, but no other differences between groups on health complaints, coping, social support or job satisfaction. The OAW participants reported receiving more

nondirective social support from coworkers after the intervention year. The MAW participants also reported receiving more nondirective social support, but the change was not large enough to reach statistical significance.

For beliefs about back pain, positive changes were seen in both groups. The MAW group, which had one workplace session about back pain, had a significantly smaller reduction in the myths concerning slipped discs and imaging compared to the OAW group, which had three workplace sessions targeting back pain. For beliefs about mental health complaints, positive changes were also seen in both groups, even though the MAW was the only group that had a workplace session about mental health complaints included in the intervention. One statistical significant difference was detected between groups; the MAW had a reduction in employees believing that depression to a great extent is hereditary, while the OAW had an increase. Generally, there was a more positive change in beliefs about mental health complaints in the MAW group. The OAW group had positive changes for some of the beliefs about mental health complaints, but for two of the statements, they also had negative changes in beliefs.

Three previous studies [44, 45, 87] have investigated the effect of giving reassuring information about back pain at the workplace. All three studies found statistically significant differences in sick leave between the intervention group and a “treatment as usual” control group. In the current trial, we compared two groups which both received a version of the atWork intervention. A comparative effectiveness design was the best design to answer our research question, but the similarities between these two interventions may have made it difficult to detect differences between groups on a hard outcome such as general sick leave. atWork targets a population that can be labeled as healthy, and participants are generally not sick-listed. Because most of the target population is healthy and working, one cannot expect large effects on sick leave [41].

The effect size on sick leave in the RCT of Odeen et al. was relatively small when compared to a passive control group [45]. It is important to remember that there are fundamental differences between individual and population-based interventions. In population-based preventive interventions success is marked by a non-event, and population approaches frequently yielded small benefit to individuals [284]. Still, small reductions in risk factors or changes in health behavior as a result of population-based interventions may be more beneficial in the larger picture than a large change in high-risk individuals [284-286]. This "prevention paradox" may lead to a misperception of the benefits from preventive interventions given to people who are seemingly in good health [284, 287]. Even with relatively small effects, population-based interventions can produce large net benefits. As the outcome of interest in population-based preventive interventions may be far in the future, such interventions may also require long-term implementation, and follow-up, before effects can be seen [288].

The lack of effect on sick leave in this current trial may be explained by some obvious differences from the previous trials. The current trial consisted of more female employees than the trial of Odeen et al. [45] and the trial of Frederiksen et al. [87]. Generally, sick leave rates are higher for women than for men [1], but the mechanisms of this gap are not fully understood [289]. Smeby et al. concluded that occupation, working conditions, income, health, and mental distress could not explain why women had more sick leave than men and that explanations for the gender difference in sick leave should be sought elsewhere [290]. There seems to be some difference in attitudes, norms, and preferences to sick leave and work between genders, but not support for the hypothesis that these variations may explain the gender difference in sick leave [291]. A recently published review investigating the "double-burden hypothesis" concluded that work-family conflict was associated with later sick leave and that work-family conflict was more common for women than men [292]. This may contribute to the gender difference in sick leave, but the review says nothing about causal

relationships. The reasons for the gender gap in sick leave are in other words poorly understood, but there seems to be a consensus that gender plays a role in sick leave. Thus, the large proportion of women in our study sample may have affected the results. Our sample also consisted of only one occupational group, as opposed to the samples in the other mentioned trials [45, 87]. The sample in the study of Odeen et al. [45] consisted of a wide range of occupations, while the study of Frederiksen et al. [87] primarily consisted of employees having manual work task. Women working in the health and social sector, e.g. kindergartens, have a higher risk of sick leave compared to other occupations [293, 294]. According to national statistics in Norway, the sick leave rates for women in this sector are higher compared to women in the general working population [295, 296]. It may be that other aspects of the work environment, such as emotional demands [294], are more important for sick leave in care occupations. Therefore, specific workplace interventions such as atWork may not produce the same results as in other occupational groups. The current trial was also performed in the private sector, while the two other trials [45, 87] were performed among municipal employees. Generally, the sick leave rates are higher among municipal employees than private sector employees [297]. The reason for this is not clear, but it has been proposed that persons bothered by health complaints may find the employment and working conditions in the public sector more attractive and that there may be more perceived negative consequences of sick leave in the private sector [297]. There may be contextual differences between sectors influencing recruitment, and thereby also health and sick leave [297]. Finally, it should be noted that the measures of sick leave were not identical between trials. The study of Odeen et al. included both self-certified and physician-certified sick leave [45], while the study of Frederiksen et al. used self-reported days of not attending work [87]. These differences may be relevant for the results.

We know that work-related factors, such as job demands and job control, play a role in sick leave. The atWork intervention does not specifically target workplace risk factors,

and by only providing information about common health complaints, the intervention may be criticized for being too small to have a major impact on sick leave. The atWork intervention is designed to be a complementary intervention to other important health-promoting initiatives. This is underlined in the MAW, where the collaboration with the Inclusive Workplace Support Centers (Arbeidslivsentra) at NAV is a part of the intervention. This collaboration aims to merge knowledge about work and health, and thereby make it more apparent to workplaces that work and health factors should be seen in relation to each other. The Inclusive Workplace Support Centers were developed to provide sufficient support to workplaces to create a more inclusive work environment [298], and if the kindergartens had work challenges that were related to other factors than SHC, these centers could be contacted for support.

There was no consistent reduction in musculoskeletal or pseudoneurological complaints in any of the intervention groups. This is consistent with previous findings [45]. The aim of the interventions was to influence some of the negative consequences of SHC. Preventing SHC from occurring seems to be difficult, or may not be possible, and thus not an expected effect of the intervention. The prevalence of back pain, anxiety, and depression were similar to the rates observed in previous studies of Norwegian and Danish employees [45, 87, 263].

There was no effect of the interventions on overall job satisfaction. Considering that the mean level of job satisfaction was quite high at baseline, a significant increase in job satisfaction after participating in the intervention was not likely. Job satisfaction was measured with one single item, but single-item questions measuring overall job satisfaction have shown convergent validity with multi-item scales [299]. It was furthermore expected that this sample of healthy employees generally were copers. The atWork intervention aims to increase employees coping in regards to SHC, but no

changes in coping were observed. This finding in is similar to the one found in the trial of Odeen et al., where the same measure was used [45]. TOMCATS measure general coping expectancies, and will thus also capture other aspects of employees' life than just their responses to SHC. It may be that an instrument asking more directly about employees coping expectancies related to SHC could have produced other results.

The OAW had a statistically significant increase in nondirective social support, and there was a trend towards significance in the MAW. The atWork intervention is based on a nondirective social support model. The message in the intervention and the way it was delivered seemed to promote nondirective support of coworkers. As discussed in paper II, nondirective social support may facilitate coping and a feeling of being appreciated for one's abilities and thus provide a positive change to the psychosocial work environment. Recognizing others as valuable persons with capabilities is an important aspect of helpful support, emphasizing the importance of focusing on how we interact with each other [300].

The atWork intervention does not focus on symptomatic relief, but on knowledge and coping, aiming to give people a tool for self-management. In both groups, there were significant positive changes in beliefs about common health complaints. New knowledge may increase the accuracy of the cognitive models employees build regarding musculoskeletal and mental health complaints and lead to positive changes in illness perceptions [105]. This may again hinder unnecessary rumination and worry in regard to SHC, and change employees responses to health complaints when they occur.

It has been proposed that we are likely to see the end of maladaptive beliefs about low back pain in the future [301]. If so, this will probably have an impact on the effect of

interventions such as atWork. When comparing our baseline data, collected in 2015, with the data Ihlebæk and Eriksen collected from a sample of the general Norwegian population in 2003 [301], we see large differences in the percentage of respondents who believed in the back pain myths. The most prevalent myths in 2003 were those stating that "radiographs and newer imaging tests can always identify the cause of pain", "most back pain is caused by injuries or heavy lifting", and "everyone with back pain should have a spine radiograph". These were also the most prevalent myths in our sample. In the sample from 2003, 43 % believed that imaging could identify the cause of back pain, 47 % believed that back pain was caused by injury or heavy lifting, and 50 % believed that everyone with back pain should have a spine x-ray. In our sample, the percentages were 23, 31 and 21 respectively. In the first atWork trial [45], two of these statements were included. Baseline data from this trial, collected in 2008 and 2009, showed that 17 % of the municipal employees believed that injury and heavy lifting was the cause of back pain, and 13 % of the employees believed that everyone with back pain should have a spine x-ray. Although these samples may not be directly comparable, there seems to have been a general reduction in faulty beliefs about back pain in the population since 2003. However, some of the myths still exist. In fact, the myths measured in the first atWork trial [45] were more prevalent six years later, in the sample participating in the second atWork trial [302]. This may be a consequence of a lower public focus on back pain. In the recent years, it seems that the focus on common mental disorders has become more prominent. The increased economic burden of mental disorders may be the reason for this shift [1, 303]. Increased societal attention to mental health complaints may also explain why the OAW had changes in beliefs about mental health complaints despite this topic not being targeted in the intervention.

As discussed in relation to paper I, there were some challenges with the psychometric properties of TOMCATS. This involved the ability to distinguish between helplessness and hopelessness. In this paper, we decided to use the factor solution retained in the

Swedish sample [238], and also used in the first atWork trial [45]. This was done to compare the results from the first atWork trial to the results found in this trial. Also, we found it relevant to distinguish between helplessness and hopelessness in this study. As earlier described, there may be a delicate balancing act between building positive response outcome expectancies and no response outcome expectancies in the atWork intervention, and thus important to have no response outcome expectancies as a separate measure from negative response outcome expectancies.

Participants' beliefs about mental health complaints were measured by statements developed for this trial, by two of the researchers in the research group. The statements were constructed based on common worries and beliefs about mental health complaints found in the literature, but also on clinical experience. These statements have however not been used in other research projects, and the lack of a valid instrument to assess beliefs about mental health complaints may be a limitation of this trial. It may also be that our statements about mental health complaints do not reflect the most common worries and beliefs and that other aspects should have been included.

In conclusion, the MAW did not have a different effect on sick leave and other health-related measures compared to the OAW, and our hypothesis was not supported. The atWork intervention did produce positive changes in beliefs about common health complaints and social support, and is a viable model also for mental health complaints. atWork has shown a positive effect on sick leave in a previous trial, but we found no evidence that adding information about mental health complaints, in addition to musculoskeletal complaints, provided increased effects.

7.2. Methodological considerations

7.2.1. Strengths

The main strengths of this thesis are the RCT designs and the large number of participants included in all papers. A cluster RCT was used to test intervention effects, and randomized controlled trials are the superior design for this purpose [230]. A cluster randomization of the kindergartens was chosen due to the nature and aim of the intervention. The aim of atWork is to reach all employees at a workplace to provide the same information to everyone, and if questions or challenges emerge, discuss these openly. To reach this aim the workplace sessions were held for groups of employees, preferably the whole employee group at the same time. Thus, it would make little sense to randomize individual employees. The study was furthermore designed as a comparative effectiveness study, where the modified atWork intervention was compared to the original atWork intervention (best practice available). In addition to this being the proper design to answer our research question (i.e. will the MAW increase effect on sick leave and other health-related outcomes compared to the OAW?), an active control group also provided a near equal use of time in the groups, thus trying to eliminate attention bias. Hence, it is reasonable to assume that changes between groups were not caused by a difference in attention given to study participants. The trial can also be described as a pragmatic RCT, testing intervention effects in a real-life setting. Pragmatic trials are useful because of their ability to achieve a balance between internal validity, practical relevance and external generalizability [304]. Large sample sizes generally provide more information and allow for better determination of the average values of data, thereby avoiding errors from testing a small number of possibly atypical samples [305].

For the RCT, we published a study protocol [306] providing a detailed blueprint of our approaching trial. This enables more available public information, and readers can easily

compare what was intended to do with what was actually done, and be confident that we did not do a post-hoc change in study aims or any data dredging. Furthermore, the sample in the RCT consisted of only one occupational group. This limits the variability in the data, and large variability in human factors (e.g. occupation) may increase uncertainty in the conclusion [307].

In paper III, the primary outcome was sick leave, obtained from the national register in Norway. We used sick leave at the cluster level, which warrants data on all employees at the kindergartens and not only those responding to the questionnaire. Furthermore, the use of register data eliminates loss to follow-up for the primary outcome. It also bypasses the pitfalls of non-response biases [308], where measurement for example may be influenced by context or social desirability.

7.2.2. Limitations

Both papers I and II had cross-sectional designs. An obvious and primary limitation of a cross-sectional design is that data on the whole study sample is collected at one single point in time. This limits the ability to draw valid conclusions on what came first; the outcome of interest or the exposure. The inability to infer this temporal relationship between outcome and exposure implies that our studies only can conclude on associations between investigated variables and not on trends or causation [309]. For paper I, this means it was not possible to infer that having a high number of SHC and a high degree of helplessness/hopelessness preceded the onset of anxiety and depression and that these variables may be risk factors for anxiety and depression among employees. It could only be inferred that anxiety and depression were associated with number of SHC and helplessness/hopelessness. The same issue was present in paper II; it was not possible to infer that type of social support (i.e. directive or nondirective) preceded the onset of SHC or the outcome on different job characteristics. Nor was it

possible to infer that type of social support provided was a protective factor or a risk factor for any of the outcome variables used. It could only be inferred that nondirective social support from coworkers was related to less SHC and more positive outcomes on job variables, while directive social support from coworkers had the opposite relationship. The associations measured were also between exposure and having the outcome (prevalence), not between exposures and developing the outcome (incidence).

Paper I reported results from the study with the largest number of participants in this thesis, but even so, this was also the study with the lowest response rate (50 %). For paper II the response rate was 75 %, and for paper III the response rate was 63 %. It may be discussed what constitutes an acceptable response rate, but the lower the response rate is, the more significant is the risk of non-response bias. When studies have low response rates they can validly be criticized for biased results [310]. Furthermore, the use of volunteers is, in this perspective, also challenging. It may be that the volunteers are not representative of the whole target population [310]. A Norwegian population-based study found no difference between responders and non-responders [311], but the "healthy volunteer effect", where participants and responders tend to have better health than non-responders, has been highlighted in other studies [312, 313]. The opposite may however also be the case; participants might find the focus of the study and questionnaire very relevant for their own situation (e.g. a questionnaire about SHC is more interesting to answer if you are experiencing SHC) and thus choose to participate [314]. In our studies, we did not have information to investigate if (or how) our participants and responders differed from those who did not participate or respond. Both papers I and II were based on baseline questionnaire data, retrieved from two trials, and information on the employees who chose not to answer the baseline questionnaires was not available to us. In the RCT (paper III), we did not have data on the kindergartens which were invited to the trial but refused to participate or did not answer the invitation. It could be that the kindergartens who wanted to participate were

those who already had a large focus on sick leave prevention and the psychosocial work environment. Conversely, it may also be that this project appealed to those kindergartens who felt they had significant challenges in this area. Or, participating and not participating kindergartens may not differ at all. Because we were unable to answer these questions, we could not draw conclusions about the representability of participants, and selection bias may be present in all three studies.

In paper III, the sample consisted of 93 kindergartens, with an estimated total of 1011 employees. Even though this was a relatively large sample, the primary outcome was measured at the cluster level. Since we were unable to extract register data on sick leave for one of the kindergartens (see paper III), we had a sample of 92 kindergartens for the primary outcome analysis (MAW; n=45, OAW; n=47). Our power calculation was based on the results from the first atWork trial, where a statistically significant difference in sick leave between intervention (n=47) and control (n=42) group was detected. However, the effect size of the sick leave reduction was relatively small when compared to a passive control group [45]. In addition to sample size, statistical power also depends upon effect size [315]. When the effect size of an intervention is large, it is possible to detect an effect with a smaller sample size than when the effect size is small [315]. The similarities between the two interventions in the second atWork trial may have made the trial insufficiently powered to detect differences between groups on general sick leave. Furthermore, we were not able to conduct an intention-to-treat analysis. We applied for ethical approval to obtain sick leave data for the seven kindergartens that withdrew from the study but did not get permission to obtain this data.

The interventions delivered in the trial (paper III) possessed several interacting components, and RCT's of such interventions have been criticized as being a "black box" approach to intervention evaluation [316]. This is because RCTs generally only measure

outcomes and not implementation fidelity. A process evaluation alongside an RCT, measuring the degree to which interventions are implemented as intended, may contribute to explaining why an intervention worked or why it did not work [317]. Furthermore, implementation fidelity is an important factor for intervention success [318]. Evaluating the implementation process involves an assessment of the quality (fidelity) and quantity (dose) of what was delivered, the reach of the intervention and how delivery was achieved [319]. A systematic evaluation of intervention implementation was not conducted in this research project due to lack of resources and time, but the atWork intervention has implemented several actions to maintain fidelity. There was a detailed protocol for what should be presented at all sessions, in each intervention group, but objective data on facilitators' adherence to this protocol was not collected. However, the facilitators conducting the intervention had longstanding experience with delivering the atWork intervention and were thoroughly trained in what information to distribute and how to communicate this information in a nondirective manner. The same facilitators delivered the information in both the MAW and the OAW group, which means they had the same amount of training, but spill-over effects may be present. With regards to dose, 98 % of the kindergartens completed the intervention they were randomized to and the reach of the intervention was generally good. Attendance rates for the workplace sessions in MAW and OAW are presented in table 1. In the MAW, only one kindergarten was below 80 % participation for both workplace sessions. In the OAW, one kindergarten was below 80 % participation on all three workplace sessions and one kindergarten did not complete the third workplace session. Generally, there was a higher participation rate in the MAW compared to the OAW. For the first workplace session, 90 % of the kindergartens in the MAW had an attendance rate between 90-100 %, while only 53 % of the kindergartens in the OAW had the same high attendance. For the second workplace sessions, the same pattern was seen (see table 1). The reason for this difference is not known, but may have something to do with mangers participating in an introductory session in the MAW.

Table 1. Attendance rates, in numbers and percentages, for the workplace sessions in MAW and OAW

Attendance	MAW				OAW					
	Workplace session 1		Workplace session 2		Workplace session 1		Workplace session 2		Workplace session 3	
%	No.	%	No.	%	No.	%	No.	%	No.	%
100	26	59	27	60	19	40	16	33	18	38
90-100	14	31	11	25	6	13	9	19	8	17
80-90	3	6	5	11	13	27	12	25	12	25
70-80	1	2	1	2	5	10	10	21	5	10
60-70	1	2	1	2	5	10	1	2	4	8

There have been several changes from the OAW to the MAW (paper III). The inclusion of a workplace session about mental health complaints is only one of the changes made. There has been a decrease in the number of workplace sessions targeting musculoskeletal complaints. Also, an introductory session and evaluation meeting for managers, health and safety representatives, and local union representatives have replaced the peer adviser role. The part of the intervention targeting managers (introductory session and evaluation meeting) was also conducted in collaboration with NAV. This collaboration is not a part of the OAW. From a researcher's point of view, the evaluation of including and excluding elements in the intervention should ideally have been conducted using a stepwise approach, where only one new element was included in the MAW before exploring the effect in a trial. The relative importance, or insignificance, of the peer adviser role should also have been more systematically explored before excluding it from the MAW. However, this was a pragmatic trial to assess effect of the atWork version being implemented "as usual" at the time the trial was planned. In the three years between the first and the second atWork trial, feedback from workplaces receiving the intervention, clinical experiences, strategic documents, and collaborations has led to changes in the intervention.

7.3. Implications and direction for future research

Employees' response outcome expectancies had a stronger association with anxiety and depression than work-related factors, and addressing employees' response outcome expectancies in workplace interventions targeting mental health complaints may thus be equally or more important than focusing on the characteristics of work tasks. Nondirective social support was related to positive health and work outcomes, while directive social support had a negative association to the same variables. The way support is provided could be relevant to consider in interventions and strategies focused on influencing social support in the workplace. There is, however, a need for studies with a longitudinal design to explore plausible causal pathways between anxiety and/or depression, number of SHC and hopelessness/helplessness among employees, and also between type of workplace social support (i.e. directive or nondirective), SHC and work characteristics. The introduction of repeated measures of the same variables over time provides several benefits to help elucidate the associations found in papers I and II. Longitudinal data may provide information about the time ordering of variables involved in the association, and offer a better guard against third variable explanations [320]. Thus, such data would be better suited to guide the focus and content of future workplace interventions.

To provide a more valid exploration of some of our hypotheses, the psychometric properties of the Theoretically Originated Measure of the Cognitive Activation Theory of Stress (TOMCATS) should be further explored and tested. It might be that the instrument needs an improvement, or change, in items or scale. Theoretically, it makes sense to distinguish between helplessness and hopelessness, but the instrument has so far not provided a clear distinction between helplessness and hopelessness in "healthy" working populations.

We found an intervention effect on nondirective social support in the OAW group. The MAW group also had an increase in nondirective social support, but it was not statistically significant. As nondirective social support was found to be associated with less musculoskeletal and pseudoneurological complaints in paper II, this may be one of the mechanisms through which the intervention had an effect on sick leave in the first atWork trial. This could be further explored in the future. It would also be interesting to investigate if positive changes in beliefs about common health complaints are related to the type of social support provided to coworkers.

It is a point of discussion if the reduction from three workplace sessions targeting back pain in the OAW to only the one workplace session on back pain in the MAW was too large. The MAW generally had a smaller reduction in faulty beliefs about back pain compared to the OAW, and the difference in change was statistically significant for two of the statements. We do not know the practical significance of this difference, but it may be relevant for the participants' response to back pain when it occurs. The last workplace session in the OAW was mainly a repetition of the information distributed in the two former workplace sessions, and there was more room for interaction with the group. It may be that adding a third session in the MAW, focusing on repetition of the message distributed in the two former sessions, would be beneficial. A natural turn-over rate in workplaces may also create the need to educate new employees, and the results from the study of Ree et al. [321] furthermore suggest a need to repeat the message over time. When comparing the percentage of employees believing in the back pain myths in the two atWork trials [45, 302], it does not seem to have been a reduction in faulty back pain beliefs during the last 6 years. There may still be a need for interventions targeting these beliefs, and atWork seems to be a good approach for reducing faulty beliefs about back pain.

We found no difference between MAW and OAW on sick leave, and the MAW was not superior, or inferior, to the OAW on this outcome measure. For secondary outcomes, there were some differences in change for beliefs about common health complaints, but the differences were not large. Still, there are several good arguments for including mental health complaints in the atWork intervention. The comorbidity between musculoskeletal and mental health complaints is high and interventions should consider this comorbidity [12]. One of the identified key factors in effective workplace health promotion programs is to target several health complaints simultaneously [186, 190]. Stigmatizing attitudes towards people experiencing mental health complaints still exist [49, 179], and workplace exclusion due to mental health complaints has emerged as one of the largest health and social challenges in Norway [1, 4]. There is a large political and governmental focus on mental health and illness. In the Norwegian government's strategic plan for 2017-2022, called "Coping with life", the government states that mental health should have an equal part in the national and local public health work and emphasize that physical and mental health complaints should be understood in relation to each other [322]. For these reasons, I would recommend implementing the MAW rather than the OAW. However, there is still a need for more knowledge about effective interventions to reduce workplace exclusion due to mental health complaints. We need interventions with a long-term effect, and thus also trials with long-term follow up.

8. References

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PAPER I

I

Work and Mental Complaints: Are Response Outcome Expectancies More Important Than Work Conditions and Number of Subjective Health Complaints?

Tone Langjordet Johnsen, Aage Indahl, Hege Randi Eriksen, Camilla Ihlebæk & Torill Helene Tveito

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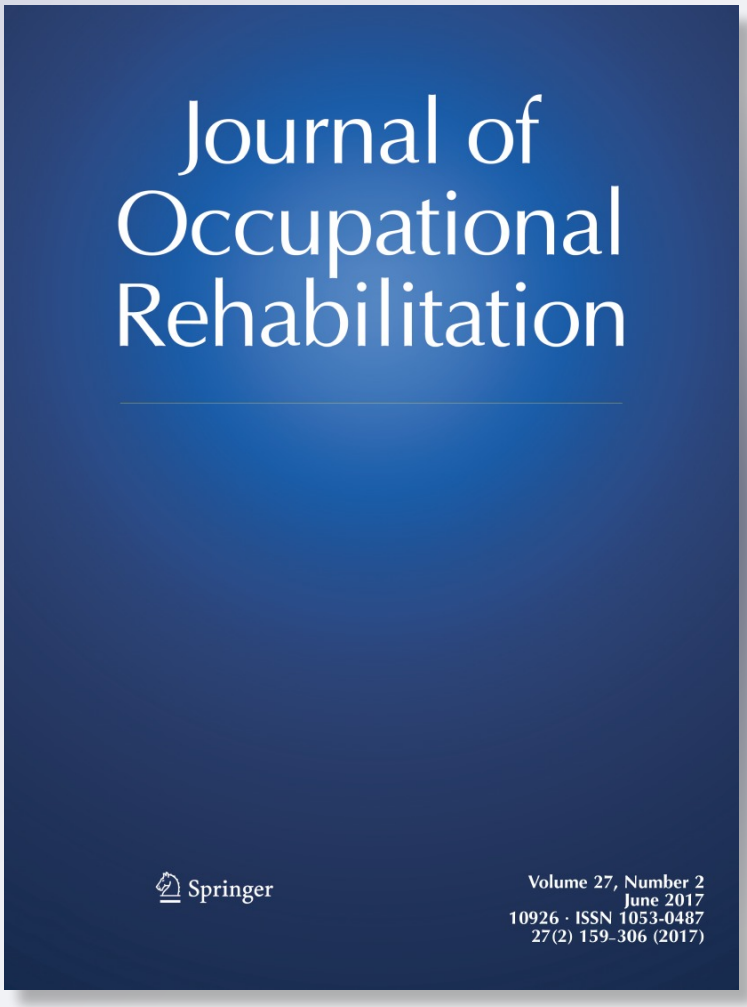

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Work and Mental Complaints: Are Response Outcome Expectancies More Important Than Work Conditions and Number of Subjective Health Complaints?

Tone Langjordet Johnsen[1,6] · Aage Indahl[1,3] · Hege Randi Eriksen[2,5] · Camilla Ihlebæk[4] · Torill Helene Tveito[2,6]

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Abstract *Purpose* Investigate the relative effect of response outcome expectancies, work conditions, and number of subjective health complaints (SHC) on anxiety and depression in Norwegian employees. Learned response outcome expectancies are important contributors to health. Individual differences in the expectancy to cope with workplace and general life demands may be important for how work conditions influence health. *Method* A survey was conducted among 1746 municipal employees (mean age 44.1, SD = 11.5, 81.5 % female), as part of a randomized controlled trial. This cross-sectional study used baseline data. Multiple logistic regression analysis was performed. Outcome variables were anxiety and depression; response outcome expectancies, work conditions, and number of SHC were independent variables. *Results* A high number of SHC was a significant factor in explaining anxiety (OR 1.26), depression (OR 1.22) and comorbid anxiety and depression (OR 1.31). A high degree of no and/or negative response outcome expectancies was a significant factor in explaining depression (OR 1.19) and comorbid anxiety and depression (OR 1.28). The variance accounted for in the full models was 14 % for anxiety, 23 % for depression, and 41 % for comorbid anxiety and depression. *Conclusion* A high number of SHC, and a high degree of no and/or negative response outcome expectancies were associated with anxiety and depression. The strongest association was found for number of SHC. However, previous studies indicate that it may not be possible to prevent the occurrence of SHC. We suggest that workplace interventions targeting anxiety and depression could focus on influencing and altering employees' response outcome expectancies.

Keywords Subjective health complaints · Anxiety · Depression · Occupational health · Coping

✉ Tone Langjordet Johnsen
tone.johnsen@siv.no

Aage Indahl
aagind@siv.no

Hege Randi Eriksen
hege.eriksen@uni.no

Camilla Ihlebæk
camilla.ihlebak@nmbu.no

Torill Helene Tveito
torill.tveito@uni.no

1 Division of Physical Medicine and Rehabilitation, Vestfold Hospital Trust, POB 2168, 3103 Tønsberg, Norway

2 Uni Research Health, POB 7810, 5020 Bergen, Norway

3 Department of Health Promotion and Development, University of Bergen, Bergen, Norway

4 Section of Public Health, ILP, Norwegian University of Life Sciences, Ås, Norway

5 Department of Sport and Physical Activity, Bergen University College, Bergen, Norway

6 Department of Health Promotion, University College of Southeast Norway, Horten, Norway

Introduction

Subjective health complaints (SHC) are general health problems with a high prevalence, affecting more than 90 % of the general population in Norway [1, 2]. SHC refers to somatic and psychological complaints without objective pathological signs or symptoms, or where the pathological findings are disproportionate to the illness experience [3]. Anxiety and depression are common psychological complaints, affecting 20–25 % of the adult population (see e.g. 4, 5).

Anxiety and depression has emerged as a major public and occupational health problem in many countries [6]. Depression and mild anxiety disorders are the most common mental disorders among employees, with a prevalence of between 6 and 10 % on a subclinical level (see e.g. 6, 7). As with other mental disorders, the core symptoms of anxiety and depression affect a person's emotional, cognitive and social functioning, which can have impact on working ability [8]. Studies based on records of sick leave certificates indicate that employees diagnosed with anxiety or depression often show a pattern with long duration and frequent recurrence of sick leave [9], and multiple episodes of sick leave is a risk factor for permanent exclusion from working life [10]. People who are employed have significantly better health compared with those who are outside the labour market [11], and being on disability benefits is a risk factor for early death [12]. The increase in sick leave and work disability because of anxiety and depression has serious negative health and economical consequences and thus calling for preventive strategies [13].

As the activity occupying most people's waking time is work, the work environment is an important arena for influencing the health of employees. Unemployment is a more important determinant for poor mental health than work-related risks, but in those who are working, the perception of high demands, low control, and high strain, as proposed in the 'job strain' model [14], and low work satisfaction are significantly associated with increased risk of anxiety and depression [15, 16]. Coping is also an important factor influencing the mental health of employees, as prolonged stress activation as a result of lack of coping might lead to a feeling of helplessness and hopelessness, and both of these conditions are proposed as cognitive models of depression [17, 18]. Coping increases resistance to development of mental disorders (see e.g. 19), and has been shown to be more important for health than control [20].

Coping is defined and measured in many different ways. The 'transactional model of stress and coping', which focuses on coping strategies [21], and self-efficacy, which focuses on the belief that a person can act in a way that leads to a particular goal [22], are influential models. However, in this study, coping is defined and measured as a positive response outcome expectancy, based on the Cognitive Activation Theory of Stress (CATS) [18]. CATS offer a psychobiological explanation for the presumed relationships between health and internal and external events. These events are referred to as "stress" [18]. Whether an event is pleasant or threatening depends on a person's appraisal of the situation, which again is based on previous experience and learning and expectations of one's responses [18]. Specific responses or coping strategies may alter the stress stimuli, and these effects will be stored as response outcome expectancies. CATS states that the strategy chosen does not predict a person's internal state and thus it does not predict health effects [18]. CATS argues that coping predicts relations to health and disease only when it is defined as positive response outcome expectancy, and that the most important aspect of coping for health outcomes is not how a person copes but rather if a person expects to cope at all [18]. In CATS, response outcome expectancies may be positive (coping), negative (hopelessness), or the individual may have established no response outcome expectancy (helplessness). The ability to react to challenges and changes with a general alarm response is an essential element of our self-regulating system. The alarm response elicits a general increase in wakefulness and brain activation, and specific responses to manage the reason for the alarm [18]. But, there is no linear relationship between the challenges or demands the individual is faced with, and the increase in activation. It is the individual's experience of the demands and the expectancies of the response outcome that is important for the duration of the activation. A short-lasting activation has no proven ill effects, but may rather have a positive training effect [18]. Long-lasting or sustained activation may however produce negative health effects, illness or disease [18]. Individual differences in the expectancy and ability to cope with workplace and general life demands may thus be important for how the work conditions influence the health of the employees [19, 20].

Somatic and mental complaints are frequently co-occurring. Unexplained or multiple somatic symptoms are strongly associated with coexisting depressive and anxiety disorders (see e.g. 23, 24), and the prevalence rates of mental disorders is found to increase with the growing number of somatic disorders [25]. Anxiety and depression are also often co-occurring, and 85 % of adults with depression experience significant symptoms of anxiety, and 58 % have a diagnosable anxiety disorder during their lifetime [26, 27]. However, it is important to remember that there are many similarities between anxiety and depression in terms of risk factors, symptoms, and genetic factors [28]. In general, there is a strong association between number of symptoms and overall health and functional status, and the simple method of counting symptoms might be valuable in research on medically unexplained conditions [29, 30].

The aim of this study was to explore the association between employees reporting anxiety and/or depression on the Subjective Health Complaint inventory (SHC), a inventory that records complaints, without asking for attributions or medical diagnosis [31], and response outcome expectancies, work satisfaction, physical and mental work strain, and number of SHC. We hypothesize that response outcome expectancies is a stronger predictor for anxiety and depression than work satisfaction, physical and mental work strain and number of SHC.

Method

Sample and Procedure

The sample consisted of 1746 Norwegian municipal employees recruited from two municipalities in Norway, as part of a large randomized controlled trial; 'at Work' [32]. All municipal employees above 18 years of age in the cities of Kongsberg and Horten, Norway, were invited to participate in the study. At the start of the study, it was estimated to be approximately 1500 municipal employees in Kongsberg and 2000 in Horten, giving a response rate of approximately 50 %. 1716 employees answered the item regarding anxiety, and 1721 employees answered the item regarding depression; 24 employees did not answer the anxiety nor the depression item and were excluded from the analysis, leaving a total sample of 1722 employees [81 % females, mean age = 44.1, SD = 11.5, mean years of education 14.5 (SD = 3)].

Ethical Considerations

The study was conducted according to the Declaration of Helsinki [33], and was approved by the appropriate ethics committee (REK-vest, ID 6.2008.117), and data protection officials (NSD, ID 18,997, Rikshospitalet, ID 08/2421). A declaration of informed consent was collected from all participants.

Instruments

Outcome Variables

Anxiety and depression were measured by the Subjective Health Complaint inventory (SHC) [31]. SHC is a reliable and valid measure of common health complaints [31] and consists of 29 questions concerning subjective somatic and psychological complaints experienced during the last 30 days. The SHC inventory records complaints, without asking for attributions or medical diagnosis [31]. The selection of questions is based on frequent health complaints and reasons for encounter with the general practitioner, and is not based on any specific theory [3]. The severity of the complaints is rated on a four point scale (0 ~ "not at all", 1 ~ "a little", 2 ~ "some", 3 ~ "severe"). The SHC inventory yields five subscales: musculoskeletal complaints (headache, neck pain, upper back pain, low back pain, arm pain, shoulder pain, migraine, and leg pain during physical activity), pseudoneurology (extra heartbeats, heat flushes, sleep problems, tiredness, dizziness, anxiety, and sadness/depression), gastrointestinal problems (heartburn, stomach discomfort, ulcer/non-ulcer dyspepsia, stomach pain, gas discomfort, diarrhea, and obstipation), allergy (asthma, breathing difficulties, eczema, allergy, and chest pain), and flu (cold/flu and coughing). In this study we used the items measuring anxiety and depression in the SHC inventory as outcome variables. The exact wording of the anxiety and depression items on the SHC was "anxiety" for the anxiety item and "sad, depressed" for the depression item. These two single items in SHC is found to perform similar with two widely used and validated questionnaires, The Hospital Anxiety and Depression Scale (HADS) and Hopkins Symptom Checklist–25 (HSCL), in identifying anxiety and depression [34]. Employees were regarded to have substantial complaints if they had answered some (score 2) or severe (score 3) in answer to "degree" on the anxiety and depression items in SHC [1].

Predictor Variables

Response outcome expectancy was measured by nine items from The Theoretically Originated Measure of the Cognitive Activation Theory of Stress (TOMCATS) [35]. It is a newly developed scale, designed to measure response outcome expectancies as defined in CATS [18]. The scale consists of three factors, which represent the three response outcome expectancies in CATS: positive expectancy (coping) (two items), no expectancy (helplessness) (four items) and negative expectancy (hopelessness) (three items). The three factors consists of the following statements: (1) Coping: "When I prioritize a task, I usually achieve my goal" (#1) and "I can solve most difficult situations with a good result" (#7) ($\alpha = 0.5$), (2) Helplessness: "Experience has taught me that even big attempts gives very small results" (#9), "I really don't have any control over the most important issues in my life" (#4), "All my attempts at changing my life are meaningless" (#8), and "I wish I could change my life, but it's not possible" (#6), (3) Hopelessness: "All my attempts at making things better just make them worse" (#2), "It's better that others try to solve my problems than for me to mess things up and make them worse" (#5), "I would have been better off if I didn't try so hard to solve my problems" (#3). All items were rated on a five point scale from 0 ~ "not true at all"—4 ~ "completely true". In a previous study of a Swedish population [35], the inventory proved to have high reliability and a clear factor structure. In this study helplessness and hopelessness are treated as one factor due to the results on factor and reliability analysis [36]. Chronbach's alpha of the helplessness/hopelessness construct was 0.79.

Work satisfaction was measured by two single questions: "Do you enjoy your work?", with the response categories; 0 ~ "no", 1 ~ "sometimes", 2 ~ "yes", and "How satisfied are you with your work when you take into

Table 1 Mean and 95 % CI for person and health variables of the participants

Variables	Mean (95 % CI)
Age	44.1 (43.59–44.70)
Years of school	14.5 (14.39–14.68)
Coping (0–8)	6.03 (5.98–6.08)
Helplessness/hopelessness (0–28)	5.2 (4.99–5.40)
Number of substantial subjective health complaints (0–27)	3.26 (3.10–3.42)

consideration the work routines, management, salary, opportunity for advancement and work colleagues?", rated on an eleven point scale ranging from 0 ~ "not satisfied" to 10 ~ "very satisfied".

Physical and mental work strain was measured by two single questions: "Do you have heavy/repetitive work?", rated on an eleven point scale ranging from 0 ~ "not at all" to 10 ~ "very heavy/repetitive", and "Do you experience your current work as stressful?", rated on an eleven point scale ranging from 0 ~ "not stressful at all" to 10 ~ "very stressful".

Number of substantial subjective health complaints was measured by the 27 remaining items of the Subjective Health Complaint inventory (SHC) [31]. We used the method of counting symptoms, as proposed by Kamaleri et al. [30]. Like the outcome variables, employees were categorized to "substantial complaints" if they responded "some" (score 2) or "severe" (score 3) on "degree" of SHC [1].

Statistics

All analyses were conducted using SPSS version 16.0 (Chicago: SPSS Inc). Our models contained ten independent variables used to assess the likelihood that respondents would report anxiety and/or depression, or comorbid anxiety and depression in the last 30 days. The outcome variables were dichotomized to 0 ~ "not at all" or "a little", and 1 ~ "some" or "severe", and logistic regression analyses were used to test the study hypothesis. All models were adjusted for age. A series of hierarchical logistic regression analyses were performed, evaluating whether each predictor was independently associated with the outcome variables. Multivariate models was then conducted, with gender being the first variable included in the models, followed by years at school, response outcome expectancies, work satisfaction, physical and mental work strain, and number of substantial SHC. Demographic variables were entered first into the model, which allowed for examination of the significance of hypothesized variables in predicting anxiety and/or depression, while controlling for demographic variables. Response outcome expectancies were then entered, to test the hypothesis that response outcome expectancies would predict anxiety and/or depression. In turn, work satisfaction, physical and mental work strain, and number of substantial SHC were entered in order to investigate if these variables would increase the prediction. The categorical work satisfaction variable with tree categories was recoded into a dichotomous variable, 0 ~ "no" or "sometimes", and 1 ~ "yes", before it was included in the models. The seven items measuring helplessness/hopelessness was computed into one variable ranging from 0 to 28, and a high score indicated a high degree of helplessness/hopelessness [36]. The two items measuring coping was computed into one variable ranging from 0 to 8, and a high score indicated a high degree of coping. The three continues variables measuring work satisfaction and physical and mental work strain were dichotomized using a median split (Table 2).

Results

Demographics

The demographic, work and psychological characteristics of the participating employees are shown in Tables 1 and 2.

Anxiety

Number of substantial SHC was the one variable that remained a significant factor in explaining anxiety among employees in the full model (see Table 3). The full model containing all predictors was statistically significant, $X^2 = 36.34$ (10, N = 1570), $p < .001$, indicating that the model was able to distinguish between employees who did report anxiety and those who did not report anxiety (Nagelkerke's R^2 .14).

Depression

Number of substantial SHC and helplessness/hopelessness were the two variables that remained significant factors in explaining depression among employees in the full model (see Table 3). Number of SHC was the variable with the highest explanatory power. The full model containing all predictors was statistically significant, $X^2 = 113.64$ (10, N = 1575), $p < .001$, indicating that the model was able to

Table 2 Percentage of person, anxiety, depression and work variables of the participants

Variables			%
Gender	Female		81.5
Comorbid anxiety and depression (n = 200)	Any level		11.6
		A little	7.9
		Some	3.0
		Severe	0.7
Anxiety (n = 61)	Any level		3.5
		A little	2.9
		Some	0.5
		Severe	0.1
Depression (n = 217)	Any level		12.6
		A little	10.4
		Some	1.7
		Severe	0.5
Do you enjoy your work?		Yes	89.6
		Sometimes	8.8
		No	0.4
Low work satisfaction			47.4
High physical work strain			40.3
High mental work strain			42.8

distinguish between employees who did report depression and those who did not report depression (Nagelkerke's R^2 .23).

Anxiety or Depression

Number of substantial SHC and helplessness/hopelessness were the two variables that remained significant factors in explaining anxiety or depression among employees in the full model (see Table 3). Number of SHC was the variable with the highest explanatory power. The full model containing all predictors was statistically significant, $X^2 = 147.02$ (10, N = 1576), $p < .001$, indicating that the model was able to distinguish between employees who did report anxiety or depression and those who did not report anxiety or depression (Nagelkerke's R^2 .24).

Comorbid Anxiety and Depression

Number of substantial SHC and helplessness/hopelessness were the two variables that remained significant factors in explaining comorbid anxiety and depression among employees in the full model (see Table 3). Number of SHC was the variable with the highest explanatory power. The full model containing all predictors was statistically significant, $X^2 = 168.16$ (10, N = 1530), $p < .001$, indicating that the model was able to distinguish between employees who did report comorbid anxiety and depression and those who did not report comorbid anxiety and depression (Nagelkerke's R^2 .42).

Anxiety and/or Depression

Number of substantial SHC, helplessness/hopelessness, and high mental work strain were the three variables that remained significant factors in explaining anxiety and/or depression among employees in the full model (see Table 3). Number of SHC was the variable with the highest explanatory power. The full model containing all predictors was statistically significant, $X^2 = 268.62$ (10, N = 1626), $p < .001$, indicating that the model was able to distinguish between employees who did report anxiety and/or depression and those who did not report anxiety and/or depression (Nagelkerke's R^2 .34).

Discussion

The aim of this study was to explore the association between anxiety and/or depression, and response outcome expectancies, work satisfaction, physical and mental work strain, and number of SHC in Norwegian municipal employees. The respondents in this sample reported on average a high degree of coping and a low degree of helplessness/hopelessness, which is to be expected in a healthy working population [35]. We hypothesized that response outcome expectancies would be the strongest predictor. The strongest association was however found between a high number of SHC and substantial anxiety and depression. A high degree of helplessness/hopelessness was a significant factor in explaining substantial

Table 3 Odds ratio and 95 % CI of person, work and psychological variables predicting likelihood of reporting severe anxiety and/or depression in the last 30 days

	Age-adjusted OR	Adjusted for yrs at school	Adjusted for outcome exp.	Adjusted for work satisfaction	Adjusted for work strain	Adjusted for # severe SHC
Anxiety, n = 31						
Age						
Women	0.54 (0.25–1.19)	0.57 (0.24–1.28)	0.60 (0.26–1.38)	0.61 (0.26–1.41)	0.60 (0.26–1.41)	0.44 (0.18–1.08)
Years of education	0.98 (0.86–1.11)	0.98 (0.87–1.11)	1.01 (0.88–1.14)	1.00 (0.88–1.13)	0.98 (0.86–1.12)	1.00 (0.87–1.15)
High helplessness/hopelessness	1.12 (1.04–1.21)*		1.08 (0.99–1.18)	1.06 (0.97–1.17)	1.07 (0.97–1.17)	1.02 (0.93–1.12)
Low coping	1.36 (1.00–1.84)*		1.21 (0.84–1.73)	1.15 (0.80–1.65)	1.14 (0.80–1.65)	1.16 (0.81–1.66)
Do not/sometimes enjoy work	2.34 (0.95–5.81)*			1.55 (0.55–4.34)	1.42 (0.50–4.08)	1.29 (0.44–3.77)
Low work satisfaction	1.19 (1.02–1.40)*			1.14 (0.95–1.36)	1.11 (0.91–1.34)	1.10 (0.91–1.33)
High physical work strain	1.08 (0.94–1.24)				0.94 (0.79–1.12)	0.93 (0.78–1.10)
High mental work strain	1.17 (1.02–1.35)*				1.11 (0.94–1.31)	1.05 (0.89–1.24)
Number of substantial subjective health complaints	1.26 (1.17–1.37)**					1.26 (1.14–1.38)**
Depression, n = 72						
Age						
Women	0.88 (0.49–1.58)	0.83 (0.46–1.50)	1.05 (0.56–1.95)	1.06 (0.57–1.99)	1.02 (0.54–1.92)	0.79 (0.41–1.53)
Years of education	1.01 (0.94–1.10)	1.01 (0.93–1.09)	1.07 (0.98–1.17)	1.07 (0.97–1.16)	1.04 (0.95–1.14)	1.05 (0.95–1.16)
High helplessness/hopelessness	1.24 (1.18–1.31)**		1.24 (1.17–1.31)**	1.22 (1.15–1.30)**	1.22 (1.15–1.30)**	1.19 (1.12–1.27)**
Low coping	1.49 (1.22–1.82)**		1.13 (0.89–1.45)	1.07 (0.84–1.37)	1.07 (0.83–1.37)	1.06 (0.82–1.37)
Do not/sometimes enjoy work	3.44 (1.97–6.03)**			1.43 (0.73–2.81)	1.23 (0.61–2.47)	1.01 (0.50–2.11)
Low work satisfaction	1.24 (1.11–1.37)**			1.14 (1.01–1.29)*	1.11 (0.98–1.26)	1.10 (0.97–1.26)
High physical work strain	1.12 (1.02–1.23)*				0.95 (0.84–1.06)	0.94 (0.83–1.05)
High mental work strain	1.25 (1.14–1.33)**				1.14 (1.02–1.28)*	1.09 (0.97–1.22)
Number of substantial subjective health complaints	1.27 (1.20–1.35)**					1.22 (1.14–1.31)**
Anxiety or depression, n = 103						
Age						
Women	0.74 (0.46–1.19)	0.73 (0.45–1.18)	0.85 (0.51–1.42)	0.86 (0.51–1.44)	0.84 (0.50–1.41)	0.61 (0.35–1.05)
Years of education	1.00 (0.94–1.08)	1.00 (0.93–1.07)	1.05 (0.98–1.13)	1.04 (0.97–1.13)	1.02 (0.94–1.10)	1.04 (0.96–1.13)
High helplessness/hopelessness	1.21 (1.16–1.27)**		1.20 (1.14–1.26)**	1.18 (1.12–1.24)**	1.18 (1.12–1.25)**	1.16 (1.10–1.22)**
Low coping	1.47 (1.24–1.75)**		1.16 (0.94–1.42)	1.10 (0.89–1.35)	1.09 (0.88–1.35)	1.08 (0.87–1.35)
Do not/sometimes enjoy work	3.21 (1.96–5.23)**			1.53 (0.86–2.72)	1.34 (0.74–2.42)	1.09 (0.58–2.06)
Low work satisfaction	1.23 (1.13–1.35)**			1.14 (1.03–1.27)*	1.11 (1.00–1.24)	1.11 (1.00–1.25)
High physical work strain	1.11 (1.03–1.20)*				0.94 (0.87–1.04)	0.93 (0.84–1.03)
High mental work strain	1.24 (1.14–1.34)**				1.14 (1.04–1.25)*	1.08 (0.98–1.19)
Number of substantial subjective health complaints	1.30 (1.23–1.37)**					1.26 (1.19–1.34)**

Table 3 continued

	Age-adjusted OR	Adjusted for yrs at school	Adjusted for outcome exp.	Adjusted for work satisfaction	Adjusted for work strain	Adjusted for # severe SHC
Comorbid anxiety and depression, n = 54						
Age						
Women	1.81 (0.77–4.28)	2.07 (0.81–5.27)	2.60 (0.96–7.04)	2.94 (1.06–8.17)*	2.74 (0.97–7.69)	1.84 (0.60–5.61)
Years of education	0.96 (0.88–1.05)	0.96 (0.88–1.06)	1.05 (0.95–1.16)	1.03 (0.93–1.15)	0.99 (0.88–1.10)	0.99 (0.88–1.13)
High helplessness/hopelessness	1.35 (1.26–1.44)**		1.35 (1.26–1.45)**	1.34 (1.25–1.45)**	1.34 (1.24–1.45)**	1.28 (1.18–1.39)**
Low coping	1.80 (1.46–2.23)**		1.30 (1.00–1.68)*	1.15 (0.88–1.50)	1.15 (0.87–1.50)	1.15 (0.86–1.53)
Do not/sometimes enjoy work	5.74 (3.19–10.31)**			2.48 (1.18–5.18)*	1.80 (0.83–3.90)	1.73 (0.73–4.09)
Low work satisfaction	1.33 (1.17–1.50)**			1.16 (1.00–1.36)	1.12 (0.95–1.32)	1.10 (0.93–1.31)
High physical work strain	1.22 (1.09–1.35)**				0.96 (0.83–1.10)	0.93 (0.80–1.08)
High mental work strain	1.40 (1.25–1.56)**				1.27 (1.10–1.46)**	1.15 (1.00–1.34)
Number of substantial subjective health complaints	1.39 (1.30–1.48)**					1.31 (1.21–1.42)**
Anxiety and/or depression, n = 157						
Age						
Women	0.96 (0.63–1.45)	0.96 (0.63–1.49)	1.17 (0.73–1.86)	1.20 (0.75–1.94)	1.16 (0.71–1.87)	0.81 (0.48–1.35)
Years of education	0.99 (0.93–1.04)	0.99 (0.93–1.04)	1.05 (0.99–1.12)	1.03 (0.97–1.11)	1.01 (0.95–1.08)	1.03 (0.96–1.11)
High helplessness/hopelessness	1.25 (1.21–1.31)**		1.24 (1.19–1.30)**	1.22 (0.93–1.33)**	1.22 (1.17–1.27)**	1.18 (1.13–1.24)**
Low coping	1.59 (1.38–1.83)**		1.18 (1.00–1.41)	1.11 (0.93–1.33)	1.12 (0.94–1.34)	1.11 (0.92–1.34)
Do not/sometimes enjoy work	3.99 (2.69–5.91)**			1.71 (1.06–2.77)*	1.43 (0.87–2.36)	1.18 (0.68–2.04)
Low work satisfaction	1.26 (1.17–1.36)**			1.15 (1.05–1.25)*	1.10 (1.01–1.21)*	1.10 (1.00–1.23)
High physical work strain	1.14 (1.07–1.22)**				0.96 (0.87–1.04)	0.95 (0.87–1.03)
High mental work strain	1.29 (1.20–1.37)**				1.17 (1.08–1.27)**	1.09 (1.00–1.19)*
Number of substantial subjective health complaints	1.34 (1.23–1.40)**					1.28 (1.22–1.35)**

* $p \leq .05$, ** $p \leq .001$

depression, but not substantial anxiety. Thus, it may be that the depression-item has a higher explanatory power to the effect of helplessness/hopelessness in the analyses including both anxiety and depression as the dependent variable. The model with the highest proportion of variance accounted for was the one using comorbid anxiety and depression as dependent variable. According to Nagelkerke "pseudo" R^2 the explained variance for this model was 41 %. For anxiety and depression alone the explained variance was lower, respectively 14 and 23 %.

Our findings are in accordance with a previous study that found a higher prevalence of SHC in groups that reported low coping in the normal working population, suggesting that lack of coping with stress, meaning low expectancies of a positive outcome, play an important role for normal SHC [20]. It may not be possible to prevent the occurrence of SHC. These complaints seem to be inherent in human nature and a part of everyday life, regardless of society or modern civilization [37]. However, it may be possible to influence employees' response outcome expectancies, which in turn may influence the perception of health and further prevent negative consequences of such complaints [32]. Inability to cope with health complaints, the stress of an adverse work environment, or general life demands, may aggravate and reinforce the perception of health complaints, which in turn may have an effect on sensitization processes [38]. When complaints get intolerable we seek help and comfort, and this is the major reason for visiting the general practitioner [39]. Few of these patients have any serious medical condition or pathological findings, and there is no specific treatment for most of them. Despite this fact, and because the complaints are still very troublesome, many keep asking for medical explanations and medical help. A constant pursuit of answers and treatment for these conditions may have an unfavorable effect on the individual, such as unnecessary worrying [40]. Health worry has been found to predict the occurrence of health complaints [41], and both rumination and worry are central factors in anxiety disorders and depression [42]. A high frequency of visits to medical practitioners for symptoms that disrupt normal activities is also found to be a strong predictor for the development of medically unexplained physical symptoms [43]. There is a high focus on treatment for SHC, and many possible different treatment options, but little information about the limited effect many of the treatments have on these conditions. The strain on health from treatments that does not work is an important aspect to consider.

In this present study no and negative response outcome expectancies are a stronger predictor for anxiety and depression than physical and mental work strain. These results can be explained within the framework of CATS [18], where the expectancy of being able to cope with challenges or demands are more important for employees health than the physical demand itself. All stress stimuli are filtered before it gets access to the response system, and how a person reacts to the stimulus is determined by his or her experience of the demand and the expectancy of the outcome. If an employee expects to be able to handle a situation or demand with a positive result, the increase in activation is short and has a positive influence on health. If an employee expects not to cope with a situation or a demand, the activation may be sustained over time, which is associated with illness, disease, and poor health [44]. Our results also indicate that a feeling of helplessness (no response outcome expectancy) and hopelessness (negative response outcome expectancy), which both are proposed models for anxiety and depression [18, 45], are more important for employees' mental health than work satisfaction.

Although the results were statistically significant, the effect sizes were relatively small. This may be a consequence of the large sample, as large samples make it more likely to achieve statistical significance even with small effect sizes. However, a large sample increases the likelihood that the results are in accordance with the actual population value, and even small effect sizes might have important practical significance [46]. Anxiety and depression have a substantially higher explanatory power in functional status than other SHC [29], and are among the most frequent causes of long-term sick leave and disability pensions in Norway [47]. Because the economic impact of sick leave is large, even marginal reductions and improvements may induce considerable savings. As response outcome expectancies may be possible to alter, our results imply that influencing employees response outcome expectancies could be an important focus in future workplace interventions targeting anxiety and depression. Nevertheless, it is probably equally important to also focus on creating an including work culture at the workplace, where employees with complaints are regarded as a part of the normal work environment and not excluded because of their health challenges.

Strengths and Limitations

One of the main strengths of the study is that it is based on a large and representative sample of Norwegian municipality employees, which provides a good basis for generalization of the results to other worksites in the public sector. The sample is diverse with regard to work type and workplace size, which reduces the possibility of localization or group specific effects. However, we should be cautious about generalizing our finding to employees in the private sector.

A response rate of about 50 % may limit the validity of the findings. Even though considerable efforts were made

to improve the response rate by providing information to the employees about the project, it remained low. The high predominance of women in the sample (81 %) is in accordance with the gender distribution of public sector employees, as about 70 % of all public sector employees are women, with the majority working in the municipalities [48]. In the two participating municipalities, 79 % and 68 % of the employees are women.

There might be limitations with using single-item questions when measuring psychological constructs [49] and the inclusion of validated scales on work satisfaction and work strain could provide more reliable conclusions regarding the relationship between anxiety, depression, and work characteristics. However, single-item questions measuring both work satisfaction [49] and work strain [50] indicates convergent validity with multi-item scales, which support the argument that a single-item question is acceptable. The anxiety- and depression items in SHC is found to be a good indicator in identifying anxiety and depression, when compared with widely used screening questionnaires [34]. From an ethical point of view, using a single-item question, as opposed to a multi-item scale, decreases the burden on the study participants.

Conclusion

A high number of SHC, and a high degree of no and/or negative response outcome expectancies were associated with anxiety and depression in Norwegian municipal employees. The associations were small, although statistically significant. Because SHC seems difficult to prevent, we suggest that future workplace intervention targeting anxiety and depression could focus on influencing and altering employees' response outcome expectancies, which may influence the perception of health and prevent negative consequences of SHC. However, we do need more research to investigate the relationship between response outcome expectancies and SHC in employees.

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Compliance with Ethical Standards

Conflict of interest Authors Johnsen, Indahl, Eriksen, Ihlebæk and Tveito declare that they have no conflicts of interest.

Ethical Approval All procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1975, as revised in 2000. Informed consent was obtained from all individual participants included in the study.

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PAPER II

II

Scandinavian Journal of Public Health, 1–10

ORIGINAL ARTICLE

Directive and nondirective social support in the workplace – is this social support distinction important for subjective health complaints, job satisfaction, and perception of job demands and job control?

TONE LANGJORDET JOHNSEN[1,2], HEGE RANDI ERIKSEN[3,4], AAGE INDAHL[1] & TORILL HELENE TVEITO[2,3]

[1]Division of Physical Medicine and Rehabilitation, Vestfold Hospital Trust, Norway, [2]Department of Health, Social and Welfare Studies, University College of Southeast Norway, Norway, [3]Uni Research Health, Bergen, Norway, and [4]Department of Sport and Physical Activity, Western Norway University of Applied Sciences, Norway

Abstract

Aims: Social support is associated with well-being and positive health outcomes. However, positive outcomes of social support might be more dependent on the way support is provided than the amount of support received. A distinction can be made between directive social support, where the provider resumes responsibility, and nondirective social support, where the receiver has the control. This study examined the relationship between directive and nondirective social support, and subjective health complaints, job satisfaction and perception of job demands and job control. *Methods:* A survey was conducted among 957 Norwegian employees, working in 114 private kindergartens (mean age 40.7 years, SD = 10.5, 92.8% female), as part of a randomized controlled trial. This study used only baseline data. A factor analysis of the Norwegian version of the Social Support Inventory was conducted, identifying two factors: nondirective and directive social support. Hierarchical regression analyses were then performed. *Results:* Nondirective social support was related to fewer musculoskeletal and pseudoneurological complaints, higher job satisfaction, and the perception of lower job demands and higher job control. Directive social support had the opposite relationship, but was not statistically significant for pseudoneurological complaints. ***Conclusions:*** **It appears that for social support to be positively related with job characteristics and subjective health complaints, it has to be nondirective. Directive social support was not only without any association, but had a significant negative relationship with several of the variables. Nondirective social support may be an important factor to consider when aiming to improve the psychosocial work environment.**

Key Words: *Social support, directive social support, nondirective social support, subjective health complaints, job satisfaction, job demands, job control, employees, coworkers, preschool teacher*

Trial registration: Clinicaltrials.gov: NCT02396797. Registered 23 March 2015.

Introduction

Social interaction is an important part of human life, and social support is associated with health and well-being [1], and predictive of health-promoting behaviour [2]. Being part of a social network, such as a workplace, provides us with good opportunities for provision of social support and may have an important health-promoting impact. A large longitudinal study found a significantly reduced risk of mortality among employees reporting high levels of peer social support [3], and low social support is associated with subsequent sick leave [4]. Social support in the workplace is assumed to be a highly important resource in helping employees cope with stress by reducing strains and stressors [5], and also to have a positive

Correspondence: Tone Langjordet Johnsen, Division of Physical Medicine and Rehabilitation, Vestfold Hospital Trust, POB 2168, NO-3103, Tønsberg, Norway E-mail: tone.johnsen@siv.no

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influence on well-being [6]. However, being part of a social network does not ensure that individuals will be supported. Social networks and relationships may also be characterized by negative qualities such as stress, conflicts or dissatisfaction, and thus serve as a model for ill health [7].

Social support can be categorized either by the type of social support or by roles and relationships between support providers and the support receivers. The most familiar classification is probably the distinction in function of support, e.g. instrumental or emotional support [8], but there are different opinions regarding the number of categories and their defining characteristics, and thus also different measurements used in existing literature. Fisher et al. [9] have made a distinction between directive and nondirective social support, based on the roles and relationships presumed between the support provider and the support receiver. Directive social support refers to support where the provider assumes responsibility, takes control, and tells the support receiver what he or she should do, think or feel. Directive social support can thus be seen as a way to impose one's own agenda on to the support receiver's coping [10, 11]. In contrast, nondirective social support shifts the focus of control from the support provider to the support receiver. It refers to support where the support provider cooperates with the support receiver, and acknowledges the support receiver's feelings, thoughts and choices. Nondirective social support can thus be seen as a way to achieve shared decision-making, where the support provider seeks to promote the support receiver's intentions [10, 11]. The distinction of directive and nondirective social support is based on the way support is provided, and each distinction in function of support can be delivered in either a directive or a nondirective way.

The items assessing directive and nondirective social support make it possible to empirically study how each type of support is associated with positive or negative outcomes [11]. This is because they describe actions the individual perceives to have received, without using language implying judgement of those actions. Measures of directive and nondirective social support also assess actual behaviours rather than perceptions of available support, which may be influenced by personality characteristics [12], or actual received support during a given time period. Received support is related to need for support and may not accurately reflect the amount of support available during a specified time period. These two features allow for the investigation of different outcomes to be pursued as empirical questions regarding how directive and nondirective social support lead to more or less benefit in different circumstances [11].

People tend to function better when they have a strong sense of coping and self-worth, feel that their lives have meaning, and are driven by inner motives rather than external pressures, and nondirective social support underpins these attributes. Nondirective social support focuses on the support receiver's intrapsychic challenges, such as the need to restore feelings of self-worth, rather than the external condition of the support receiver's challenges. Nondirective social support often leads to an increase in positive health behaviours, better health outcomes, greater life satisfaction, heightened self-esteem, and greater hope and optimism [10, 11, 13]. Directive social support is, on the other hand, more frequently associated with negative outcomes, such as higher levels of depression and loneliness, more subjective health complaints (SHCs), reduced self-esteem and increased dependence [10, 13, 14]. However, it is important to acknowledge that directive social support is useful in some situations and one cannot conclude that nondirective social support is always positive and directive social support is always negative. For instance, when the individual lacks the necessary skills to handle a challenge, is initiating a behaviour change, or the circumstances are acute, directive social support may be preferred or even necessary [9, 15]. In acute situations, attention to immediate solutions may be more important than the support receiver's psychological needs, and failure to take control could jeopardize the support receiver's well-being and also imply insufficient caring.

Both health complaints and job characteristics may be related to employee absenteeism. SHCs, such as back pain, anxiety and depression, are the most frequent reasons reported for sick leave in Norway [16]. Low job satisfaction is associated with higher sick leave proportions [17], while high job demands [18] and low job control [19] are found to be predictive of later sick leave. Social support may have a positive influence on these factors [20], and thus an important aspect to consider when aiming to promote a positive work environment and greater work presence.

In summary, current research substantiates a considerable difference in outcomes of support and help provided in a nondirective manner, and support and help provided in a directive manner. Nondirective social support normally promotes coping and control, while directive social support may restrict these resources. Numerous research studies on the impact of workplace social support have been conducted, both in relation to health [3] and job characteristics [6, 20]. To our knowledge, there is however limited research distinguishing between the provision of directive and nondirective social support in a workplace setting, and whether the type of support influences employees'

health, job satisfaction, and perception of job demands and job control. The current study adds to the literature by assessing this support distinction in a sample of Norwegian private-sector employees. The aim was to investigate whether the distinction between receiving directive or nondirective social support from coworkers was related to the amount of SHCs reported, employees' satisfaction with their job, and the perception of job demands and job control. Our hypothesis is that nondirective social support is more positive for these variables than directive social support.

Methods

Sample and procedure

The sample consisted of 957 Norwegian employees recruited from 114 private kindergartens in Norway, as part of a large randomized controlled trial [21]. All employees in the participating kindergartens were invited to answer the questionnaire. At the start of the study, all employers were instructed to report the number of employees working in each kindergarten and this totalled 1312 employees. Nine hundred and ninety employees chose to answer the questionnaire, giving a response rate of 75%. We did not have data on those employees not responding to the questionnaire. Of the 990 employees who chose to answer the questionnaire, 33 employees did not answer any of the standardized instruments used in this present study. These participants were thus excluded from the analysis, leaving a total sample of 957 employees (92.8% females, mean age = 40.7 (SD = 10.5; range 18–69), 51% had higher education).

Ethical considerations

The study was approved by the the Regional Committee for Medical and Health Research Ethics for South East Norway (Registration 2014/162/REC South East), and conducted according to the Declaration of Helsinki. A declaration of informed consent was collected from all participants using electronically secure survey software [21], emphasizing the right to withdraw from the trial at any time without any explanation (Trial registration: NCT02396797).

Instruments

Directive and nondirective social support were measured by a Norwegian version of the 16-item Social Support Inventory (SSI) [9, 10, 13]. Eight items assessed directive social support, and consisted of the following statements: 'Tell you to feel proud of yourself' (#6), 'Push you to get going on things' (#8), 'Do not let you dwell on upsetting thoughts' (#16), 'Point out harmful or foolish ways you view things' (#14), 'Solve problems for you' (#2), 'Take charge of your problems' (#4), 'Give you clear advice on how to handle problems' (#10), and 'Tell you what to do' (#12). The other eight items assessed nondirective social support, and consisted of the following statements: 'Show interest in how you are doing' (#1), 'Make it easy to talk about anything you think is important' (#5), 'Ask how you are doing' (#9), 'Are available to talk anytime' (#13), 'Ask if you need help' (#3), 'Cooperate with you to get things done' (#7), 'Provide information so you understand why you are doing things' (#11), and 'Offer a range of suggestions' (#15). Using a five-point scale ranging from 1='not at all typical'–5='very typical', employees indicated how typical each statement was for the way colleagues provided help and support. The internal consistency of the SSI has been found to be adequate in other samples [9, 10, 15]. For the present study, principal component analysis was used to assess the validity of the distinction between directive and nondirective social support.

Subjective health complaints were measured by the Subjective Health Complaints Inventory (SHC) [22]. The SHC Inventory is a reliable and valid measure of common health complaints [22] and consists of 29 questions concerning subjective somatic and psychological complaints experienced during the last 30 days. The SHC Inventory records complaints, without asking for attributions or medical diagnosis [22]. The severity of the complaints is rated on a four-point scale (0='not at all', 1='a little', 2='some', 3='severe'). The SHC Inventory yields five subscales, and sum scores of the five subscales were computed: musculoskeletal complaints (headache, neck pain, upper back pain, low back pain, arm pain, shoulder pain, migraine and leg pain during physical activity, $\alpha = 0.80$), pseudoneurology (extra heartbeats, heat flushes, sleep problems, tiredness, dizziness, anxiety, and sadness/depression, $\alpha = 0.72$), gastrointestinal problems (heartburn, stomach discomfort, ulcer/non-ulcer dyspepsia, stomach pain, gas discomfort, diarrhoea, and obstipation, $\alpha = 0.71$), allergy (asthma, breathing difficulties, eczema, allergy, and chest pain, $\alpha = 0.54$), and flu (cold/flu and coughing, $\alpha = 0.64$).

Job satisfaction was measured using a single item from Quinn and Shepard's global job satisfaction scale [23]. The wording of the item was 'All things considered, how satisfied are you with your current job?', rated on a five-point Likert scale ranging from 1 = very dissatisfied to 5 = very satisfied. Single-item questions measuring overall job satisfaction have shown convergent validity with multi-item scales [24].

Psychological demands and *decision latitude* were measured using the short Swedish version [25] of the

Demand Control Support Questionnaire, based on the Demand–Control Model by Karasek and Theorell [26]. The scale consists of three subscales: demands, decision latitude and support. Only the demand and decision latitude subscales were used in this current study. The demand subscale consisted of five items: 'Does your job require that you work very fast?' (#1), 'Does your job require that you work very hard?' (#2), 'Does your job require too great a work effort?' (#3), 'Do you have sufficient time for all your work tasks?' (#4), and 'Do conflicting demands often occur in your work?' (#5). The decision latitude subscale consisted of six items; 'Do you have the opportunity to learn new things in your work?' (#6), 'Does your work require skills?' (#7), 'Does your job require creativity?' (#8), 'Does your job require doing the same tasks over and over again?' (#9), 'Do you have the possibility to decide for yourself how to carry out your work?' (#10), and 'Do you have the possibility to decide for yourself what should be done in your work?' (#11). However, item #9 (repetitive work) correlated poorly with the other items measuring decision latitude, and also reduced the internal consistency ($\alpha = 0.56$). Item #9 was thus removed, leaving five items in the decision latitude subscale. Each item was scored on a four-point scale (1='yes, often', 2='yes, sometimes', 3='no, rarely', 4='no, almost never'). The necessary items were reversed before scores were added, giving subscale scores from 5 (minimum score) to 20 (maximum score) for both demands ($\alpha = 0.70$) and decision latitude ($\alpha = 0.64$). Low and high scores represented low and high levels of demands and decision latitude, respectively.

Statistics

All analyses were conducted using SPSS version 21.0 (Chicago: SPSS Inc). A principal component analysis (PCA) with Kaiser Oblimin Rotation was used to assess the latent structure of the SSI items. Items were considered to load on a factor if the loadings were greater than 0.4 on the primary factor, and the secondary loading at least 0.3 less than the primary loading. Items not meeting the criteria were removed, and a new factor solution excluding the eliminated items was performed to ensure that no items were cross loading on factors. Similar procedures have been used in other studies when refining the measure of directive and nondirective social support [11, 13]. Based on the factor structure, subscales were constructed by taking the mean score of the items loading on each factor, and Cronbach's alpha was used to determine the internal consistency of the factors. Cronbach's alpha was also used to determine the internal consistency of the five different subscales on the SHC Inventory, job demands and job control.

A series of hierarchical regression analyses was used to assess the relationship between directive social support, nondirective social support, SHCs and job variables. The main interest was the unique variance explained by directive and nondirective social support. Separate analyses were conducted with musculoskeletal complaints, pseudoneurology, gastrointestinal problems, allergy, flu, job satisfaction, job demands, and job control as outcome variables. In each of these analyses age, gender, and education were entered as a block in the first step, to control for demographic variables. The education variable was dichotomized into lower education ('no completed education', 'primary school', 'middle school', 'high school' or 'certificate of apprenticeship') and higher education ('up to four years of college or university' or 'over four years of college or university') before being entered in the regression models. Directive and nondirective social support were entered as a block in the second step. This method allowed for the assessment of the unique contribution of directive and nondirective social support to each of the dependent variables.

Results

Participant characteristics

The participants reported receiving more nondirective than directive social support from colleagues; a general high score on job satisfaction, a moderate score on job demands, and a fairly high score on decision latitude (see Table I). Ninety-seven percent of the employees reported at least one SHC during the last 30 days. Eighty-eight percent reported musculoskeletal complaints, 78% reported pseudoneurological complaints, 60.8% reported gastrointestinal complaints, 44.3% reported allergic complaints, and 50.9% reported flu. Women reported significantly more musculoskeletal and pseudoneurological complaints than men (see Table II). Tiredness, reported by 62.8% of the employees, was the most frequently reported single complaint, followed by headache (61.9%), neck pain (51%), low back pain (50.3%), and flu (45.8%).

Refining the measure of social support for the current sample

PCA was used to determine whether the SSI loaded on two factors (nondirective and directive). Suitability for performing PCA was assessed prior to the factor analysis. The inspection of the correlation matrix revealed a clear majority of coefficients of 0.3 and above, the Kaiser-Meyer-Olkin value was 0.91, exceeding the recommended value of 0.6, and the Bartlett's Test of Sphericity reached statistical significance. PCA revealed three factors with eigenvalues exceeding 1, explaining 37.9%, 12.5% and 6.5% of the variance

Table I. Mean and 95% CI for baseline characteristics on age, social support, job satisfaction, job demands and job control.

Variables	*n*	Mean	95% CI
Age	954	40.7	39.99–41.33
Directive support (1–5)	957	2.38	2.33–2.42
Nondirective support (1–5)	957	3.73	3.68–3.78
Job satisfaction (1–5)	956	4.32	4.28–4.36
Job demands (5–20)	944	13.25	13.09–13.41
Job control (5–20)	945	17.66	17.54–17.80

respectively. An inspection of the scree plot revealed a clear break after the second component, and it was decided to retain two factors for further investigation. The two-component solution explained 50.4% of the variance. Oblimin rotation was then performed to aid the interpretation. In this sample of Norwegian employees, seven items loaded on the nondirective factor ($\alpha = 0.88$), and three items loaded on the directive factor ($\alpha = 0.51$), see Table III. The reported pattern coefficients summarize the pattern factor loadings for the items on the two principal components, and indicate the effect of the factor on an item having controlled for the effect of the other extracted factor. The structure coefficients determine the correlation of each item with the two rotated principal components. Six items did not meet the predefined criteria with a loading greater than 0.4 on the primary factor and the secondary loading at least 0.3 less than the primary loading, and were thus not included when calculating the scores of the two subscales. Inter-correlations between the two subscales and outcome variables are presented in Table IV. One of the items included in the nondirective subscale was identified as directive in the original SSI (*'Tell you to feel proud of yourself')*, but loaded strongly on the nondirective factor in this sample. With a setting of $\delta = 0$ there was nearly no correlation between the two factors when excluding items not meeting the predefined criteria ($r = .03$).

Relationship between SHC and social support

Hierarchical regression analysis was used to assess the contribution of directive and nondirective social support for each of the five subscales measuring SHC. In the analysis containing musculoskeletal complaints as dependent variable, age, gender and education explained 2.7% of the variance. Adding directive and nondirective social support explained an additional 1.4% of the variance. In this final step of the equation, four factors significantly explained the variance in musculoskeletal complaints. Being female, having lower education, receiving a high degree of directive social support and a low degree of nondirective social support predicted musculoskeletal complaints (see Table V).

In the analysis containing pseudoneurological complaints as dependent variable, age, gender and education explained 1.2% of the variance. Adding directive and nondirective social support explained an additional 1.1% of the variance. In this final step of the equation, three factors significantly explained the variance in pseudoneurological complaints. Being female, having lower education, and receiving a low degree of nondirective social support predicted pseudoneurological complaints (see Table V).

There were no significant relationships between gastrointestinal complaints or flu and type of social support. For allergy, only directive social support was a significant factor in explaining the variance ($\beta = 0.068$, $p = 0.04$). However, the model as a whole was not significant ($R^2 = 0.008$, $F(5, 915) = 1.54$, $p = 0.175$), and neither was R^2 change for the final step (R^2 change $= 0.005$, $F(2, 915) = 2.18$, $p = 0.114$).

Relationship between job satisfaction and social support

In the hierarchical regression analysis containing job satisfaction as dependent variable, age, gender and education explained 1.1% of the variance. Adding directive and nondirective social support explained an additional 15.1% of the variance. In this final step of the equation, three factors significantly explained the variance in job satisfaction. Higher age, receiving a low degree of directive social support and a high degree of nondirective social support predicted reporting high job satisfaction (see Table V).

Relationship between job demands and social support

In the hierarchical regression analysis containing job demands as dependent variable, age, gender and education explained 3.1% of the variance. Adding directive and nondirective social support explained an additional 6.6% of the variance. In this final step of the equation, three factors significantly explained the variance in job demands. Having higher education, receiving a high degree of directive social support and a low degree of nondirective social support predicted reporting high job demands (see Table V).

Relationship between job control and social support

In the hierarchical regression analysis containing job control as dependent variable, age, gender and education explained 5.7% of the variance. Adding directive and nondirective social support explained an additional 10.3% of the variance. In this final step of the equation, three factors significantly

Table II. Mean and 95% CI of subjective health complaints. Separate values for women and men.

	Total			**Women**			**Men**			***p*-value**
	n	Mean	CI	*n*	Mean	CI	*n*	Mean	CI	
SHC total	922	11.07	10.52–11.62	855	11.29	10.72–11.86	67	8.22	6.43–10.0	**.004**
Musculoskeletal complaints	923	4.51	4.25–4.77	856	4.67	4.39–4.94	67	2.51	1.81–3.20	**< .001**
headache	924	0.87	0.82–0.92	857	0.88	0.83–0.94	67	0.72	0.53–0.90	.113
neck pain	922	0.77	0.72–0.83	855	0.82	0.76–0.87	67	0.25	0.12–0.38	**< .001**
upper back pain	922	0.49	0.44–0.54	855	0.52	0.47–0.57	67	0.15	0.06–0.24	**< .001**
low back pain	925	0.77	0.71–0.83	858	0.79	0.73–0.85	67	0.48	0.30–0.65	**.006**
arm pain	923	0.43	0.38–0.48	856	0.45	0.40–0.50	67	0.18	0.04–0.32	**.006**
shoulder pain	923	0.64	0.59–0.70	856	0.66	0.61–0.72	67	0.40	0.21–0.60	**.017**
migraine	922	0.24	0.20–0.28	855	0.25	0.21–0.29	67	0.19	0.06–0.33	.498
leg pain during physical activity	922	0.29	0.24-0.33	855	0.30	0.25-0.34	67	0.13	0.04–0.23	**.045**
Pseudoneurological complaints	922	2.84	2.65–3.02	855	2.89	2.70–3.08	67	2.17	1.56–2.78	**.046**
extra heart beats	922	0.22	0.19–0.25	855	0.23	0.19–0.26	67	0.09	0.01–0.15	**.032**
heat flushes	921	0.28	0.24–0.32	855	0.30	0.26–0.34	66	0.02	-0.02–0.05	**< .001**
sleep problems	923	0.58	0.53–0.64	856	0.59	0.54–0.65	67	0.46	0.26–0.66	.210
tiredness	923	0.91	0.85–0.96	856	0.92	0.87–0.98	67	0.70	0.50–0.91	**.041**
dizziness	922	0.32	0.28–0.36	855	0.33	0.29–0.38	67	0.13	0.02–0.25	**.010**
anxiety	922	0.20	0.17–0.23	855	0.19	0.16–0.23	67	0.28	0.13–0.44	.181
sadness/depression	922	0.32	0.28–0.36	855	0.31	0.27–0.35	67	0.46	0.29–0.63	**.047**
Gastrointestinal complaints	922	1.76	1.61–1.92	855	1.77	1.62–1.93	67	1.64	1.09–2.20	.655
heartburn	922	0.22	0.19–0.26	855	0.21	0.18–0.25	67	0.36	0.18–0.54	**.035**
stomach discomfort	922	0.15	0.12–0.17	855	0.14	0.11–0.17	67	0.24	0.09–0.39	.082
ulcer/non-ulcer dyspepsia	922	0.05	0.03–0.07	855	0.05	0.03–0.07	67	0.07	0.00–0.15	.441
stomach pain	922	0.31	0.27–0.35	855	0.32	0.28–0.36	67	0.16	0.06–0.27	**.043**
gas discomfort	924	0.52	0.47–0.56	857	0.53	0.48–0.58	67	0.33	0.17–0.48	**.029**
diarrhoea	922	0.33	0.29–0.37	855	0.33	0.29–0.37	67	0.33	0.19–0.47	.991
obstipation	921	0.19	0.16–0.23	855	0.20	0.16–0.23	66	0.14	0.03–0.24	.357
Allergy	922	1.05	0.95–1.16	855	1.05	0.94–1.16	67	1.04	0.71–1.38	.970
asthma	923	0.18	0.14–0.21	856	0.18	0.14–0.21	67	0.19	0.06–0.32	.779
breathing difficulties	922	0.13	0.10–0.16	855	0.13	0.10–0.16	67	0.09	0.02–0.16	.414
eczema	921	0.27	0.23–0.31	855	0.27	0.23–0.31	66	0.27	0.13–0.42	.951
allergy	922	0.37	0.33–0.42	855	0.37	0.33–0.42	67	0.36	0.17–0.54	.870
chest pain	922	0.11	0.08–0.13	855	0.10	0.08–0.13	67	0.12	0.02–0.22	.759
Flu	925	0.92	0.84–0.99	855	0.92	0.84–1.00	67	0.85	0.54–1.16	.632
cold/flu	925	0.61	0.56–0.66	858	0.61	0.56–0.66	67	0.61	0.41–0.82	1.000
coughing	924	0.31	0.27–0.35	857	0.31	0.27–0.35	67	0.24	0.09–0.39	.362

p-values were calculated with independent sample t-test. $p < 0.05$ when numbers are in bold.

explained the variance in job control. Having higher education, receiving a low degree of directive social support and a high degree of nondirective social support predicted reporting high job control (see Table V).

Discussion

This study examined whether directive and nondirective social support were related to SHCs, job satisfaction, job demands, and job control in a sample of Norwegian employees working in private kindergartens. Employees reported receiving more nondirective than directive social support from their colleagues. Nondirective social support was related to more positive perceptions for all outcome variables, while directive social support was related to more negative perceptions.

For SHCs, nondirective social support was significantly associated with fewer musculoskeletal and pseudoneurological complaints, while directive social support was associated with more musculoskeletal and pseudoneurological complaints, but the relationship was not statistically significant for pseudoneurological complaints. Musculoskeletal complaints were most frequently reported by the employees, followed by pseudoneurological complaints. These findings are supported by a growing body of literature suggesting the benefit of nondirective social support on health outcomes. Previous studies have found nondirective social support to be associated with lower depression, lower anxiety

Table III. Pattern and structure matrix for PCA with oblimin rotation of the two-factor solution of SSI items.

	Original analysis				Second analysis			
	Pattern coefficients		Structure coefficients		Pattern coefficients		Structure coefficients	
	Nondirective	Directive	Nondirective	Directive	Nondirective	Directive	Nondirective	Directive
Show interest in how you are doing (#1)	**.823**	−.153	.792	.011	**.824**	−.032	.823	−.008
Make it easy to talk about anything you think is important (#5)	**.816**	−.131	.790	.032	**.805**	−.059	.803	−.036
Ask how you are doing (#9)	**.806**	−.115	.783	.046	**.805**	−.014	.805	.009
Ask if you need help (#3)	**.777**	−.025	.772	.130	**.782**	.048	.784	.071
Cooperate with you to get things done (#7)	**.753**	−.240	.705	−.090	**.736**	−.153	.732	−.132
Tell you to feel proud of yourself (#6)	**.742**	−.031	.736	.117	**.750**	.065	.752	.087
Are available to talk anytime (#13)	**.669**	.065	.682	.198	**.685**	.119	.688	.139
Point out harmful or foolish ways you view things (#14)	−.254	**.706**	−.113	.655	−.151	**.749**	−.129	.745
Tell you what to do (#12)	.161	**.651**	.291	.683	.227	**.643**	.246	.649
Push you to get going on things (#8)	−.156	**.575**	−.041	.544	−.051	**.728**	−.029	.727
Give you clear advice on how to handle problems (#10)	*.597*	*.380*	*.673*	*.499*	·	·	·	·
Provide information so you understand why you are doing things (#11)	*.577*	*.289*	*.634*	*.404*	·	·	·	·
Solve problems for you (#2)	*.473*	*.390*	*.551*	*.484*	·	·	·	·
Take charge of your problems (#4)	*.424*	*.466*	*.518*	*.551*	·	·	·	·
Do not let you dwell on upsetting thoughts (#16)	*.399*	*.276*	*.454*	*.355*	·	·	·	·
Offer a range of suggestions (#15)	*.353*	*.469*	*.447*	*.540*	·	·	·	·

Coefficients in bold loaded above 0.4 on the primary factor and at least 0.3 less on the secondary factor. Items in italics did not meet the criteria in the original analysis, and were not entered in the second analysis.

Table IV. Inter-correlation between musculoskeletal complaints, pseudoneurological complaints, job satisfaction, job demands, job control, nondirective social support and directive support.

		1.	2.	3.	4.	5.	6.
1.	Musculoskeletal complaints	·	·	·	·	·	·
2.	Pseudoneurological complaints	**.480**	·	·	·	·	·
3.	Job satisfaction	**−.108**	**−.164**	·	·	·	·
4.	Job demands	**.160**	**.153**	**−.268**	·	·	·
5.	Job control	−.051	**−.085**	**.329**	−.052	·	·
6.	Nondirective social support	**−.077**	**−.086**	**.384**	**−.248**	**.288**	·
7.	Directive social support	.062	.029	**−.078**	**.078**	**−.136**	.038

$p < 0.05$ when number is bold.

and more adaptive coping [10, 14, 27], while directive social support was related to higher levels of anxiety and depression, less adaptive coping and more SHCs [9, 13, 14, 27]. Musculoskeletal and mental health complaints are the most frequent reasons for work absence, and a focus on providing

Table V. Standardized coefficients, R^2, and R^2 change for the two-step regression models with musculoskeletal complaints, pseudoneurology, job satisfaction, job demands, and job control as dependent variables.

	Musculoskeletal				**Pseudoneurology**				**Job satisfaction**				**Job demands**				**Job control**			
	Step 1		Step 2		Step 1		Step 2		Step 1		Step 2		Step 1		Step 2		Step 1		Step 2	
	β	***p***	*β*	***p***	*β*	***p***	*β*	***p***	*β*	***p***	*β*	***p***	*β*	***p***	*β*	***p***	*β*	***p***	*β*	***p***
Age	.004	.911	.014	.680	.030	.375	.034	.315	.082	**.013**	.075	**.016**	−.048	.150	−.033	.308	.067	**.039**	.054	.085
Females	.142	**.001**	.155	**.001**	.065	.054	.076	**.024**	.051	.124	.010	.731	.006	.849	.034	.287	.054	.098	.019	.533
Higher education	−.088	**.008**	−.087	**.009**	−.080	**.016**	−.084	**.012**	.007	.838	.032	.293	.165	**.001**	.158	**.001**	.224	**.001**	.237	.001
Directive support	.	.	.069	**.038**	.	.	.033	.320	.	.	−.076	**.013**	.	.	.106	**.001**	.	.	−.106	**.001**
Nondirective support	.	.	−.101	**.002**	.	.	−.102	**.002**	.	.	.387	**.001**	.	.	−.240	**.001**	.	.	.311	**.001**
R^2	.027	**.001**	.041	**.001**	.012	**.011**	.023	**.001**	.011	**.016**	.162	**.001**	.031	**.001**	.097	**.001**	.057	**.001**	.160	**.001**
R^2 change	.027	**.001**	.014	**.001**	.012	**.011**	.011	**.006**	.011	**.016**	.151	**.001**	.031	**.001**	.066	**.001**	.057	**.001**	.103	**.001**

$p < 0.05$ when number is bold.

nondirective social support may thus be important in the management of such health complaints in a workplace setting.

Previous studies have explored the relation between workplace social support and job satisfaction, and social support and job satisfaction are often positively related [20]. To our knowledge there are, however, no studies distinguishing between directive and nondirective workplace social support when exploring relations to job satisfaction. According to our findings this distinction seems to be important. In our sample, nondirective social support was significantly associated with reports of high job satisfaction, while directive social support was significantly associated with reports of low job satisfaction. This was also the case for job demands and job control. Nondirective social support was significantly associated with reporting lower demands and higher control, while directive social support was significantly associated with reporting higher demands and lower control. This suggests that the way support is provided influences the way employees perceive job demands and job control. Both the perception of job demands and job control is closely linked to health and well-being, and social support may function as a buffer. However, our results indicate that the type of social support provided is of importance. In our sample of kindergarten employees, those receiving a high degree of nondirective social support reported having lower job demands than their colleagues. As the perception of high job demands is linked to poorer health outcomes, nondirective social support may function as a tool to maintain employees' well-being even in job settings where it is difficult to reduce or redesign job demands. A similar result was found for job control; employees receiving a high degree of nondirective social support reported perceiving higher job control. For organizations, variables influencing the perception of job control among employees may be of importance, as job control is positively related not only with health but also work productivity. As earlier described, the two distinctions of support, or ways to communicate, imply two clearly different assumptions about people. When providing directive social support a person takes the role of an expert and communicates that he or she knows best what colleagues should do, think or feel, whereas nondirective social support communicates a belief that one has the ability to decide for oneself what is best. Nondirective communication and support between colleagues seems to promote a positive work environment, and our findings indicate that the distinction between directive and nondirective social support may be important in interventions aiming to influence employees' job satisfaction and perception

of demands and control. Studies with experimental designs are needed to enhance our understanding of the effect of each support type on these variables.

Semmer et al. [28] argue that for social support to be perceived as helpful by the receiver, or to be 'effective', it needs to entail an emotional component. They propose that the inconsistency in the literature may be a consequence of instrumental support sometimes having emotional meaning. Results from their study on hospital patients indicate that for support to be perceived as useful, the communication of care and understanding should be present, even if the support provided is of an instrumental nature [28]. It is, however, difficult to know whether, and how, the support receiver attributes emotional meaning to different types of support provided. Looking at the items measuring social support in this present study, they could all be attributed an emotional meaning. However, whether the emotional meaning is perceived as positive or negative is probably dependent on the situation. For instance, 'being told what to do' may be preferred when you lack the necessary skills to handle a specific task, but may be perceived as offending in situations where you do have the skills needed or where there are no definitive answers and you would rather decide yourself. In these situations, nondirective social support may be required for it to be perceived as useful. Furthermore, results from the study conducted by Harber et al. [10] indicate that the distinction between nondirective and directive social support adds a unique dimension compared to other measures of support. They found nondirective social support to be associated with enhanced morale, and directive support to be associated with depleted moral, even after controlling for other traditional measures of social support.

Most studies on the distinction between directive and nondirective social support have been conducted with samples from the US [9, 10]. Kim et al. [29] argue that there may be cultural differences in the type of support sought and provided, how it is viewed, and its effect on health outcomes. Thus, it is important to examine whether the distinction between directive and nondirective social support is maintained in different countries and cultures, and also whether it is associated with health. Øyeflaten et al. [13] assessed this distinction in a sample of Norwegian rehabilitation patients, and found a two-factor solution reflecting the distinction between directive and nondirective social support, as with the US samples [9, 10]. However, they found some minor differences in the factor loadings compared to the original version of the scale, which was also the case in the current study. In both Norwegian samples, the distinction between directive and nondirective social support seemed to stand up well. Nevertheless, for the items meeting the predefined criteria, one item defined as directive in US samples loaded on the nondirective factor in both Norwegian samples ('Tell you to feel proud of yourself'). This supports the assumption that there may be a cultural difference in the manifestation of this item [13]. In US samples the wording of this item might be understood as being told what to think or feel, while in Norwegian it may be interpreted as supporting one's autonomy [13]. The item, 'Offer a range of suggestions', loaded on the directive factor in Norwegian rehabilitation patients [13], while it was identified as nondirective in US samples. This item did not meet the predefined criteria in the current study and is thus not included in the final two-factor solution. However, the item also loaded more on the directive factor in this Norwegian sample. In summary, the results of the PCA of the SSI for this current sample are similar to the results found in other studies [11, 13, 14]. There may however be a need for further development to consolidate its psychometric properties to a Norwegian context.

Study limitations

The main limitation of this study is the cross-sectional design, which does not allow us to determine causality, and thus only demonstrate that there is a positive association between nondirective social support, SHCs, job satisfaction, and perception of job demands and job control, and a negative association for directive social support on the same variables. Further studies are needed to assess exactly how these variables influence each other. Also, the directive social support factor only contains three items, which may limit the construct validity of this variable. The Cronbach's alpha value of this factor was low (α = 0.51), but this may be a function of few items being included in the analysis as Cronbach's alpha values are quite sensitive to the number of items in the scale. The mean inter-item correlation for the items was 0.26, which is within the recommended optimal range of 0.2–0.4 [30]. Furthermore, one of the items in the directive social support factor ('Point out harmful or foolish ways you view things') may be perceived as offending and conveying little understanding, thus being more associated with negative affect than the other items. Finally, participation in the study was voluntary, and we did not have data to investigate whether employees responding to the questionnaire were systematically different from non-responders.

Conclusions

This study showed that social support was related to employees' job satisfaction, how they perceived demands and control at work, and also the amount of

SHCs they reported. Nondirective social support had a positive relationship with these health and job variables, while directive social support showed a negative relationship. We suggest that future workplace interventions could focus on the characteristics and delivery of support, as nondirective social support seems to be favourable for many outcomes.

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Conflict of interest

The authors declare that there is no conflict of interest.

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PAPER III

III

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Effect of reassuring information about musculoskeletal and mental health complaints at the workplace: a cluster randomized trial of the atWork intervention

Tone Langjordet Johnsen[1,2,4*], Hege Randi Eriksen[2,3], Valborg Baste[2], Aage Indahl[1], Magnus Odeen[2], Torill Helene Tveito[2,4]

[1] Division of Physical Medicine and Rehabilitation, Vestfold Hospital Trust, POB 2168, NO-3103, Tønsberg, Norway

[2] Uni Research Health, POB 7810, NO-5020, Bergen, Norway

[3] Department of Sport and Physical Activity, Western Norway University of Applied Sciences, Bergen, Norway

[4] Department of Health, Social and Welfare Studies, University College of Southeast Norway, Horten, Norway

[*]Corresponding author

Email; tone.johnsen@siv.no, telephone; +4797119310, fax; +4733134010

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Abstract

Purpose The purpose of this study was to investigate the possible difference between the Modified atWork intervention (MAW) and the Original atWork intervention (OAW) on sick leave and other health related outcomes. atWork is a group intervention using the workplace as an arena for distribution of evidence-based knowledge about musculoskeletal and mental health complaints.

Methods A cluster randomized controlled trial with 93 kindergartens, comprising a total of 1011 employees, was conducted. Kindergartens were stratified by county and size and randomly allocated to MAW (45 clusters, 324 respondents) or OAW (48 clusters, 313 respondents). The randomization and intervention allocation processes were concealed. There was no blinding to group allocation. Primary outcome was register data on sick leave at cluster level. Secondary outcomes were health complaints, job satisfaction, social support, coping, and beliefs about musculoskeletal and mental health complaints, measured at the individual level.

Results The MAW group reduced sick leave by 5.7 % during the intervention year, while the OAW group had a 7.5 % increase. Overall, the changes were not statistically significant, and no difference was detected between groups, based on 45 and 47 kindergartens. Compared to the OAW group, the MAW group had a smaller reduction for two of the statements concerning faulty beliefs about back pain, but believed less in the hereditary nature of depression.

Conclusions The MAW did not have a different effect on sick leave at cluster level compared to the OAW.

Keywords: Sick leave, Subjective health complaints, Employee health, Mental health, Back pain, Workplace, Social support, Randomized controlled trial

Trial registration: Clinicaltrials.gov: NCT02396797. Registered March 23th, 2015.

Introduction

Subjective health complaints (SHC), such as back pain and reports of feeling anxious or depressed, are prevalent in the general population [1, 2] and the comorbidity between these health complaints are high [3, 4]. Preventing the occurrence of SHC appear to be a difficult undertaking, despite long-term attempts from the healthcare services. These health complaints seem to be a part of human life, and might be impossible to avoid [5-7]. In some cases, SHC may impact a person's ability to function as usual [2, 8], and musculoskeletal and mental disorders are the two major diagnostic groups reported for sick leave and disability pension in Norway [9, 10]. Accordingly, the economic consequences of musculoskeletal and mental disorders are high, both for society, the workplace, and the person affected [11, 12]. Equally important are also the negative health consequences workplace exclusion may have for the individual.

Back pain is the largest single cause for sick leave in Norway, but in the last decade sick leave due to mild mental disorders have had a rapid increase, and is today one of the major health challenges in the Norwegian society [9, 12]. The duration of sick leave due to mental disorders is generally longer than for musculoskeletal disorders [13], and mental disorders also account for an average of one third of all disability pensions, with anxiety and depression being the diagnostic groups contributing to most of the lost working years [10].

There is increasing evidence suggesting that work is good for health, and especially for mental health [11, 14, 15]. Accordingly, it is important to develop effective interventions aiming to improve or sustain labor market participation for employees experiencing SHC. Because SHC

appear to be a part of human life, there is a need for interventions aiming to influence the perception and management of SHC and not solely focus on interventions aiming to prevent occurrence. There is evidence that workplace interventions directed towards influencing employees' perceptions of SHC can lead to positive outcomes, such as reductions in sick leave [16, 17].

atWork is a workplace intervention aimed at reducing the negative consequences of SHC [16, 18]. This is done by providing evidence-based knowledge to all employees and managers, aiming to enable both the individual and the workplace to cope with the consequences of such health complaints. atWork is based on a Brief Intervention [19], a non-injury model [20], and a nondirective social support model [21], and has a theoretical foundation from the Cognitive Activation Theory of Stress (CATS) [22]. atWork was originally established as a new stepped-care approach to musculoskeletal complaints, which was effective in reducing sick leave and faulty beliefs about back pain [16]. The intervention has now been modified to also comprise mental health complaints, with a goal to further reduce sick leave and increase positive effects on other health related outcomes.

The current atWork trial was designed as a cluster randomized controlled trial (RCT) to compare the Modified AtWork intervention (MAW) to the Original AtWork intervention (OAW) in Norwegian private sector kindergarten employees [18]. A cluster randomization was chosen due to the nature of the intervention; the idea behind atWork is to provide the same information for everyone at the workplace, preferably at the same time, and the workplace sessions were held in groups. The primary aim of the present study was to compare the effect

of two workplace interventions on sick leave. The secondary aims were to compare the effect of interventions on health complaints, coping, job satisfaction, social support, and beliefs about musculoskeletal and mental health complaints, measured through individual questionnaires.

Methods

A parallel, cluster randomized controlled trial with two groups was conducted. The study took place in four Norwegian counties, from May 2014 to January 2017. Clusters were private kindergartens, one kindergarten equaling one cluster. A computer-generated randomization list with a 1:1 allocation ratio was used to randomize clusters into the MAW or the OAW. The full protocol for the trial is published elsewhere [18].

Sample and procedure

A total of 430 private kindergartens in four counties located in Eastern Norway (Telemark, Vestfold, Buskerud, and Akershus) were invited to participate in the study. The enrolment period for the trial was between May 2014 and February 2016. A letter of invitation was emailed to the general manager in the kindergartens, and 114 managers responded that their kindergarten would like to participate. Due to practical reasons, fourteen kindergartens withdrew from the study before randomization. One hundred kindergartens were randomized; 50 kindergartens to the MAW and 50 kindergartens to the OAW (Fig. 1). Seven kindergartens withdrew from the study when it was time to schedule dates for conducting the sessions in the interventions. In six kindergartens the reason for withdrawal was restricted time to participate in the intervention. One kindergarten got a new manager after enrolment, and the new manager wanted time to settle in before participating in a research study. Five of the kindergartens who withdrew from

the study had been randomized to MAW and two to OAW, leaving 45 kindergartens in the MAW group and 48 kindergartens in the OAW group (Fig. 1).

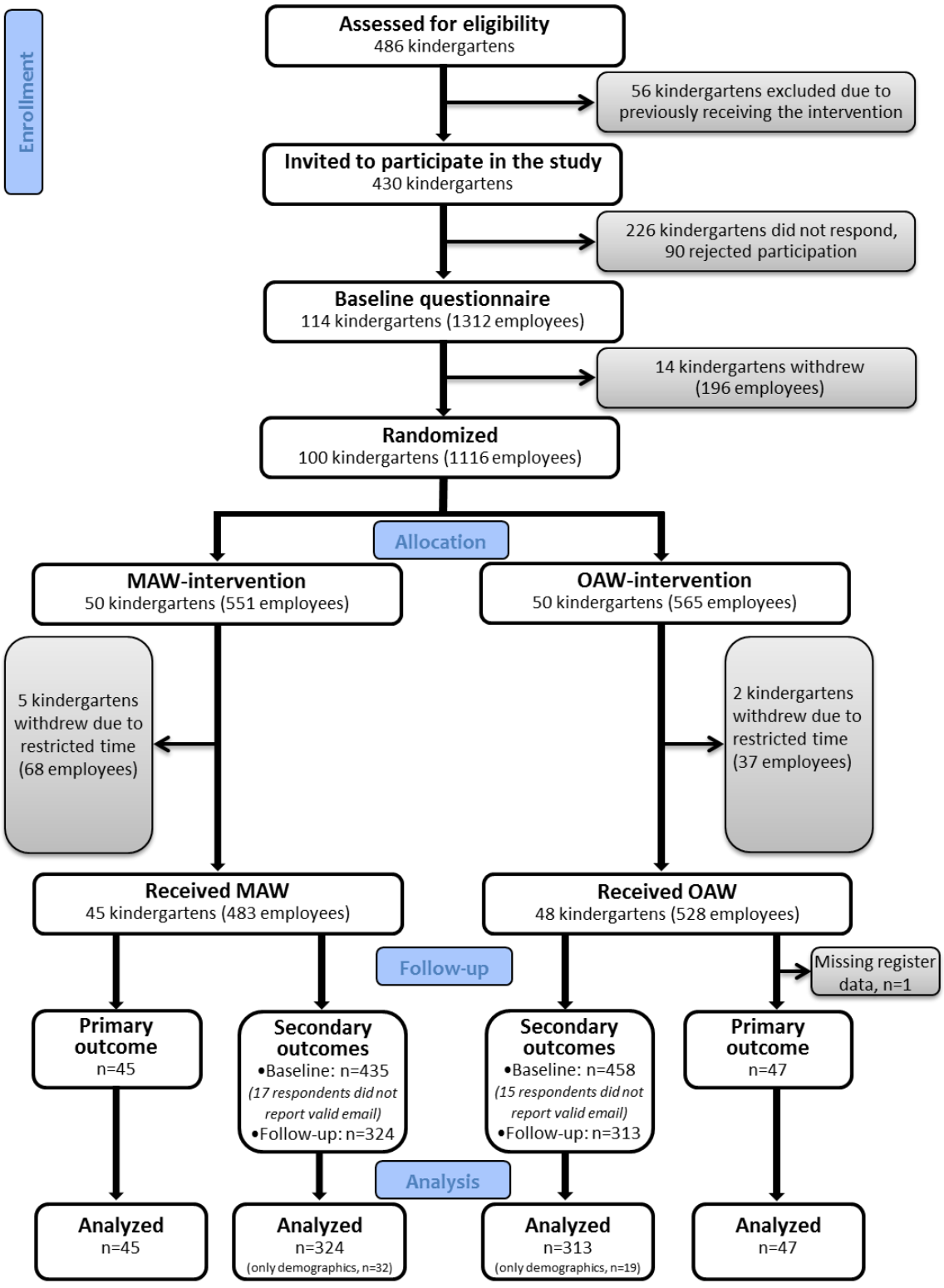

Figure 1. Flowchart of enrollment, allocation, follow-up, and data analysis for the atWork trial, modified from the CONSORT 2010 Statement

Aggregated information on quarterly sick leave for all employees' per kindergarten, one year before the intervention and the following year, was obtained from the national register in Norway. Register data on sick leave was collected from 92 of the 93 participating kindergartens. One kindergarten was registered as a part of a larger unit, and it was thus not possible to collect sick leave data from only the kindergarten employees. This kindergarten is however included in the questionnaire data analysed, and represents 1.3 % of the data material for secondary outcomes.

All employees above 18 years, working at any of the 93 kindergartens agreeing to be a part of the study, totally 1011 employees, were invited to participate in a survey about health and job characteristics. Baseline questionnaires were distributed at enrolment, and questionnaire data was collected using electronically survey software (Qualtrics®) [18]. There were 893 out of the 1011 individual employees who answered the baseline questionnaire. This gives a response rate of 88 %. In the baseline questionnaires employees were asked to provide their email address, which was used to distribute follow-up questionnaires. The follow-up questionnaires were distributed to participants 12 months after the kindergarten where they worked had been randomized. Of those responding to baseline questionnaire, 19 employees did not leave an email address and 13 employees left an invalid email address. Follow-up questionnaires were thus distributed to 861 employees, and 637 employees (74 %) answered the questionnaire. However, 51 of the respondents only supplied demographic variables. Of the 224 participants not responding, 15 employees reported to the trial coordinator that they did not want to answer the follow-up questionnaire. For the remaining 209 participants, the reason for not responding was unknown. There were more women than men who chose to answer the follow-up questionnaires. They also had higher age and education compared to those who chose not to

respond. The distribution of loss to follow up was near equal between intervention groups, and there were no differences in gender, age or education for respondents lost to follow-up.

Interventions

MAW consisted of 1) one introductory session for managers' at all organisational levels, health and safety representatives, and local union representatives, 2) two workplace sessions for all employees, one targeting mental health complaints and one targeting musculoskeletal complaints, and 3) one reflection and review session for the participants in the introductory session. OAW consisted of 1) three workplace sessions about musculoskeletal complaints to all employees, and 2) peer support. For a more detailed description, see study protocol [18]. The interventions were conducted at group level, and the workplace sessions for all employees were carried out during work hours.

The 93 participating kindergartens received the seminars in the MAW or the OAW between January 2015 and August 2016. Kindergartens did not register for the trial at the same time and the seminars were accordingly carried out in different time periods. The intervention was fully completed by 100 % of the kindergartens in the MAW group and 96 % of the kindergartens in the OAW group. One kindergarten in the OAW group did not complete the third workplace session and the two peer adviser sessions, and another kindergarten did not attend the second peer adviser sessions because the peer adviser had started on maternity leave. In the MAW group, 93 % of the kindergartens had an attendance rate of over 80 % for both workplace sessions. In the OAW, 59 % of the kindergartens had an attendances rate over 80 % for the all three workplace sessions. None of the kindergartens had an attendance rate below 60 for any of

the workplace sessions. The kindergarten that did not complete the third workplace sessions had an attendance rate of 78 and 85 percent for the first and second workplace sessions, respectively.

Primary outcome measure, cluster level

Primary outcome measure was register data on sick leave for any diagnosis at cluster level (aggregated information on sick leave for employees per kindergarten), collected through the Norwegian Labour and Welfare Association (NAV). The register data comprised quarterly data on the total sum of agreed work days for all employees in each kindergarten and how many of these days were lost due to physician certified sick leave. Agreed work days were the contracted number of days that employees were expected to come to work. Sick leave data were aggregated from all the employees of the participating kindergartens. All register data was collected in June 2017. We did not have ethical approval to collect register data on the seven kindergartens choosing to withdraw from the study.

Secondary outcomes, individual level

Secondary outcomes were measured at the individual level, through baseline and follow-up questionnaires [18]. *Musculoskeletal complaints* and *pseudoneurological complaints* were measured by two subscales from the Subjective Health Complaints Inventory [23]. The inventory consisted of 29 questions concerning subjective somatic and psychological complaints experienced during the last 30 days, and yielded a total of five subscales. Severity of each complaint was rated on a four point scale (0~"not at all", 1~"a little", 2~"some", 3~"severe"). The musculoskeletal subscale consisted of eight items (headache, neck pain, upper

back pain, low back pain, arm pain, shoulder pain, migraine and leg pain during physical activity) and the pseudoneurology subscale consisted of seven items (extra heartbeats, heat flushes, sleep problems, tiredness, dizziness, anxiety, and sadness/depression). Musculoskeletal complaints and pseudoneurological complaints were used as sum scores for the included items in each subscale. *Low back pain*, *anxiety*, and *depression* was measured by single items from the same inventory [23], and was dichotomized into no complaints (0 or 1) or substantial complaints (2 or 3) in the analyses.

Coping expectancies were measured using the Theoretically Originated Measure of the Cognitive Activation Theory of Stress (TOMCATS) [24]. This inventory was developed to measure the three response outcome expectancies in CATS: positive expectancy (coping), no expectancy (helplessness), and negative expectancy (hopelessness). It consisted of six statements, one representing coping, two representing helplessness and three representing hopelessness [24]. Items were rated on a five point scale ranging from 1~"completely true" to 5~"not true at all". All items were reversed so that high scores represent high degrees of coping, helplessness, and hopelessness respectively. To obtain a meaningful comparison to previous research, the questions were recoded from a five to a four point scale, giving a scale ranging from 1- "not true at all" to 4 – "completely true" [16], and mean scores were computed for helplessness and hopelessness.

Nondirective and directive social support from co-workers were measured with the Social Support Inventory (SSI) [25, 26]. Seven items measured nondirective social support and three

items measured directive social support [27]. Items were rated on a five point scale, ranging from 1~”not at all typical” to 5~”very typical”.

Job satisfaction was measured using one item from the Global Job Satisfaction scale (GJS) [28]. The wording was “All things considered, how satisfied are you with your current job?”. The item was rated on a five point scale, ranging from 1~”very dissatisfied” to 5~”very satisfied”.

Beliefs about back pain were measured by seven statements from Deyo’s “back pain myths” [29]. Deyo’s back pain myths presents untrue and maladaptive beliefs about back pain, including statements such as “radiographs and newer imaging tests can always identify the cause of back pain” and “back pain is usually disabling” (statements are listed in Table 4). Participants were asked to rate the statements on a 5-point scale (1~”totally disagree”, 2~”disagree”, 3~”neither disagrees nor agrees”, 4~”agree”, and 5~”totally agree”) [30]. All statements were dichotomized into 0~not believing in the statement (”totally disagree”, ”disagree” and ”neither disagrees nor agrees”) or 1~believing in the statement (”agree” and ”totally agree”).

Beliefs about mental health complaints were measured by 9 statements. The statements were constructed by two of the authors (TLJ and AI), and were based on research and clinical experience related to common worries and beliefs about mental health complaints. The first item stated that “Having mental health complaints is embarrassing” and was constructed based

on embarrassment and stigma being a barrier for openness and help seeking [31]. The second item, “In most cases, mental health complaints will pass”, was aimed at addressing the belief that people don’t recover from mental health complaints [32]. The third and fourth item, “It is common to experience depression” and “It is common to experience anxiety”, was constructed to address the belief that mental health complaints only affects a small part of the population [33]. The fifth and sixth item, “Depression is to a great extent hereditary” and “Anxiety is to a great extent hereditary”, was constructed to address the belief that mental health complaints are purely genetic in nature, caused only by “bad genes” and thus impossible to influence [34]. The seventh and eighth item, “Depression is best treated with medication” and “Anxiety is best treated with medication”, was constructed to address the belief that mental health complaints primarily is a result of biological pathology and thus is best treated with medication [35]. The ninth and last item, stating that “Depression is a sign of low willpower”, was aimed at addressing the belief that people experiencing depression is weak and thus have themselves to blame for their problems [36]. Participants were asked to rate the statements on a 5-point scale (1~”totally disagree”, 2~”disagree”, 3~”neither disagrees nor agrees”, 4~”agree”, and 5~”totally agree”). As for beliefs about back pain, all statements were dichotomized into 0~not believing in the statement or 1~believing in the statement.

Sample size

The sample size estimation was based on a prior atWork trial [16], and we planned to recruit a minimum of 50 units in each intervention group. The calculation for primary outcome, based on the assumptions that changes in sick leave followed a normal distribution, a between group difference of 20 % in sick leave (from 9.0 to 7.2 %, SD = 3) [37] and a significance level of 0.05, gave 84 % power.

Randomization

The randomization and intervention allocation processes were concealed for the clinicians and researchers and performed at cluster level using a computer generated randomization list stratified by county and size of the kindergarten (small: <11 employees, large: ≥11). The random allocation sequence was generated by the trial statistician. Randomization was performed by the research technician at the randomizing unit (Uni Research Health) after the baseline questionnaire was completed. The trial coordinator then emailed the name, county and size of the kindergarten to the randomization unit and received information about intervention allocation back. The trial coordinator informed the manager of the kindergarten and the personnel performing the intervention about the allocation. Due to the nature of the intervention there was no blinding to group assignment.

Ethics

The research was carried out in compliance with the Helsinki declaration, and approved by the appropriate ethics committee (Registration 2014/162/REC South East). Informed consent was electronically collected from all participants responding to the study questionnaire.

Statistical methods

Descriptive statistics were presented as mean, standard deviation (SD) and percentages. Difference between groups at baseline was tested with Chi-Square tests for gender and education, and independent sample t-tests for age and sick leave. Baseline differences for secondary outcomes were tested with generalized linear models (GLM) with robust variance estimator accounting for clustering of data. Differences on demographic variables between

responders and participants lost to follow-up, and also for drop-outs between intervention groups, were tested with Chi-Square testes for gender and education, and independent sample t-test for age.

To analyse the possible different effect of the two interventions on sick leave, a generalized estimating equation (GEE) model with exchangeable correlation structure for kindergarten and robust standard errors was used. The rate of days lost to days agreed for each kindergarten for each quartile was estimated in the model. Total days lost were modelled using a negative binomial distribution to account for overdispersion compared to the simple Poisson model. Log of days agreed were included as offset in the model. Sick leave the year before the interventions was used as baseline; while the one year follow up included the quartile the intervention was started. Changes in sick leave between baseline and the intervention year within intervention groups were analysed. Change in sick leave in the MAW group relative to the OAW group was estimated in the model as the interaction between intervention and time. Results from the GEE are presented as incidence rate ratios (IRR) with 95% confidence intervals (CI). As we did not have data to perform an intention-to-treat analysis, only per protocol analyses were performed.

For the continuous secondary outcomes, generalized linear models (GLM) with robust variance estimator to account for clustering of data were used to assess group differences from baseline to follow-up. In the between group analyses, follow-up measures were adjusted for baseline score. For the dichotomous secondary outcomes, a McNemar test was used to test differences between baseline and 1 year after, within intervention groups. Between intervention group difference was tested using multinomial logistic regression with robust variance estimator, to

account for kindergarten clusters. All analyses were performed using STATA IC V.14.2 (College Station, Texas, USA).

Results

Mean age of the respondents were 40.7 years (SD = 10.6), 92.7 % were females, and 50.4 % had higher education (Table 1). There was no difference in sick leave rates between MAW and OAW at baseline. This was also the case for the majority of secondary outcomes, except for two statements about mental health complaints and the directive social support variable. The MAW group did to a larger degree believe in the hereditary nature of anxiety and depression. The OAW group reported receiving more directive social support from co-workers than the MAW group.

Table 1. Demographic characteristics and health status for participants in the two intervention groups, based on baseline questionnaire data.

	MAW [1]		OAW [2]		Total	
Continuous variables	n	Mean (SD)	n	Mean (SD)	n	Mean (SD)
Age	434	40.4 (10.4)	454	40.9 (10.9)	888	40.7 (10.6)
Musculoskeletal complaints (0-24)	406	4.56 (4.27)	437	4.46 (3.86)	843	4.51 (4.06)
Pseudoneurological complaints (0-21)	406	2.90 (2.96)	436	2.87 (2.80)	842	2.88 (2.87)
Categorical variables	n	%	n	%	n	%
Female	435	93.3	458	92.1	893	92.7
Higher education	435	51.7	458	49.1	893	50.4
Substantial low back pain	407	23.8	438	21	845	22.4
Substantial anxiety	406	4.7	436	4.6	842	4.6
Substantial depression	406	4.7	436	6.4	842	5.6

[1] Modified atWork intervention, [2] Original atWork intervention

Primary outcome

The MAW group had a 5.7 % reduction in sick leave during the intervention year, while the OAW group had a 7.5 % increase in sick leave compared to baseline. The changes were not

statistically significant in either group. There was no difference in sick leave between the groups for the year of the intervention (Table 2).

[See Table 2 at the end of this paper]

Secondary outcomes

Musculoskeletal and pseudoneurological complaints

There was no difference in musculoskeletal and pseudoneurological complaints from baseline to follow-up (Table 3). In the MAW group, substantial low back pain was reported by 26.6 % and 21 % at baseline and follow-up respectively. For substantial anxiety the corresponding numbers were 5.7 % and 6 %, and for substantial depression 4.4 % and 8 %. In the OAW group, substantial low back pain was reported by 21 % and 18.6 % at baseline and follow-up respectively. For substantial anxiety the corresponding numbers were 4.7 % and 3.9 %, and for substantial depression 6.6 % and 5.4 %. For substantial low back pain there was a small difference in change between groups (p 0.043). More of the employees in the MAW group reported being better after the intervention year (16.3 % in the MAW, and 10.5 % in the OAW), but more of the employees in the MAW group also reported being worse (10.7 % in the MAW, and 8.1 % in the OAW).

Coping, job satisfaction and social support

There were no changes in coping, helplessness, hopelessness, or job satisfaction from baseline to follow-up (Table 3). The OAW group reported receiving more nondirective social support

from co-workers after the intervention. There were no differences in change between groups (Table 3).

[See Table 3 at the end of this paper]

Statements about back pain and mental health complaints

For the statements concerning slipped discs and the statement about imagining always identifying the cause of back pain, the reduction in the percentage of employees believing in the statements was smaller in the MAW group compared to the OAW group (Table 4). Both groups had a reduction in employees believing that if you have a slipped disc you must have surgery, that most back pain is caused by injury or heavy lifting, and that everyone with back pain should have a spine radiograph. The OAW group also had a reduction in employees believing that radiographs and newer imaging tests always can identify the cause of pain, and that back pain usually is disabling.

For the statement claiming that depression to a great extent is hereditary, there was a difference in change between groups. The OAW group had an increase in employees' believing in this statement, and compared to the OAW group, employees in the MAW group believed less in the hereditary nature of depression (Table 4). Both groups had a reduction in employees believing that people do not recover from mental health complaints and that experiencing anxiety is uncommon. The MAW group also had a reduction in employees believing that anxiety to a great extent is hereditary, while the OAW group had a reduction in employees believing that

experiencing depression is uncommon. The OAW group had an increase in employees believing that depression is a sign of low willpower.

[See Table 4 at the end of this paper]

Discussion

Primary outcome

The main result of this study was that the MAW did not have a different effect on sick leave compared to the OAW for this sample. There was a small reduction in sick leave in the MAW group and a small increase in sick leave in the OAW group, but overall, the sick leave percentage was relatively stable for both groups during the year before the intervention and the year of the intervention.

The previous atWork trial found a reduction in sick leave when comparing the atWork intervention to a control group not receiving any intervention (treatment as usual) [16]. The same design yielded similar results in a trial investigating the effect of group-based reassuring information about back pain in Danish municipal employees [17]. In the present trial, all participating kindergartens received a version of the atWork intervention, and we did not have data to compare our two intervention groups to a control group not receiving the interventions. Hence, we do not know if the sick leave rates for the kindergartens participating in the trial differ from the sick leave rates of kindergartens treated as usual.

The MAW and the OAW had a theoretical foundation in CATS, and both interventions were aimed at targeting employees' response outcome expectancies [22]. The interventions also used the same communication model [21], and both targeted back pain. These similarities may make it difficult to detect differences between groups on general sick leave. Sick leave is a multi-causal phenomenon, and successful workplace interventions generally produce small effect sizes [16, 38]. Still, we did not see a systematic decrease in sick leave in either of the intervention groups during the intervention year, as were found in the trial of Odeen et al. [16]. An important difference between these two trials was the study sample, which in the current trial was more homogeneous in regards to gender and occupation. The current trial included only one occupational group, while the previous trial investigated intervention effects among a wide range of occupations. The study from Frederiksen et al. [17] also included employees having different occupations, where the majority of the study sample had manual work tasks. Employees working in the health and social sector, e.g. kindergartens, have higher sick leave rates and higher risk of sick leave compared to other occupations [9, 39]. Thus, it might be that other aspects of the work environment are more important for general sick leave in care occupations, and specific workplace interventions may not produce the same results as in other occupational groups. Compared to the other two trials [16, 17], the current trial also had a higher percentage of female participants, and the rates of sick leave are generally higher for women than for men [9]. The reasons for this difference are debated [40]. Uneven balance in gender distribution at the workplace and difference in social causal explanations for sick leave are suggested explanations [40, 41]. Although the gender gap is poorly understood, there seems to be a consensus that gender plays a role in sick leave and the high percentage of women in this sample may have influenced the results. Furthermore, the sick leave measures were not identical in the mentioned trials. The study of Frederiksen et al. [17] used self-reported days of not

attending work, and the study of Odeen et al. [16] included both self-certified and physician certified sick leave. The current trial used physician certified sick leave only.

Secondary outcomes

There were few differences between groups on secondary outcomes. However, there were differences in effects on two beliefs about back pain and one belief about depression between intervention groups. Both groups had reductions in employees believing in the back pain myths, indicating that the overall message had been understood and accepted, but for two of the myths there was a smaller reduction in the MAW group compared to the OAW group. This is probably a consequence of difference in time used on back pain in the workplace sessions (one hour in MAW, three hours in OAW). The difference in back pain beliefs may be relevant for employees' responses to back pain when it occurs.

Only the MAW group received information and reassurance about mental health complaints, but changes were observed in both groups. For the statement claiming that depression to a great extent is hereditary, there was a difference in change between groups. However, the employees in the MAW group believed more in this statement at baseline than the employees in the OAW group. After the intervention, there was a small decrease in employees believing in this statement in the MAW group, while the OAW group had an increase. Even though this difference in change between groups was statistically significant, it is not likely that the small difference in the percentage of employees agreeing with this statement in the MAW and the OAW would be of practical relevance. The MAW and the OAW both had positive changes in some beliefs about mental health complaints, but the OAW also had some negative changes,

moving in the direction of more stigmatizing beliefs. The positive changes in the OAW group may be a consequence of an increased focus on this topic from authorities and the society in general. Also, the general message that SHC are common, generally not harmful conditions, and usual activity may be beneficial, was emphasized in both intervention groups. In the OAW the focus was only on back pain, but the general message may also have affected participants' beliefs about other SHC.

There was a minor difference in change between the groups for substantial low back pain, where more of the employees in the MAW group reported being either better or worse compared to the OAW group. However, this difference is probably of little practical importance. The OAW group reported receiving more nondirective social support from co-workers after the intervention year. The MAW group also reported receiving slightly more nondirective social support at follow-up, but the change was not statistically significant. The didactic approach used in the interventions was based on a nondirective social support model, demonstrating respect for employees' autonomy and their capacity to discover and implement solutions to SHC. The subjectivity of these health complaints, and the diversity in experiences and needs, was emphasized in all sessions. Hence, the atWork intervention may facilitate nondirective support of co-workers experiencing SHC.

Strengths and limitations

The main strengths of this study were the RCT design, the use of registry data for the primary outcome, the applied setting, and the relatively high response rate. The RCT design provides protection against selection bias and ensures that confounding variables are distributed by

chance alone. The use of registry data at cluster level warrants data on all employees in the kindergartens, eliminates loss to follow-up for primary outcome, and bypass the pitfalls of self-report biases [42]. It is a limitation that an intention to treat analysis could not be presented in addition to the per protocol analysis. Several statistical tests was performed, but not adjusted for. The study was performed as a pragmatic trial, evaluating the effect of the interventions under real-life conditions, and the results can thus be generalized and applied to a real-life setting in kindergartens. The response rate for secondary outcomes was relatively high, but baseline differences were found between responders and non-responders to follow up. The characteristics of employees lost to follow up were not different between the intervention groups, reducing the risk of attrition bias [43]. Furthermore, the similarities between the two interventions may have made the trial insufficiently powered to detect differences between groups on general sick leave. A large effort was initiated to recruit more kindergartens to the trial, but unfortunately only 93 kindergartens agreed to participate. Based on completion and participation rates, both the MAW and the OAW are feasible interventions, but the participation rate was generally higher in the MAW compared to the OAW.

Conclusion

The MAW did not have a different effect on sick leave and other health related outcomes compared to the OAW in this sample of kindergarten employees. There were few differences also for secondary outcomes, except for some of participants' belief about SHC. Compared to the OAW group, the MAW group had a smaller reduction for two of the statements concerning faulty beliefs about back pain, but believed less in the hereditary nature of depression. atWork is an intervention that previously has shown positive effects on sick leave and health beliefs,

but this study did not provide any indication that adding information about mental health complaints gave additional positive effects.

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Competing interests

Authors Johnsen, Eriksen, Baste, Indahl, Odeen and Tveito declare that they have no conflicts of interest.

Compliance with Ethical Standards

All procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1975, as revised in 2000. Informed consent was obtained from all participants for being included in the study.

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Table 2. Total work days agreed, work days lost and percent sick leave in MAW[1] and OAW[2], one year before the intervention (baseline) and the intervention year. The incidence rate ratio (IRR) within group is from the GEE[3] model, accounting for size of kindergartens and dependency in quarterly measurements. IRR between groups is the relative change in sick leave in MAW relative to OAW.

		Baseline			1 Year			Change within group					Change between groups		
	N	Days agreed	Days lost	% sick leave	Days agreed	Days lost	% sick leave	%	% points	IRR	95% CI	P-value	IRR	95% CI	P-value
MAW[1]	45	154028	13529	8.8	160160	13349	8.3	- 5.7	- 0.5	1.06	(0.86-1.28)	0.550	0.97	(0.76-1.24)	0.829
OAW[2]	47	171488	13677	8.0	177056	15262	8.6	7.5	0.6	1.08	(0.93-1.27)	0.282	1		

[1]Modified atWork intervention, [2]Original atWork intervention, [3]Generalized Estimating Equation

Table 3. Mean level of musculoskeletal complaints, pseudoneurological complaints, coping, helplessness, hopelessness, social support and job satisfaction for MAW[1] and OAW[2] at baseline and one year after. Test for within and between group differences.

	MAW[1]				OAW[2]				Between groups
		Baseline	1 year			Baseline	1 year		
	n	Mean (SD)	Mean (SD)	p-value	n	Mean (SD)	Mean (SD)	p-value	p-value
Musculoskeletal complaints (0-24)	252	5.03 (4.32)	4.58 (4.13)	0.055	258	4.29 (3.69)	4.42 (4.12)	0.521	0.254
Pseudoneurological complaints (0-21)	252	3.06 (3.02)	3.03 (3.29)	0.850	258	2.88 (2.79)	2.97 (2.91)	0.600	0.763
Coping (1-4)	253	3.37 (0.40)	3.40 (0.38)	0.202	261	3.36 (0.39)	3.41 (0.39)	0.097	0.741
Helplessness (1-4)	253	1.59 (0.62)	1.66 (0.69)	0.082	259	1.60 (0.68)	1.62 (0.63)	0.598	0.413
Hopelessness (1-4)	253	1.65 (0.53)	1.65 (0.51)	0.915	258	1.62 (0.52)	1.66 (0.52)	0.134	0.460
Nondirective social support (1-5)	266	3.72 (0.76)	3.79 (0.74)	0.064	269	3.76 (0.71)	3.85 (0.69)	**0.037**	0.614
Directive social support (1-5)	265	2.24 (0.70)	2.24 (0.72)	0.945	268	2.36 (0.73)	2.34 (0.73)	0.623	0.397
Job satisfaction (1-5)	276	4.32 (0.64)	4.28 (0.75)	0.342	274	4.36 (0.62)	4.36 (0.65)	0.907	0.382

[1] Modified atWork intervention, [2] Original atWork intervention

P-value < 0.05 when numbers are in bold

Table 4. Percentage of participants agreeing with the statements about back pain and mental health complaints at baseline and 1 year after and test for change in agreement for each statement, for MAW[1] and OAW[2]. Percent within intervention group change[3]. Test for difference in change between the intervention groups.

	Modified atWork intervention (MAW)							Original atWork intervention (OAW)							Between groups
		Baseline	1 year		Change[3]				Baseline	1 year		Change[3]			
	Total n	Agreed %	Agreed %	p-value	Negative %	Same %	Positive %	Total n	Agreed %	Agreed %	p-value	Negative %	Same %	Positive %	p-value
Statements about back pain															
If you have a slipped disc you must have surgery	284	8.1	3.9	**0.036**	2.8	90.1	7.0	288	13.5	2.4	**<0.001**	0.7	87.5	11.8	**0.038**
Radiographs and newer imaging tests can always identify the cause of pain	284	20.8	15.1	0.056	8.1	78.2	13.7	288	25.4	10.1	**<0.001**	5.2	74.3	20.5	**0.014**
If your back hurts, you should take it easy until the pain goes away	285	6.0	3.9	0.286	2.8	92.3	4.9	289	4.8	2.8	0.238	2.1	93.8	4.2	0.803
Most back pain is caused by injuries or heavy lifting	284	26.8	9.2	**<0.001**	2.5	72.4	25.1	288	34.4	9.0	**<0.001**	1.4	65.2	33.5	0.073
Back pain is usually disabling	283	3.9	1.8	0.180	1.4	95.1	3.5	287	6.6	1.1	**<0.001**	0.7	93.0	6.3	0.209
Everyone with back pain should have a spine radiograph	283	19.8	11.0	**0.001**	5.3	80.6	14.1	288	21.9	8.3	**<0.001**	3.5	79.5	17.0	0.346
Bed rest is the mainstay of therapy	286	0.7	0.7	1.000	3.9	95.4	0.7	288	1.7	0.4	0.219	2.4	95.8	1.7	0.432
Statements about mental health complaints															
Having mental health complaints is embarrassing	288	9.4	8.0	0.557	3.8	91.0	5.2	287	11.2	9.1	0.418	5.6	86.8	7.7	0.286
In most cases, mental health complaints will not pass [R]	288	22.2	15.3	**0.008**	5.6	81.9	12.5	287	25.1	14.6	**<0.001**	5.2	79.1	15.7	0.559
It is uncommon to experience depression [R]	288	8.3	5.9	0.311	4.9	87.9	7.3	287	11.2	5.9	**0.020**	3.8	87.1	9.1	0.580
It is uncommon to experience anxiety [R]	288	17.4	9.7	**0.004**	5.6	81.3	13.2	286	17.5	10.8	**0.007**	4.6	84.3	11.2	0.600
Depression is to a great extent hereditary	287	16.7	13.2	0.223	8.0	80.5	11.5	286	10.1	16.4	**0.010**	10.8	84.6	4.6	**0.001**
Anxiety is to a great extent hereditary	286	12.9	7.3	**0.017**	5.9	83.3	10.8	284	7.8	10.9	0.188	7.7	86.0	6.3	0.113
Depression is best treated with medication	288	3.1	1.7	0.388	7.6	89.6	2.8	287	2.1	1.1	0.508	8.7	89.6	1.7	0.624
Anxiety is best treated with medication	288	1.7	1.7	1.000	8.0	90.3	1.7	285	2.8	0.7	0.070	8.7	88.8	2.5	0.819
Depression is a sign of low willpower	288	3.1	2.1	0.581	1.7	95.5	2.8	286	1.1	3.9	**0.039**	3.5	95.8	0.7	0.094

[1] Modified atWork intervention, [2] Original atWork intervention, [3]Change from baseline to 1 year follow-up; positive change = no longer believing in statement, negative change=started believing in statement.
[R]The wording of the statement was reversed from the questionnaire
P-value < 0.05 when numbers are in bold

APPENDIX

REK
REGIONALE KOMITEER FOR MEDISINSK OG HELSEFAGLIG FORSKNINGSETIKK

Region:	Saksbehandler:	Telefon:	Vår dato:	Vår referanse:
REK sør-øst	Claus Henning Thorsen	22845515	17.03.2014	2014/162/REK sør-øst C
			Deres dato:	Deres referanse:
			21.01.2014	

Vår referanse må oppgis ved alle henvendelser

Til Torill Helene Tveito

2014/162 iBedrift - arbeidsplassen som arena for helseinformasjon

Forskningsansvarlig: Sykehuset i Vestfold
Prosjektleder: Torill Helene Tveito

Vi viser til søknad om forhåndsgodkjenning av ovennevnte forskningsprosjekt. Søknaden ble behandlet av Regional komité for medisinsk og helsefaglig forskningsetikk (REK sør-øst C) i møtet 25.02.2014. Vurderingen er gjort med hjemmel i helseforskningsloven (hfl.) § 10, jf. forskningsetikklovens § 4.

Prosjektomtale
Hensikten med prosjektet er å undersøke effekten av arbeidsplassintervensjonen iBedrift, rettet mot alminnelige psykiske plager, på sykefravær og helse. Psykiske lidelser er en av de hyppigste årsakene til langtids sykefravær og uførepensjon, og det kan være mye å hente fra intervensjoner rettet mot å forebygge sykefravær. Ideen bak iBedrift er å redusere negative konsekvenser av alminnelige helseplager gjennom evidensbasert helseinformasjon, og hjelpe arbeidsplassen med å holde medarbeidere i jobb tross plager. iBedrift, rettet mot muskel- og skjelettplager, reduserte sykefraværet og bedret helse i en stor randomisert kontrollert studie. En pilotstudie på iBedrift rettet mot psykiske plager førte til signifikant økning i kunnskap om psykiske plager i intervensjonsgruppen sammenliknet med kontrollgruppen, og deltakernes subjektive vurdering av tiltaket var meget bra. Det er nå designet en ny stor randomisert kontrollert studie for å teste effekten på sykefravær og helse.

Vurdering
Deltakerne skal rekrutteres fra arbeidsplassen og de spørsmål som skal besvares er sensitive personopplysninger om egen helse. Etter komiteens oppfatning er det derfor en utfordring i forhold til å sikre frivillighet hos deltakerene slik at de ikke føler seg presset til å delta, det være seg fra bedriftsledelsen eller forsker. Søker poengterer selv viktigheten av frivillighet ved deltakelse, og komiteen forutsetter at man ved rekruttering til studien er seg dette ansvar bevisst.

Når det gjelder håndteringen av de personsensitive opplysninger som skal fylles ut av deltakerne på de web-baserte spørreskjemaene, finner komiteen at det i liten grad er beskrevet i søknaden hvorledes studien skal sikre forsvarlig og sikker behandling av opplysningene slik at de ikke kommer uvedkommende i hende, herunder arbeidsgiver. Utover å vise til at det kun er ansatte i forskningsprosjektet som har tilgang til besvarte spørreskjemaer, er det ikke gitt noen nærmere redegjørelse for sikringen av konfidensialitet.

I henhold til forskrift om organisering av medisinsk og helsefaglig forskning § 3 bokstav a, skal forskningsansvarlig sørge for at det tilrettelegges for at medisinsk og helsefaglig forskning blir utført på en måte som ivaretar blant annet personvern- og informasjonssikkerhetsmessige forhold.

Komiteen forutsetter derfor at forskningsansvarlig og prosjektleder sikrer at bruk av samtykker på internett og at løsningen for webbaserte spørreskjema med sensitivt innhold, har det nødvendige sikkerhetsnivå og sikker kommunikasjonsløsning. Komiteen viser her til veiledning etter Norm for informasjonssikkerhet "Personvern og informasjonssikkerhet i forskningsprosjekter innenfor helse- og omsorgssektoren", som er tilgjengelig på Helsedirektoratets nettsider.

Komiteen har for øvrig notert seg, men har ingen merknader til, at det i prosjektet er inngått databehandler-avtale med et amerikansk firma som er tilsluttet Safe Harbour (avtale mellom EU og USA om personvern).

Informasjonsskriv
Informasjonsskrivet må opplyse om overføring av helseopplysninger til utlandet.

Ut fra dette setter komiteen følgende vilkår for prosjektet:

1. Informasjonsskrivet revideres i tråd med ovennevnte og sendes komiteen til orientering.

Vedtak
Prosjektet godkjennes under forutsetning av at ovennevnte vilkår oppfylles, jf helseforskningslovens §§ 9 og 33.

I tillegg til vilkår som fremgår av dette vedtaket, er tillatelsen gitt under forutsetning av at prosjektet gjennomføres slik det er beskrevet i søknaden og protokollen, og de bestemmelser som følger av helseforskningsloven med forskrifter.

Tillatelsen gjelder til 28.12.2024. Av dokumentasjons-og oppfølgingshensyn skal opplysningene likevel bevares inntil 28.12.2029. Opplysningene skal lagres avidentifisert, dvs. atskilt i en nøkkel-og en opplysningsfil. Opplysningene skal deretter slettes eller anonymiseres, senest innen et halvt år fra denne dato.

Forskningsprosjektets data skal oppbevares forsvarlig, se personopplysningsforskriften kapittel 2, og *Helsedirektoratets veileder for Personvern og informasjonssikkerhet i forskningsprosjekter innenfor helse- og omsorgssektoren*.

Komiteens avgjørelse var enstemmig.

Komiteens vedtak kan påklages til Den nasjonale forskningsetiske komité for medisin og helsefag, jfr. helseforskningsloven § 10, tredje ledd og forvaltningsloven § 28. En eventuell klage sendes til REK sør-øst C. Klagefristen er tre uker fra mottak av dette brevet, jfr. forvaltningsloven § 29.

Sluttmelding og søknad om prosjektendring
Prosjektleder skal sende sluttmelding til REK sør-øst på eget skjema senest 28.06.2025, jf. hfl. 12. Prosjektleder skal sende søknad om prosjektendring til REK sør-øst dersom det skal gjøres vesentlige endringer i forhold til de opplysninger som er gitt i søknaden, jf. hfl. § 11.

Klageadgang
Komiteens vedtak kan påklages til Den nasjonale forskningsetiske komité for medisin og helsefag, jfr. helseforskningsloven § 10, tredje ledd og forvaltningsloven § 28. En eventuell klage sendes til REK sør-øst C. Klagefristen er tre uker fra mottak av dette brevet, jfr. forvaltningsloven § 29.

Med vennlig hilsen

Britt-Ingjerd Nesheim
prof. dr. med.
leder REK sør-øst C

Claus Henning Thorsen
rådgiver

Kopi til:
Aage Indahl, overlege, Sykehuset i Vestfold: aagind@siv.no
Sykehuset i Vestfold ved øverste administrative ledelse: firmapost@siv.no

Forespørsel om deltakelse i forskningsprosjektet

"iBedrift – kunnskapsformidling om alminnelige plager på arbeidsplassen"

Bakgrunn og hensikt
Dette er et spørsmål til deg om å delta i en forskningsstudie for å teste effekten av arbeidsplasstiltaket iBedrift. iBedrift gjennomføres av Sykehuset i Vestfold, Klinikk FMR, Raskere Tilbake, i samarbeid med NAV Arbeidslivsentra. iBedrift ble etablert i 2007, som et nytt tiltak rettet mot uspesifikke muskel- og skjelettplager. Tiltaket bestod av kurs på arbeidsplassen, til alle ansatte, omhandlene uspesifikke muskel- og skjelettplager, og opprettelse av mestringskontakter. iBedrift, rettet mot uspesifikke muskel- og skjelettplager, reduserte sykefraværet og førte til bedret helse gjennom testing i en stor randomisert kontrollert studie. iBedrift er nå videreutviklet til også å omhandle psykiske plager, i tillegg til eget lederkurs. I den forbindelse ønsker vi å teste ut den nye modellen av iBedrift, i en ny stor randomisert kontrollert studie. Primært utfallsmål er sykefravær, sekundære utfallsmål er helse, mestring og sosial støtte. Din arbeidsplass er en av bedriftene som har sagt ja til å delta, og som ansatt mottar du derfor en forespørsel om å delta i denne forskningsstudien.

Hva innebærer studien?
Det skal i utvalgte bedrifter gjennomføres kurs for alle ledere med personalansvar, tillitsvalgte og verneombud, kurs for hele arbeidsplassen og kurs for mestringskontakter. Kunnskapen som blir formidlet vil fokusere på oppdatert vitenskaplig kunnskap vedrørende uspesifikke muskel- og skjelettplager og de vanligste psykiske plagene. Tiltaket foreskriver ingen endring i livsstil, men tar sikte på å etablere en forståelse av alminnelige plager og hva som kan være hensiktsmessig å gjøre når plager oppstår. Målet er å legge til rette for mestring, og la det være opp til deltakerne å trekke sine egne konklusjoner og å bestemme hva de skal gjøre. Alle prosjektdeltakere vil bli spurt om å svare på to spørreskjema. Sykefraværsdata på bedriftsnivå vil hentes ut fra NAV.

Mulige fordeler og ulemper
Som deltaker i prosjektet vil du være med på å frembringe ny dokumentasjon om tiltakets nyteverdi. Deltakerne vil få tilført et nytt tilbud på arbeidsplassen, og informative foredrag om alminnelige helseplager gjennomført på sitt arbeidssted. Intervensjonsgruppene vil få den nye modellen av iBedrift, som i tillegg til kurs uspesifikke muskel- og skjelettplager også innebærer kurs om psykiske plager, samt et kurs for ledere, tillitsvalgte og verneombud. Kontrollgruppen vil i prosjektperioden få den tidligere modellen av iBedrift, rettet kun mot uspesifikke muskel- og skjelettplager, men vil få tilbud om de nye delene av tiltaket i etterkant av gjennomført forskningsprosjekt. Den enkelte deltaker må gi sitt samtykke til deltakelse i prosjektet og vil bli spurt om å svare på ett spørreskjema før oppstart, og ett i etterkant av gjennomført tiltak. Deltakelse i studien har ingen konsekvenser for ordinær behandling i helsevesenet.

Hva skjer med informasjonen om deg?
Informasjonen som registreres om deg skal kun brukes slik som beskrevet i hensikten med studien. Alle opplysningene vil bli behandlet uten direkte gjenkjennende opplysninger. En kode knytter deg til dine opplysninger gjennom en liste med e-postadresser. Det er kun autorisert personell knyttet til prosjektet som har adgang til denne listen og som kan finne tilbake til deg. Det vil ikke være mulig å identifisere deg i resultatene av studien når disse publiseres.

Frivillig deltakelse
Det er frivillig å delta i studien. Du kan når som helst og uten å oppgi noen grunn trekke ditt samtykke

til å delta i studien. Dette vil ikke få konsekvenser for eventuell behandling i helsevesenet. Om du nå sier ja til å delta, kan du senere trekke tilbake ditt samtykke. Dersom du senere ønsker å trekke deg eller har spørsmål til studien, kan du kontakte Tone Langjordet Johnsen på tone.johnsen@siv.no eller på telefon 971 19 310.

Ytterligere informasjon om studien finnes i kapittel *A* – *utdypende forklaring av hva studien innebærer.*

Ytterligere informasjon om personvern finnes i kapittel B – *Personvern og økonomi.*

Kapittel A- utdypende forklaring av hva studien innebærer

Kriterier for deltakelse
Personene som deltar skal være ansatt i en av bedriftene inkludert i studien. Ut over dette finnes det ingen andre kriterier for deltakelse.

Bakgrunnsinformasjon om studien
Psykiske lidelser er en av de hyppigste årsakene til langtids sykefravær og uførepensjon i Norge, og er i dag en av de største helseutfordringene i vårt samfunn. I følge Verdens Helseorganisasjon er det behov for et omfattende og koordinert tilbud fra helse- og sosialsektoren på landsnivå for å overkomme byrden av psykiske lidelser. I den nye globale handlingsplan for psykisk helse påpeker de viktigheten av å forebygge og fremme psykisk helse blant innbyggerne. Derfor er det viktig å få på plass tiltak for å forebygge psykiske lidelser, og for å beskytte og fremme psykisk helse i alle faser av livet. Arbeidsplassen er en ideell setting for et befolkningsrettet forebyggende tiltak. For de fleste mennesker, og mesteparten av tiden, er arbeid gunstig for vår psykiske helse. Det er betydelige forskjeller i psykisk helse blant mennesker som er ansatt i forhold til de som er utenfor arbeidsmarkedet. Å bli ekskludert fra arbeidsmarkedet påvirker ofte vår mentale helse negativt, da det fratar oss de sosiale og psykologiske fordelen arbeid har, som eksempelvis sosial støtte, opplevelse av mestring, strukturering av tid, og økt selvfølelse. Av den grunn er det viktig å hindre ekskludering, samt skape forhold for økt inkludering i arbeidsmarkedet.

Sosial støtte og mestring er viktige faktorer for økt motstandsdyktighet mot utvikling av psykiske lidelser, og tiltak rettet mot å øke sosial støtte og mestring kan derfor forventes å ha gode resultater. Kunnskap om psykisk helse på arbeidsplassen er ansett for å være en viktig faktor for å bygge en helsefremmende arbeidsplass. Arbeidsplasstiltak som har til hensikt å formidle informasjon om psykisk helse og psykiske lidelser kan vise til betydelig økning i kunnskap, bedret helse, økt trygghet for å søke hjelp og å utøve hjelp til andre, reduserte stigmatiserende holdninger, økt bruk av positive mestringsstrategier og bedret sosiale ferdigheter.

iBedrift er et tiltak som innebærer kunnskapsformidling om alminnelige helseplager på arbeidsplassen. Tiltaket er basert på kognitiv teori, og benytter en ikke-formanende tilnærming. Gjennom systematisk kursing av alle ledere og ansatte, har iBedrift som mål å påvirke ansattes holdninger og adferd gjennom evidensbasert kunnskap. iBedrift er basert på en ikke-skade modell, der smerte og plager ikke er et tegn på skade forårsaket av ”feil” adferd. Selv om disse plagen kan være veldig smertefulle og plagsomme, er det sjeldent tegn på noen alvorlig sykdom. I tillegg til å nå ut til alle ansatte med kunnskapen, er målet til iBedrift å forsterke organisasjonskulturen slik at arbeidstakere med fysiske og psykiske helseplager blir akseptert som en del av det normale arbeidsmiljøet. Arbeidsplasstiltak som tar sikte på endring på individnivå vil trolig ha mindre sannsynlighet for å lykkes dersom kulturen i organisasjonen ekskluderer ansatte som ikke opplever optimal helse.

Design
Prosjektet skal gjennomføres som en randomisert kontrollert studie, med en pretest - posttest kontrollgruppedesign. Dette blir tilfeldig fordelt blant de bedriftene som deltar. Alle grupper blir spurt om å svare på ett spørreskjema før oppstart, og ett etter gjennomført tiltak.

Tidsskjema – hva skjer og når skjer det?
Spørreskjema nummer en er planlagt utsendt til alle ansatte i inkluderte bedrifter i siste kvartal 2014. Vi vil deretter kjøre en løpende inkludering og randomisering til vi har oppnådd det antall bedrifter vi er i behov av. Aktuelle kurs vil gjennomføres fra slutten av 2014 til utgangen av 2015. Spørreskjema nummer to vil sendes ut til ansatte 12 måneder etter spørreskjema nummer en.

Annet
Dersom det skulle forekomme uforutsette beslutninger eller situasjoner som fører til endringer eller opphør av prosjektet vil deltakende bedrifter umiddelbart bli informert.

Kapittel B – Personvern og økonomi

Personvern
Opplysninger som registreres om deg er de svarene du gir i utsendte spørreskjema. Du vil få spørsmål om å oppgi din e-postadresse. Vi ber om din e-postadresse av to årsaker. Første årsak er at vi ønsker å koble dine svar på første spørreskjema med dine svar på andre spørreskjema. Dette er helt vesentlig for å kunne måle eventuelle endringer. Andre årsak er at vi ved å samle inn din e-postadresse på første spørreskjema kan sende andre spørreskjema direkte til deg, og ikke via din leder. Din e-postadresse vil ikke benyttes til andre formål enn beskrevet over.

Prosjektet vil i hovedsak benytte seg av elektroniske spørreskjema, administrert gjennom spørreskjematjenesten Qualtrics. Qualtrics har sine servere i utlandet, der innhentet data vil bli oppbevart. Qualtrics oppfyller de strenge kravene fra både norske og amerikanske datatilsynsmyndigheter til trygg behandling av personopplysninger. Det er kun autorisert personell knyttet til dette forskningsprosjekt som vil ha tilgang til innhentede opplysninger. Uni Helse ved administrerende direktør er databehandlingsansvarlig.

Rett til innsyn og sletting av opplysninger om deg
Hvis du sier ja til å delta i studien, har du rett til å få innsyn i hvilke opplysninger som er registrert om deg. Du har videre rett til å få korrigert eventuelle feil i de opplysningene vi har registrert. Dersom du trekker deg fra studien, kan du kreve å få slettet innsamlede opplysninger, med mindre opplysningene allerede er inngått i analyser eller brukt i vitenskapelige publikasjoner.

Økonomi
Studien er finansiert gjennom interne forskningsmidler fra Sykehuset i Vestfold.

Informasjon om utfallet av studien
Alle resultater vil publiseres på Sykehuset i Vestfold og Uni Helse sin nettsider (www.siv.no, www.uni.no), samt gjennom artikler i internasjonale fagfellevurderte tidsskrifter.

Sykehuset i Vestfold

HELSE SØR-ØST

uni Research

Samtykkeerklæring

Jeg bekrefter at jeg har blitt informert skriftlig om studien *"iBedrift – arbeidsplassen som arena for helseinformasjon"*, og ønsker å delta.

Jeg er orientert om at deltakelse i studien er frivillig, og at jeg når som helst kan trekke meg fra studien uten å angi nærmere forklaring. Deltakelse i studien vil ikke ha betydning for ordinær behandling i helsevesenet.

Jeg er villig til å delta i studien (kryss av):

☐ Jeg samtykker

(Signatur vil benyttes for eventuelle spørreskjema på papir)

(Signert av prosjektdeltaker, dato)

Jeg bekrefter å ha gitt informasjon om studien

(Signert, rolle i studien, dato)

Bakgrunnsspørsmål

1. **Dato i dag:** .....
2. **E-post:** .....
3. **Arbeidsplass:** .....
4. **Kjønn** 1 ☐ mann 2 ☐ kvinne
5. **Fødselsår:** .....
6. **Hva er din høyeste fullførte utdanning?**
   - 1 ☐ Ingen fullført utdanning
   - 2 ☐ Grunnskole
   - 3 ☐ Videregående skole
   - 4 ☐ Fagbrev/fagutdanning
   - 5 ☐ Høgskole/universitet inntil 4 år
   - 6 ☐ Høgskole/universitet over 4 år
   - 7 ☐ Annet: .....

Mestring

1. **Mestring av problemer og utfordringer**
Nedenfor finner du eksempler på utsagn som beskriver hvilke muligheter man har når man møter problemer og utfordringer i hverdagen. Det finnes ingen riktige eller gale svar.

	Svar på alle nevnte utsagn og sett et kryss for det svaret som passer best for deg.	Stemmer ikke i det hele tatt 1	Stemmer ikke særlig bra 2	Verken stemmer eller stemmer ikke 3	Stemmer ganske bra 4	Stemmer helt 5
1.	**Når jeg prioriterer en oppgave, oppnår jeg som regel det målet jeg har satt meg**	☐	☐	☐	☐	☐
2.	**Selv om jeg prøver å mestre alle mine problemer, så påvirker det resultatene så lite at det ikke er verd anstrengelsene**	☐	☐	☐	☐	☐
3.	**Erfaring har lært meg at selv store anstrengelser gir veldig små resultater**	☐	☐	☐	☐	☐
4.	**Alle mine forsøk på å gjøre ting bedre gjør det egentlig bare verre**	☐	☐	☐	☐	☐
5.	**De aller fleste vanskelige situasjoner klarer jeg å løse med et bra resultat**	☐	☐	☐	☐	☐
6.	**Jeg ville nok hatt det bedre hvis jeg ikke hadde strevd sånn med å løse problemene mine**	☐	☐	☐	☐	☐
7.	**De viktigste sakene i livet mitt har jeg egentlig ingen kontroll over**	☐	☐	☐	☐	☐
8.	**Det er bedre at andre forsøker å løse problemene enn at jeg skal rote det til og gjøre det verre**	☐	☐	☐	☐	☐
9.	**Selv om jeg skulle ønske jeg kunne forandre livssituasjonen min, så vet jeg at det ikke går**	☐	☐	☐	☐	☐

Theoretically Originated Measure of the Cognitive Activation Theory of Stress, (TOMCATS), Odeen et al, 2012

Helseplager

1. **Stort sett, vil du si at din helsetilstand er:**
1 ☐ Meget god 2 ☐ God 3 ☐ Middels 4 ☐ Dårlig 5 ☐ Meget dårlig

2. **Nedenfor nevnes noen vanlige helseplager. Vi vil be deg om å vurdere hvert enkelt problem/ symptom, og oppgi om du har vært plaget av dette i løpet av de siste tretti døgn:**

	Svar for alle nevnte helseplager og sett et kryss for det svaret som passer best for deg.	Ikke plaget 0	Litt plaget 1	En del plaget 2	Alvorlig plaget 3
1.	**Forkjølelse, influensa**	☐	☐	☐	☐
2.	**Hoste, bronkitt**	☐	☐	☐	☐
3.	**Astma**	☐	☐	☐	☐
4.	**Hodepine**	☐	☐	☐	☐
5.	**Nakkesmerter**	☐	☐	☐	☐
6.	**Smerter øverst i ryggen**	☐	☐	☐	☐
7.	**Smerter i korsrygg**	☐	☐	☐	☐
8.	**Smerter i armer**	☐	☐	☐	☐
9.	**Smerter i skuldre**	☐	☐	☐	☐
10.	**Migrene**	☐	☐	☐	☐
11.	**Hjertebank, ekstraslag**	☐	☐	☐	☐
12.	**Brystsmerter**	☐	☐	☐	☐

13.	**Pustevansker**	☐	☐	☐	☐
14.	**Smerter i føttene ved anstrengelser**	☐	☐	☐	☐
15.	**Sure oppstøt, «halsbrann»**	☐	☐	☐	☐
16.	**Sug eller svie i magen**	☐	☐	☐	☐
17.	**Magekatarr, magesår**	☐	☐	☐	☐
18.	**Mageknip**	☐	☐	☐	☐
19.	**«Luftplager»**	☐	☐	☐	☐
20.	**Løs avføring, diaré**	☐	☐	☐	☐
21.	**Forstoppelse**	☐	☐	☐	☐
22.	**Eksem**	☐	☐	☐	☐
23.	**Allergi**	☐	☐	☐	☐
24.	**Hetetokter**	☐	☐	☐	☐
25.	**Søvnproblemer**	☐	☐	☐	☐
26.	**Tretthet**	☐	☐	☐	☐
27.	**Svimmelhet**	☐	☐	☐	☐
28.	**Angst**	☐	☐	☐	☐
29.	**Nedtrykt, depresjon**	☐	☐	☐	☐

Subjective Health Complaints (SHC), Eriksen et al, 1999

Ansatte som krysser av på 2-*"en del plaget"* eller 3-*"alvorlig plaget"* vil få følgende oppfølgingsspørsmål:

3. **Har "xx plagen" bekymret deg?**

1 ☐ Nei 2 ☐ I liten grad 3 ☐ I stor grad 4 ☐ Hele tiden/alltid

4. **Har "xx plagen" hindret deg i å gjøre det du ønsker?**

a. På jobben:

1 ☐ Nei 2 ☐ I liten grad 3 ☐ I stor grad 4 ☐ Hele tiden/alltid

b. I fritiden:

1 ☐ Nei 2 ☐ I liten grad 3 ☐ I stor grad 4 ☐ Hele tiden/alltid

5. **Hvordan har du det?**

Når smerter og plager har vart en tid, blir en gjerne sliten og oppgitt. Dette gir ofte plager som nevnt nedenfor. Samlet blir disse plagene brukt som mål på at en er kroppslig eller mentalt presset. Vurder hvor mye hvert symptom har vært til plage eller ulempe for deg de siste 14 dagene.

Svar for alle nevnte plager og sett et kryss for det svaret som passer best for deg.		Ikke i det hele tatt 1	Litt 2	En god del 3	Svært mye 4
1.	**Plutselig skremt uten grunn**	☐	☐	☐	☐
2.	**Føler du deg engstelig**	☐	☐	☐	☐
3.	**Føler du deg svimmel eller kraftløs**	☐	☐	☐	☐
4.	**Føler deg anspent eller opphisset**	☐	☐	☐	☐
5.	**Anklager deg selv for ting**	☐	☐	☐	☐
6.	**Vanskelig for å sove**	☐	☐	☐	☐
7.	**Føler deg nedfor**	☐	☐	☐	☐
8.	**Føler at du ikke er noe verdt**	☐	☐	☐	☐
9.	**Føler at alt krever stor anstrengelse**	☐	☐	☐	☐
10.	**Følelse av håpløshet mht. framtiden**	☐	☐	☐	☐

Hopkins Symptoms Check List (HSCL-10), Derogatis et al, 1974; Strand m.fl. 2003

Påstander om alminnelige helseplager

1. **Påstander om ryggplager**
Nedenfor finner du noen påstander om ryggplager som vi ber deg ta stilling til og gradere i forhold til om du er enig eller uenig.

	Svar på alle nevnte påstander og sett et kryss for det svaret som passer best med ditt syn.	Helt uenig 1	Uenig 2	Både - og 3	Enig 4	Helt enig 5
1.	**Skiveutglidning (prolaps) bør opereres**	☐	☐	☐	☐	☐
2.	**Moderne røntgenundersøkelser finner som regel årsaken til ryggsmertene**	☐	☐	☐	☐	☐
3.	**Ryggsmerter skal behandles med ro og hvile til de går over**	☐	☐	☐	☐	☐
4.	**Ryggsmerter skyldes ofte skader eller tunge løft**	☐	☐	☐	☐	☐
5.	**Ryggsmerter er vanligvis invalidiserende**	☐	☐	☐	☐	☐
6.	**Alle med ryggsmerter bør undersøkes med røntgen**	☐	☐	☐	☐	☐
7.	**Å ligge er den beste behandlingen for ryggsmerter**	☐	☐	☐	☐	☐

Deyo, 1998

2. **Påstander om psykiske plager**
Nedenfor finner du noen påstander om psykiske plager som vi ber deg ta stilling til og gradere i forhold til om du er enig eller uenig.

	Svar på alle nevnte påstander og sett et kryss for det svaret som passer best med ditt syn.	Helt uenig 1	Uenig 2	Både - og 3	Enig 4	Helt enig 5
1.	**Det er flaut å ha psykiske plager**	☐	☐	☐	☐	☐
2.	**I de fleste tilfeller går psykiske plager over**	☐	☐	☐	☐	☐
3.	**Det er normalt å oppleve depresjon**	☐	☐	☐	☐	☐
4.	**Depresjon er i stor grad arvelig**	☐	☐	☐	☐	☐
5.	**Depresjon er et tegn på lav viljestyrke**	☐	☐	☐	☐	☐
6.	**Depresjon behandles best med medisiner**	☐	☐	☐	☐	☐
7.	**Det er normalt å oppleve angst**	☐	☐	☐	☐	☐
8.	**Angst er i stor grad arvelig**	☐	☐	☐	☐	☐
9.	**Angst behandles best med medisiner**	☐	☐	☐	☐	☐

Arbeidslivsforhold

1. **Jobbtilfredshet**

Svar på alle spørsmål og sett ett kryss for det svaret som passer best for deg.

1. **Alt i alt, hvor tilfreds er du med jobben din?**
   - 1 ☐ Svært misfornøyd
   - 2 ☐ Misfornøyd
   - 3 ☐ Verken misfornøyd eller fornøyd
   - 4 ☐ Fornøyd
   - 5 ☐ Svært fornøyd
2. **Hvis du kunne velge å gå inn i hvilken som helst jobb, hva ville du velge?**
   - 1 ☐ Ville foretrekke en annen jobb enn den jeg har nå. Hvilken? ……..
   - 2 ☐ Ville ikke jobbet i det hele tatt
   - 3 ☐ Ville ønske den jobben jeg har nå
3. **Med det du vet i dag, ville du tatt den jobben du har?**
   - 1 ☐ Jeg ville uten tvil takke nei
   - 2 ☐ Jeg ville tenkt meg om to ganger
   - 3 ☐ Jeg ville uten å nøle ta den samme jobben

4. **Svarer jobben til forventningene dine?**
   - 1 ☐ Ikke særlig lik forventningene
   - 2 ☐ Litt lik forventningene
   - 3 ☐ Svært lik forventningene
5. **Hvis en god venn av deg var intressert i å ta en jobb tilsvarende din for samme arbeidsgiver, hva ville du råde han eller henne til?**
   - 1 ☐ Jeg ville fraråde min venn det
   - 2 ☐ Jeg ville vært i tvil om å anbefale det
   - 3 ☐ Jeg ville anbefale det på stedet

Global Job Satisfaction (GJS), Quinn and Shepard, 1974

2. Krav – kontroll - støtte

Vedrørende ditt arbeid *Svar på alle spørsmål og sett ett kryss for det svaret som passer best for deg.*	Ja, ofte 1	Ja, noen ganger 2	Nei, sjelden 3	Nei, så godt som aldri 4
1. **Krever arbeidet ditt at du arbeider meget raskt?**	☐	☐	☐	☐
2. **Krever arbeidet ditt at du arbeider meget hardt?**	☐	☐	☐	☐
3. **Krever arbeidet ditt stor arbeidsinnsats?**	☐	☐	☐	☐
4. **Har du tilstrekkelig tid til å fullføre arbeidsoppgavene dine?**	☐	☐	☐	☐
5. **Forekommer det ofte motstridende krav i arbeidet ditt?**	☐	☐	☐	☐
6. **Får du lære nye ting i arbeidet ditt?**	☐	☐	☐	☐
7. **Krever ditt arbeid dyktighet?**	☐	☐	☐	☐
8. **Krever ditt arbeid oppfinnsomhet/kreativitet?**	☐	☐	☐	☐
9. **Innebærer ditt arbeid at du gjør samme ting om og om igjen?**	☐	☐	☐	☐
10. **Har du frihet til å bestemme hvordan ditt arbeid skal utføres?**	☐	☐	☐	☐
11. **Har du frihet til å bestemme hva som skal utføres i ditt arbeid?**	☐	☐	☐	☐

Demand-Control-Support-Questionnaire, short Swedish version, Theorell et al 1991

Positive og psykososiale faktorer i arbeidsmiljøet *Svar på alle spørsmål og sett ett kryss for det svaret som passer best for deg.*	Stemmer helt 1	Stemmer ganske bra 2	Stemmer ikke særlig bra 3	Stemmer ikke 4
1. **Det er rolig og behagelig stemning på min arbeidsplass**	☐	☐	☐	☐
2. **Det er godt samhold**	☐	☐	☐	☐
3. **Mine arbeidskollegaer stiller opp for meg**	☐	☐	☐	☐
4. **Det er forståelse for at jeg kan ha en dårlig dag**	☐	☐	☐	☐
5. **Jeg kommer godt overens med mine overordnede**	☐	☐	☐	☐
6. **Jeg trives bra med mine arbeidskollegaer**	☐	☐	☐	☐

Demand-Control-Support-Questionnaire, short Swedish version, Theorell et al 1991

3. Sosial støtte

Vi er interessert i de typene av oppmuntring, assistanse og samarbeid du mottar fra dine kollegaer for å takle ditt arbeid. Vi har erfart at ulike typer mennesker hjelper og oppmuntrer oss på ulike måter. Noen mennesker gjør det helt klart hva vi skal gjøre, mens andre mennesker lar oss finne ut av ting på egenhånd. Vi vil at du forteller oss hva du føler er mest typisk ved måten dine arbeidskollegaer gir hjelp og oppmuntring. Hvert spørsmål i denne undersøkelsen beskriver en måte mennesker kan støtte deg på.

Svar på alle spørsmål, og marker med et kryss på en skala fra 1-5 hvor typisk hvert utsagn er for den støtten du mottar	Slett ikke typisk 1	2	3	4	Svært typisk 5
1. **Viser interesse for hvordan du har det**	☐	☐	☐	☐	☐
2. **Løser problemer for deg**	☐	☐	☐	☐	☐
3. **Spør om du trenger hjelp**	☐	☐	☐	☐	☐
4. **Tar seg av dine problemer**	☐	☐	☐	☐	☐
5. **Gjør det lettere for deg å snakke om alt som du synes er viktig**	☐	☐	☐	☐	☐
6. **Sier at du skal være stolt av deg selv**	☐	☐	☐	☐	☐
7. **Samarbeider med deg for å få ting gjort**	☐	☐	☐	☐	☐
8. **Presser deg til å gjøre ting**	☐	☐	☐	☐	☐
9. **Spør deg hvordan du har det**	☐	☐	☐	☐	☐
10. **Gir deg klare råd om hvordan du skal takle problemer**	☐	☐	☐	☐	☐
11. **Gir deg informasjon slik at du forstår hvorfor du gjør ting**	☐	☐	☐	☐	☐
12. **Forteller deg hva du skal gjøre**	☐	☐	☐	☐	☐
13. **Er tilgjengelig for samtale når som helst**	☐	☐	☐	☐	☐
14. **Peker på skadelige eller tåpelige måter du ser på ting på**	☐	☐	☐	☐	☐
15. **Tilbyr en rekke forslag**	☐	☐	☐	☐	☐
16. **Lar deg ikke dvele ved opprørende forslag**	☐	☐	☐	☐	☐

Non directive and Directive Support Survey (NDSS-16), Fisher et al, 2004

4. Inkludering

Nedenfor har vi beskrevet en rekke ulike personer. Vi ønsker å vite hvordan du mener at disse personene passer inn i ditt arbeidsmiljø. Prøv å svare så ærlig som mulig, og sett kryss ved det svaret du mener passer best.

De ansatte vil bli bedt om å ta stilling til 4 eller 5 av disse kasusene.

Hilde

Hilde er en kvinne i midten av 40-årene, som har de faglige kvalifikasjonene som kreves i jobben. De siste årene har hun slitt med smerter og stivhet i korsryggen i lengre perioder. Hun har vært til en rekke undersøkelser uten at det har vært mulig å fastslå årsaken eller påvise noen organisk årsak til plagene. Smertene kan være meget intense og blir verre når hun har sittet eller stått i ro lenge, men hun kan ofte finne en aktivitet eller stilling som lindrer smertene i kombinasjon med vanlige smertestillende medisiner.

a) Ideelt sett, hvordan mener du at Hilde burde passe inn i din arbeidsgruppe?

Svært dårlig 1 ☐ 2 ☐ 3 ☐ 4 ☐ Svært godt 5 ☐

b) Ut fra forholdene i din arbeidsgruppe nå, hvordan mener du at Hilde ville passe inn i gruppen?

Svært dårlig 1 ☐ 2 ☐ 3 ☐ 4 ☐ Svært godt 5 ☐

c) Dersom Hilde ikke passer godt/svært godt inn i din arbeidsgruppe: Hva mener du er det største hinderet i denne sammenhengen?

1 ☐ Mulighet for behov for omfattende tilrettelegging
2 ☐ Risiko for negative økonomiske konsekvenser pga. sykefravær eller tilrettelegging
3 ☐ Evne til å jobbe i team/samspill med kolleger
4 ☐ Usikkerhet om arbeidsevn
5 ☐ Risiko for økt arbeidsbelastning for kolleger
6 ☐ Usikkerhet om evne til å yte service

7 ☐ Usikkerhet om arbeidskapasitet
8 ☐ Annet: _____

d) Har du eller har du hatt tidligere erfaring med kollegaer/ansatte som Hilde?

1 ☐ Ja
2 ☐ Nei

Bjørn

Bjørn er en 62 år gammel mann. Han er normalt frisk og i god form sammenliknet med andre i samme aldersgruppe og har alle nødvendige faglige kvalifikasjoner. Han har vurdert å benytte seg av avtalefestet pensjon (AFP) men har kommet frem til at han ønsker å arbeide noen år til.

a) Ideelt sett, hvordan mener du at Bjørn burde passe inn i din arbeidsgruppe?

Svært dårlig				Svært godt
1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

b) Ut fra forholdene i din arbeidsgruppe nå, hvordan mener du at Bjørn ville passe inn i gruppen?

Svært dårlig				Svært godt
1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

c) Dersom Bjørn ikke passer godt/svært godt inn i din arbeidsgruppe: Hva mener du er det største hinderet i denne sammenhengen?

1 ☐ Mulighet for behov for omfattende tilrettelegging
2 ☐ Risiko for negative økonomiske konsekvenser pga. sykefravær eller tilrettelegging
3 ☐ Evne til å jobbe i team/samspill med kolleger
4 ☐ Usikkerhet om arbeidsevn
5 ☐ Risiko for økt arbeidsbelastning for kolleger
6 ☐ Usikkerhet om evne til å yte service
7 ☐ Usikkerhet om arbeidskapasitet
8 ☐ Annet: _____

d) Har du eller har du hatt tidligere erfaring med kollegaer/ansatte som Bjørn?

1 ☐ Ja
2 ☐ Nei

Marit

Marit er en 35 år gammel kvinne som i det siste har følt seg nedfor, engstelig og sover dårlig. Hun deltar ikke i noen regelmessige fritidsaktiviteter og holder seg for det meste for seg selv. Marit føler ofte at hun har lite energi og er ikke så nøye med sitt utseende. Hun har en tendens til å se mørkt på fremtiden. Bortsett fra disse tingene har Marit normalt god helse og de faglige kvalifikasjonene som jobben krever.

a) Ideelt sett, hvordan mener du at Marit burde passe inn i din arbeidsgruppe?

Svært dårlig				Svært godt
1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

b) Ut fra forholdene i din arbeidsgruppe nå, hvordan mener du at Marit ville passe inn i gruppen?

Svært dårlig				Svært godt
1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

c) Dersom Marit ikke passer godt/svært godt inn i din arbeidsgruppe: Hva mener du er det største hinderet i denne sammenhengen?

1 ☐ Mulighet for behov for omfattende tilrettelegging
2 ☐ Risiko for negative økonomiske konsekvenser pga. sykefravær eller tilrettelegging
3 ☐ Evne til å jobbe i team/samspill med kolleger
4 ☐ Usikkerhet om arbeidsevn
5 ☐ Risiko for økt arbeidsbelastning for kolleger
6 ☐ Usikkerhet om evne til å yte service
7 ☐ Usikkerhet om arbeidskapasitet
8 ☐ Annet: _____

d) Har du eller har du hatt tidligere erfaring med kollegaer/ansatte som Marit?

1 ☐ Ja
2 ☐ Nei

Elin

Elin er en meget aktiv kvinne i begynnelsen av 30-årene, som har de nødvendige faglige kvalifikasjonene for jobben. Hun snakker fort og mye, og virker positiv og meget engasjert. Til tross for dette har Elin en tendens til å skifte mellom oppgaver uten å fullføre ting hun har startet med. Hun blir fort utålmodig og kan tidvis virke lite oppmerksom. Hun kan ha vanskeligheter med å konsentrere seg lenge av gangen. I oppveksten hadde Elin vansker med å oppføre seg slik som foreldre og skole forventet og en tendens til å bryte normer og regler, men dette har hun bedre kontroll over i dag.

a) Ideelt sett, hvordan mener du at Elin burde passe inn i din arbeidsgruppe?

Svært dårlig				Svært godt
1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

b) Ut fra forholdene i din arbeidsgruppe nå, hvordan mener du at Elin ville passe inn i gruppen?

Svært dårlig				Svært godt
1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

c) Dersom Elin ikke passer godt/svært godt inn i din arbeidsgruppe: Hva mener du er det største hinderet i denne sammenhengen?

1 ☐ Mulighet for behov for omfattende tilrettelegging
2 ☐ Risiko for negative økonomiske konsekvenser pga. sykefravær eller tilrettelegging
3 ☐ Evne til å jobbe i team/samspill med kolleger
4 ☐ Usikkerhet om arbeidsevn
5 ☐ Risiko for økt arbeidsbelastning for kolleger
6 ☐ Usikkerhet om evne til å yte service
7 ☐ Usikkerhet om arbeidskapasitet
8 ☐ Annet: _____

d) Har du eller har du hatt tidligere erfaring med kollegaer/ansatte som Elin?

1 ☐ Ja
2 ☐ Nei

Lars

Lars er en mann på 30 år og er tidligere rusmisbruker. I ungdomstiden drakk han mye alkohol, røykte hasj og begynte etter hvert å eksperimentere med ulike narkotiske stoffer som amfetamin og kokain. Etter å ha blitt plukket opp av systemet kom Lars inn i et avrusningsprogram og tilbake på skolebenken. Han har vært rusfri i to år, og vandelsattesten hans viser at han ikke har vært borti volds eller overgrepsrelaterte saker. I dag har han de faglige kvalifikasjoner som skal til for jobben og han ønsker en ny sjanse til å komme inn i arbeidslivet.

a) Ideelt sett, hvordan mener du at Lars burde passe inn i din arbeidsgruppe?

Svært dårlig				Svært godt
1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

b) Ut fra forholdene i din arbeidsgruppe nå, hvordan mener du at Lars ville passe inn i gruppen?

Svært dårlig				Svært godt
1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

c) Dersom Lars ikke passer godt/svært godt inn i din arbeidsgruppe: Hva mener du er det største hinderet i denne sammenhengen?

1 ☐ Mulighet for behov for omfattende tilrettelegging
2 ☐ Risiko for negative økonomiske konsekvenser pga. sykefravær eller tilrettelegging
3 ☐ Evne til å jobbe i team/samspill med kolleger
4 ☐ Usikkerhet om arbeidsevn
5 ☐ Risiko for økt arbeidsbelastning for kolleger
6 ☐ Usikkerhet om evne til å yte service
7 ☐ Usikkerhet om arbeidskapasitet
8 ☐ Annet: _____

d) Har du eller har du hatt tidligere erfaring med kollegaer/ansatte som Lars?

1 ☐ Ja
2 ☐ Nei

Terje

Terje er en 42 år gammel mann som av og til hører stemmer som kommenterer det han gjør i hverdagen. Innimellom får han også for seg at mennesker rundt ham forsøker å styre tankene hans, noe som kan føre til at han sier rare ting eller blir irritert. Disse symptomene kommer i episoder som varer i noen uker av gangen, men de er ellers helt fraværende i lengre perioder. Han går i dag på medisiner som gir ham bra kontroll på symptomene sine. Utenom dette er Terje klar og bevisst, har normal intelligens og gode faglige kvalifikasjoner. Han har ikke fått påvist noen organisk sykdom i hjernen og har ingen problemer med rusmidler. Terjes mor hadde det på samme måte, så det er grunn til å tro at Terjes tilstand kan være genetisk.

a) Ideelt sett, hvordan mener du at Terje burde passe inn i din arbeidsgruppe?

Svært dårlig				Svært godt
1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

b) Ut fra forholdene i din arbeidsgruppe nå, hvordan mener du at Terje ville passe inn i gruppen?

Svært dårlig				Svært godt
1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

c) Dersom Terje ikke passer godt/svært godt inn i din arbeidsgruppe: Hva mener du er det største hinderet i denne sammenhengen?

1 ☐ Mulighet for behov for omfattende tilrettelegging
2 ☐ Risiko for negative økonomiske konsekvenser pga. sykefravær eller tilrettelegging
3 ☐ Evne til å jobbe i team/samspill med kolleger
4 ☐ Usikkerhet om arbeidsevn
5 ☐ Risiko for økt arbeidsbelastning for kolleger
6 ☐ Usikkerhet om evne til å yte service
7 ☐ Usikkerhet om arbeidskapasitet
8 ☐ Annet: _____

d) Har du eller har du hatt tidligere erfaring med kollegaer/ansatte som Terje?

1 ☐ Ja
2 ☐ Nei

Arne

Arne er en faglig kvalifisert og normalt frisk mann i 30-årene som fikk et brudd i ryggen i en trafikkulykke for et halvt år siden. Han måtte opereres for å få satt inn skruer i ryggen. Han hadde store smerter i tiden etter operasjonen, men ble fortalt at dette var normalt og fikk resept på smertestillende medisiner. Han går nå til behandling og opptrening hos fysioterapeut. Fysioterapeuten anbefaler Arne å komme tilbake i normal aktivitet, men ber ham også om å unngå lagidrett eller konkurranser i noen måneder til.

a) Ideelt sett, hvordan mener du at Arne burde passe inn i din arbeidsgruppe?

Svært dårlig				Svært godt
1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

b) Ut fra forholdene i din arbeidsgruppe nå, hvordan mener du at Arne ville passe inn i gruppen?

Svært dårlig				Svært godt
1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

c) Dersom Arne ikke passer godt/svært godt inn i din arbeidsgruppe: Hva mener du er det største hinderet i denne sammenhengen?

1 ☐ Mulighet for behov for omfattende tilrettelegging
2 ☐ Risiko for negative økonomiske konsekvenser pga. sykefravær eller tilrettelegging
3 ☐ Evne til å jobbe i team/samspill med kolleger
4 ☐ Usikkerhet om arbeidsevn
5 ☐ Risiko for økt arbeidsbelastning for kolleger
6 ☐ Usikkerhet om evne til å yte service
7 ☐ Usikkerhet om arbeidskapasitet
8 ☐ Annet: _____

d) Har du eller har du hatt tidligere erfaring med kollegaer/ansatte som Arne?

1 ☐ Ja
2 ☐ Nei

Inger

Inger er en småbarnsmor på 33 år som nylig har fullført svangerskapspermisjonen for sitt andre barn. Hun har også et barn på tre år. Inger er skilt og deler foreldreretten for begge barna med sin tidligere partner. Begge barna har barnehageplass. Inger har normalt god helse og faglige kvalifikasjoner, men som småbarnsforeldre flest strever hun med å få tiden til å strekke til, er ofte forkjølet og må innimellom være hjemme med syke barn.

a) Ideelt sett, hvordan mener du at Inger burde passe inn i din arbeidsgruppe?

Svært dårlig				Svært godt
1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

b) Ut fra forholdene i din arbeidsgruppe nå, hvordan mener du at Inger ville passe inn i gruppen?

Svært dårlig				Svært godt
1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

c) Dersom Inger ikke passer godt/svært godt inn i din arbeidsgruppe: Hva mener du er det største hinderet i denne sammenhengen?

1 ☐ Mulighet for behov for omfattende tilrettelegging
2 ☐ Risiko for negative økonomiske konsekvenser pga. sykefravær eller tilrettelegging
3 ☐ Evne til å jobbe i team/samspill med kolleger
4 ☐ Usikkerhet om arbeidsevn
5 ☐ Risiko for økt arbeidsbelastning for kolleger
6 ☐ Usikkerhet om evne til å yte service
7 ☐ Usikkerhet om arbeidskapasitet
8 ☐ Annet: _____

d) Har du eller har du hatt tidligere erfaring med kollegaer/ansatte som Inger?

1 ☐ Ja
2 ☐ Nei

Abdul Hakim

Abdul Hakim er en mann midt i 30-årene som kom til Norge fra Afghanistan for tre år siden. Han har tatt obligatorisk norskopplæring for innvandrere, har normalt god helse og har de nødvendige kvalifikasjonene som trengs for jobben. Abdul arbeider for tiden som drosjesjåfør, fordi han har hatt vansker med å komme inn på arbeidsmarkedet ellers.

a) Ideelt sett, hvordan mener du at Abdul Hakim burde passe inn i din arbeidsgruppe?

Svært dårlig				Svært godt
1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

b) Ut fra forholdene i din arbeidsgruppe nå, hvordan mener du at Abdul Hakim ville passe inn i gruppen?

Svært dårlig				Svært godt
1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

c) Dersom Abdul Hakim ikke passer godt/svært godt inn i din arbeidsgruppe: Hva mener du er det største hinderet i denne sammenhengen?

1 ☐ Mulighet for behov for omfattende tilrettelegging
2 ☐ Risiko for negative økonomiske konsekvenser pga. sykefravær eller tilrettelegging
3 ☐ Evne til å jobbe i team/samspill med kolleger

4 ☐ Usikkerhet om arbeidsevn
5 ☐ Risiko for økt arbeidsbelastning for kolleger
6 ☐ Usikkerhet om evne til å yte service
7 ☐ Usikkerhet om arbeidskapasitet
8 ☐ Annet: _____

d) Har du eller har du hatt tidligere erfaring med kollegaer/ansatte som Abdul Hakim?

1 ☐ Ja
2 ☐ Nei

Jan

Jan er en mann i 40-årene med dårlig kondisjon men ellers normalt god arbeidskraft og faglige kvalifikasjoner. Han er 170 cm høy og veier 100 kg. Han er ikke glad i å trene, men i og med at hans kroppsvekt klassifiseres som moderat til alvorlig fedme har han gjentatte ganger blitt oppfordret av legen til å være mer fysisk aktiv og spise sunnere. Jan røyker 10 sigaretter om dagen, og har ikke umiddelbare planer om å slutte.

a) Ideelt sett, hvordan mener du at Jan burde passe inn i din arbeidsgruppe?

Svært dårlig				Svært godt
1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

b) Ut fra forholdene i din arbeidsgruppe nå, hvordan mener du at Jan ville passe inn i gruppen?

Svært dårlig				Svært godt
1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

c) Dersom Jan ikke passer godt/svært godt inn i din arbeidsgruppe: Hva mener du er det største hinderet i denne sammenhengen?

1 ☐ Mulighet for behov for omfattende tilrettelegging
2 ☐ Risiko for negative økonomiske konsekvenser pga. sykefravær eller tilrettelegging
3 ☐ Evne til å jobbe i team/samspill med kolleger
4 ☐ Usikkerhet om arbeidsevn
5 ☐ Risiko for økt arbeidsbelastning for kolleger
6 ☐ Usikkerhet om evne til å yte service
7 ☐ Usikkerhet om arbeidskapasitet
8 ☐ Annet: _____

d) Har du eller har du hatt tidligere erfaring med kollegaer/ansatte som Jan?

1 ☐ Ja
2 ☐ Nei

Eva

Eva er en 38 år gammel kvinne som har de faglige kvalifikasjonene som trengs for jobben. Eva oppsøker legen sin ofte og så lenge hun kan huske har hun hatt mange kroppslige plager. Hun har hatt perioder med brystsmerter, ømhet i leddene, svimmelhet og uregelmessig menstruasjon. Det hender at hun bekymrer seg for at plagene kan være tegn på kreft eller annen alvorlig sykdom. Sykehistorien hennes er lang og komplisert, og hun er blitt grundig undersøkt av flere spesialister uten at noen av dem har funnet noen medisinsk årsak til plagene hennes. Evas symptomer varierer og i perioder hvor ting går bra ellers i livet, hender det at hun føler seg helt frisk.

a) Ideelt sett, hvordan mener du at Eva burde passe inn i din arbeidsgruppe?

Svært dårlig — Svært godt

1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

b) Ut fra forholdene i din arbeidsgruppe nå, hvordan mener du at Eva ville passe inn i gruppen?

Svært dårlig — Svært godt

1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

c) Dersom Eva ikke passer godt/svært godt inn i din arbeidsgruppe: Hva mener du er det største hinderet i denne sammenhengen?

1 ☐ Mulighet for behov for omfattende tilrettelegging
2 ☐ Risiko for negative økonomiske konsekvenser pga. sykefravær eller tilrettelegging
3 ☐ Evne til å jobbe i team/samspill med kolleger
4 ☐ Usikkerhet om arbeidsevn
5 ☐ Risiko for økt arbeidsbelastning for kolleger
6 ☐ Usikkerhet om evne til å yte service
7 ☐ Usikkerhet om arbeidskapasitet
8 ☐ Annet: _____

d) Har du eller har du hatt tidligere erfaring med kollegaer/ansatte som Eva?

1 ☐ Ja
2 ☐ Nei

Din arbeidsplass:

1) Hvor mange personer er ansatt i din bedrift?

1 ☐ Inntil 20 ansatte
2 ☐ 20-100 ansatte
3 ☐ Flere enn 100 ansatte

2) Har du ansvar for å ansette folk på din arbeidsplass?

1 ☐ Ja
2 ☐ Nei

Sykehuset i Vestfold
Klinikk Fysikalsk Medisin og Rehabilitering
Postboks 2168
3103 Tønsberg

Att: Prosjektleder Torill Helene Tveito

Deres ref.:	Vår ref.: (må oppgis ved kontakt):	Saksbehandler:	Vår dato:
	16/4177	Knut Brenne	30.8.2016

DISPENSASJON FRA TAUSHETSPLIKTEN I FORBINDELSE MED FORSKNING

Arbeids- og velferdsdirektoratet viser til søknad mottatt 30.6.2016 om dispensasjon fra taushetsplikten for forskningsprosjektet " iBedrift - arbeidsplassen som arena for helseinformasjon".

Sakens opplysninger

Behandlingsansvarlig enhet er Sykehuset i Vestfold.

Prosjektet er beskrevet slik:

Prosjektets problemstilling
1 Er den videreutviklede iBedrift-modellen mer effektiv enn den originale iBedrift-modellen når det gjelder å redusere sykefravær?
2 Er den videreutviklede iBedrift-modellen mer effektiv enn den originale iBedrift-modellen når det gjelder å øke mestringsforventninger, jobbtilfredshet, og sosial støtte?

Prosjektets formål/nytteverdi
Hensikten med prosjektet er å undersøke effekten av arbeidsplassintervensjonen iBedrift, rettet mot alminnelige psykiske plager, på sykefravær og helse. Psykiske lidelser er en av de hyppigste årsakene til langtids sykefravær og uførepensjon i Norge. Ideen bak iBedrift er å redusere negative konsekvenser av alminnelige helseplager gjennom evidensbasert helseinformasjon, og hjelpe arbeidsplassen med å holde medarbeidere i jobb tross plager. iBedrift, rettet mot uspesifikke muskel- og skjelettplager, endret ansattes oppfatninger om ryggplager og reduserte sykefraværet i en stor randomisert kontrollert studie. En pilotstudie på iBedrift rettet mot psykiske plager førte til signifikant økning i kunnskap om psykiske plager i intervensjonsgruppen sammenliknet med kontrollgruppen, og deltakernes subjektive vurdering av tiltaket var meget bra. Det er nå designet en ny stor randomisert

kontrollert studie for å teste effekten av den videreutviklede iBedrift-modellen på sykefravær og andre helserelaterte variabler. Den videreutviklede iBedrift-modellen er et samarbeidsprosjekt mellom Sykehuset i Vestfold og arbeidslivsentrene i Akershus, Buskerud, Vestfold og Telemark.

Utvalget består av totalt 93 private barnehager (enheter). 52 av barnehagene er lokalisert i Akershus, 17 i Buskerud, 17 i Vestfold, og 7 i Telemark. Antall ansatte i de ulike barnehagene varierer fra 3 til 35, totalt ca 1000 personer.

Metoden er beskrevet slik:

> Denne studien er designet som en randomisert kontrollert studie, der barnehagene som ønsket å delta ble tilfeldig fordelt mellom en intervensjonsgruppe og en kontrollgruppe. Intervensjonsgruppen får den videreutviklede iBedrift-modellen, mens kontrollgruppen får den originale iBedrift-modellen. Alle private barnehager i Akershus, Buskerud, Vestfold og Telemark ble invitert til å delta. Rekrutteringen startet i april 2014, og har foregått via Private Barnehagers Landsforbund, NAV Arbeidslivsentra i de 4 nevnte fylkene, og Sykehuset i Vestfold. Alle ansatte i de deltakende barnehagene blir spurt om å svare på spørreskjema før oppstart, og etter 12 måneder.

Alle deltakere har avgitt skriftlig samtykke til å delta i undersøkelsen. Samtykkeerklæring er fremlagt. Samtykket omfatter ikke innhenting av opplysninger fra NAV om den enkelte deltaker.

Fra NAV ønskes sykefraværsdata på enhetsnivå. Dette er i e-post av 15.8.2016 beskrevet slik:

> «I utgangspunktet ønsker vi antall sykefraværsdager/tapte dagsverk (basert på sykepengefilen) per enhet – OG antall avtalte dagsverk per enhet. Så vidt jeg forstår det er ikke dette en av variablene du nevner under, men er dette mulig å få hentet ut? Vi ønsker så korte intervaller som mulig. Dersom enhetsfiler per måned er et alternativ er det svært ønskelig.
>
> Problemstillingen krever ikke tilgang til diagnosespesifikt sykefravær.»

Det ønskes slike sykefraværsdata for perioden 1. kv. 2014 til og med 4. kv. 2017.

Vi legger til grunn at det ikke søkes om sykefraværsdata på personnivå og heller ikke diagnosedata.

Opplysningene fra undersøkelsen skal behandles avidentifisert (indirekte identifiserbar med koblingsnøkkel oppbevart adskilt av forsker).

Prosjektet har varighet til 28.12.2029.

REK sør-øst har i vedtak av17.03.2014 gitt prosjektet godkjenning etter helseforskningsloven. REK sier:» Tillatelsen gjelder til 28.12.2024. Av dokumentasjons- og oppfølgingshensyn skal opplysningene likevel bevares inntil 28.12.2029. Opplysningene skal lagres avidentifisert, dvs. atskilt i en nøkkel- og en opplysningsfil. Opplysningene skal deretter slettes eller anonymiseres, senest innen et halvt år fra denne dato».

Det er opplyst at prosjektet har inngått databehandleravtale med et amerikansk firma som er tilsluttet Safe Harbour (avtale mellom EU og USA om personvern). REK har i 2014 ikke hatt merknader til dette. Vi bemerker at Safe Harbour-avtalen ble opphevet i oktober 2015. Den avtalen vil altså ikke kunne brukes på data som nå ønskes fra NAV. Dersom prosjektet ønsker å sende data fra NAV til den amerikanske databehandleren, må prosjektet først avklare dette med Datatilsynet, jf personopplysningslovens §§ 29 og 30.

Rettslig utgangspunkt

Det rettslige utgangspunktet for taushetsplikten er forvaltningsloven § 13, jf arbeids- og velferdsforvaltningsloven § 7 og lov om sosiale tjenester i NAV § 44.

Taushetsplikten er ikke til hinder for at opplysninger brukes når behovet for beskyttelse må anses ivaretatt ved at de gis i statistisk form eller at individualiserende kjennetegn utelates på annen måte, jf forvaltningsloven § 13a nr. 2.

For at det skal kunne gjøres unntak fra taushetsplikten i forbindelse med et forskningsprosjekt, må det foreligge et gyldig rettsgrunnlag. Dette innebærer enten gyldig samtykke fra de personene som er omfattet, jf forvaltningsloven § 13a nr 1, eller dispensasjon fra taushetsplikt til forskning, jf forvaltningsloven § 13d. Arbeids- og velferdsdirektoratet er delegert avgjørelsesmyndighet etter forvaltningsloven § 13d første ledd til å kunne dispensere fra taushetsplikten til forskningsformål for så vidt gjelder opplysninger i saker på vårt ansvarsområde.

Vurdering

Da samtykket i saken ikke gjelder innhenting av NAV-data, vil vi vurdere søknaden i forhold til dispensasjonsregelen i forvaltningslovens § 13d.

De omsøkte opplysningene skal avleveres som samledata pr enhet (barnehage) og ikke på personnivå, men sykefraværsopplysningene vil etter det opplyste gjelde ca 1000 personer fordelt på 93 større og mindre barnehager (i gjennomsnitt 10-11 ansatte, noen helt ned til 3) i et avgrenset antall fylker og bli strukturert pr kvartal. Dette gir muligheter for identifiserbare forekomster, noe som gjør at opplysningene fra NAV er underlagt taushetsplikt selv om de i utgangpunktet ikke gis på personnivå og selv om muligheten er liten.

Vi forstår det slik at forholdet mellom faktisk sykefravær og resultatene fra spørreundersøkelsen er helt vesentlig for vurderingene som skal gjøres i prosjektet, slik at det kan synes vanskelig å gjennomføre prosjektet fullt ut slik det er lagt opp til i prosjektbeskrivelsen, dersom det ikke gis dispensasjon fra taushetsplikten. Prosjektet kan anses å ha samfunnsmessig verdi, for så vidt som det vil kunne bidra til at flere på en bedre måte kan mestre helseplager og fortsette i arbeid i stedet for å bli sykmeldt.

Etter en helhetsvurdering anser vi det rimelig å gi slik dispensasjon som det er søkt om. Risikoen for at enkeltpersoner vil kunne bli identifisert anses liten. Utleveringen av sykefraværsopplysninger pr enhet anses ikke å ville utgjøre en uforholdsmessig ulempe for de personer som undersøkelsen er ment å omfatte, jf forvaltningsloven § 13d første ledd. Personvernhensyn antas derfor å være tilstrekkelig ivaretatt. Vi gir derfor dispensasjon fra taushetsplikten, men setter visse vilkår.

Vilkår for utlevering av NAV-dataene (jf forvaltningsloven § 13d annet ledd):

- Prosjektet gjennomføres i samsvar med prosjektbeskrivelsen og det gis kun dispensasjon for bruk av opplysningene fra NAV slik som beskrevet.
- Vilkår stilt av REK sør-øst må overholdes.
- Det forutsettes at adgangen til å bruke utenlandsk databehandler på dataene fra NAV er avklart, jf ovenfor.
- Det er en viss mulighet for at opplysningene som utleveres kan bidra til å identifisere enkeltpersoner, og prosjektleder samt alle prosjektmedarbeidere er derfor pålagt taushetsplikt for opplysninger som er underlagt taushetsplikt etter arbeids- og velferdsforvaltningsloven § 7 og lov om sosiale tjenester i NAV § 44, jf forvaltningsloven § 13e.
- Hensynet til taushetsplikt må ivaretas ved publisering eller annen offentliggjøring av forskningen, dvs. at det som publiseres ikke inneholder personidentifiserbare opplysninger. NAV legger til grunn at personantall under fem medfører fare for personidentifisering. Dette må motvirkes ved at indirekte personidentifiserende opplysninger (sammenstilling av bakgrunnsopplysninger som f.eks. yrke, alder, kjønn, bosted, geografisk tilhørighet, arbeidssted, tidsrom) fjernes eller grovkategoriseres/aggregeres slik at ingen enkeltpersoner kan gjenkjennes i materialet.
- Søker må påse at opplysningene oppbevares slik at de ikke kommer uvedkommende i hende og alt materiale som ikke er anonymisert og der identifikasjon kan være mulig, må oppbevares innelåst eller tilsvarende elektronisk sikret, jf personopplysningsloven § 13 og personopplysningsforskriften kap. 2.
- Personidentifiserbare data og koblingsnøkkelen slettes straks det ikke lenger er behov for dem og senest ved prosjektets avslutning.
- Utlevering av opplysninger og kostnader knyttet til utlevering og videre kobling bæres av prosjektet.

Kopi av dette vedtaket går til Statistikkseksjonen her i Arbeids- og velferdsdirektoratet, som vil stå for tilrettelegging og utlevering av tilgjengelige data i tråd med dette vedtaket.

Dette vedtaket kan påklages innen 3 uker fra mottakelsen av brevet, jf forvaltningsloven § 29. Klagen fremsettes for Arbeids- og velferdsdirektoratet som forbereder klagesaken til Arbeids- og sosialdepartementet.

Med hilsen
Arbeids- og velferdsdirektoratet
IKT-avdelingen
Sikkerhetsseksjonen

Terje André Olsen
Seksjonssjef

Knut Brenne
Seniorrådgiver

Kopi: Statistikkseksjonen, Arbeids- og velferdsdirektoratet

REK
REGIONALE KOMITEER FOR MEDISINSK OG HELSEFAGLIG FORSKNINGSETIKK

Region:	Saksbehandler:	Telefon:	Vår dato:	Vår referanse:
REK sør-øst	Claus Henning Thorsen	22845515	29.05.2017	2014/162/REK sør-øst C
			Deres dato:	**Deres referanse:**
			06.04.2017	

Vår referanse må oppgis ved alle henvendelser

Torill Helene Tveito
Postboks 2168

2014/162 iBedrift - arbeidsplassen som arena for helseinformasjon

Forskningsansvarlig: Sykehuset i Vestfold
Prosjektleder: Torill Helene Tveito

Vi viser til søknad om prosjektendring datert 06.04.2017 for ovennevnte forskningsprosjekt. Søknaden er behandlet av leder for REK sør-øst C på fullmakt.

Vurdering

De omsøkte endringene er beskrevet i skjema for prosjektendringer. Det søkes om å få hente sykefraværsdata fra NAV også for bedrifter (barnehager) som har trukket seg fra studien. Alternativt bes det om anledning til å innhente data frem til de trakk seg fra studien.

Etter komiteens oppfatning er det ikke anledning til å innhente data når man har trukket seg fra studien. Anførselen om at dette ikke er individdata, men aggregerte data per organisasjon, kan i denne sammenheng ikke tillegges vekt. Omsøkte endring kan således ikke godkjennes.

Vedtak

Prosjektendringen godkjennes ikke.

Komiteens vedtak kan påklages til Den nasjonale forskningsetiske komité for medisin og helsefag, jf. helseforskningsloven § 10, 3 ledd og forvaltningsloven § 28. En eventuell klage sendes til REK sør-øst C.

Klagefristen er tre uker fra mottak av dette brevet, jf. forvaltningsloven § 29.

Vi ber om at alle henvendelser sendes inn via vår saksportal: http://helseforskning.etikkom.no eller på e-post til: post@helseforskning.etikkom.no

Vennligst oppgi vårt referansenummer i korrespondansen.

Med vennlig hilsen

Britt-Ingjerd Nesheim
Prof.dr.med.
Leder REK sør-øst C

Claus Henning Thorsen
Rådgiver

Kopi til: *aagind@siv.no;post@siv.no*