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INSIDE THE BLACK BOX OF WORKPLACE INTERVENTIONS

Investigating the influence of context and process on outcomes

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Investigating the influence of context and process on outcomes

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ABSTRACT

Introduction: Staff working in healthcare and residential care for older people are continuously required to learn and develop competencies to keep up with medical, technological and social developments. At the same time, they experience a work situation generally characterized by high demands. Workplace interventions aiming to improve competence and work environment have been highlighted as a way to improve working conditions for staff. However, these interventions are complex and challenging to implement, difficult to evaluate and have resulted in mixed effects. Not only the intervention content but also the context and process factors may influence the outcomes of workplace interventions. Yet, although several factors that may influence implementation have been identified, these factors have rarely been linked to the outcomes of such interventions.

Aim: The aim of this thesis was to investigate how factors related to the context and implementation process of workplace interventions in healthcare and residential care for older people influenced the implementation and intervention outcomes.

Methods: This thesis is based on the evaluation of three workplace interventions. Both qualitative and quantitative methods were used to study the context, process and outcomes. Study I was a workplace learning intervention conducted in three residential care facilities for older people. Six facilities served as a comparison group. The intervention's effect on organizational learning was evaluated using questionnaires at baseline and at 6- and 12-month follow-up. Context and process factors influencing outcomes were investigated using semi-structured interviews with line managers on two occasions (6- and 14-month follow-up) and with staff on one occasion (6-month follow-up). Study II was an organizational-level occupational health intervention conducted at a hospital with six departments included in the intervention group and six in a comparison group. Implementation fidelity regarding the two core components in the intervention was evaluated using questionnaires administered to all employees in the intervention departments at 6-month follow-up as well as with an analysis of organizational documents. Context and process factors influencing implementation fidelity were assessed with semi-structured interviews with line managers and key individuals, as well as with questionnaires administered to employees at baseline and at 6-month follow-up. Study III was a workplace learning intervention conducted in 78 primary healthcare centers. Employees' openness to change, concerning both the process and the content of the change, and the work group's openness to the content of change were measured with questionnaires at baseline. These were used to predict two types of outcomes, improvements in competence regarding information and communication technologies (ICT) and the use of acquired competence, which were evaluated using questionnaires administered to all staff at baseline and at18-month follow-up.

Results: Both context and process factors influenced the implementation and intervention outcomes. More specifically, stakeholders' low ownership of the intervention, an insufficient learning climate, insufficient prerequisites for change and managers' attitudes and actions

were found to hinder the creation of organizational learning in study I. In study II, implementation fidelity varied between the departments that participated in the intervention. Factors related to the *omnibus context* (i.e., having a well-established quality improvement system, group collaboration), the *discrete context* (i.e., changes in management), the *intervention and implementation* (i.e., line managers' attitudes and actions, perception of information and communication, level of participation, the roles of the drivers of change), and *participants' mental models* (i.e., outcome expectancy, perceptions of the intervention activities) were found to explain the differences in implementation fidelity. In study III, baseline *individual-level openness* to both *change process* and *change content* as well as *group-level openness to change content* predicted intervention outcomes at the time of the follow-up.

Conclusions: Overall, the findings suggest that successful workplace interventions are shaped by several factors related to the intervention's content, the context in which the intervention takes place and the process by which the intervention is implemented. Thus, rather than waiting until after an intervention to evaluate why it succeeded or not, context and process factors should be taken into account already when planning and implementing an intervention. Workplace interventions in which context and process factors, as well as implementation outcomes, are continuously monitored and used to tailor the intervention may have greater potential to improve employees' work conditions.

LIST OF SCIENTIFIC PAPERS

I. Challenges in transferring individual learning to organizational learning in the residential care of older people
II. Investigating differences in implementation fidelity of an organizational-level occupational health intervention
III. The need for dual openness to change: a longitudinal study evaluating the impact of employees' openness to organizational change content and process on intervention outcomes

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CONTENTS

LIST OF ABBREVIATIONS AND DEFINITIONS

APA	American Psychological Association
HP	Health promotion
HR	Human resources
ICT	Information and communication technologies
NIOSH	National Institute for Occupational Health
OSH	Occupational safety and health
TWH™	Total Worker Health™
Implementation fidelity	Implementation fidelity measures the degree to which an intervention was implemented as intended by the intervention developer (Dusenbury, Brannigan, Falco, & Hansen, 2003). Implementation fidelity was the implementation outcome that was evaluated in study II.
Workplace interventions	Workplace interventions are in this thesis defined as "interventions targeting the work environment as well as the individual, to create healthier workplaces and organizations and to improve the capacity of workers to protect their safety and health and to maximize their overall effectiveness" (Society for Occupational Health Psychology, 2017, http://www.sohp-online.org/field.htm.)

1 INTRODUCTION

Health and social care in Sweden, as well as in other countries, face several challenges. One of these is the increasing life expectancy. It has been estimated that in 15 years there will be 50% more people over the age of 85 than there are today (Swedish Association of Local Authorities and Regions, 2016b). Even though older people today are healthier, many are living with chronic diseases and consequently have more complex care needs. At the same time, patients are becoming increasingly informed and have high expectations for both the quality of care and availability of care. Although healthcare in Sweden shows good quality and effectiveness in international comparisons, it is less successful when patient involvement and waiting times are taken into consideration (Swedish Association of Local Authorities and Regions, 2016a). Meanwhile, technological advances in society continue and the use of information and communication technologies within the healthcare sector is proposed to be one important solution to the challenges that healthcare is facing (e.g., by creating more innovative ways to communicate with patients) (Swedish Association of Local Authorities and Regions, 2016b). Consequently, the increased use of information and communication technologies implies major opportunities for healthcare. However, it is also associated with challenges for the healthcare sector and in particular for staff to keep up with this development.

The challenges for the health and social care sector translate into challenges for staff. Drawing from the job demands-resources (JD-R) model (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001), this includes high demands (e.g., in terms of high work pressure, demands for increased effectivity and cost savings, an unfavorable physical environment and emotionally demanding interactions with patients) in combination with inadequate resources (e.g., in terms of low job control, insufficient opportunities for reflection and inadequate competence) (Arbetsmiljöverket, 2015). This creates a high-strain job situation, which has been associated with negative consequences for employees (Bakker, Demerouti, De Boer, & Schaufeli, 2003; Schaufeli, Bakker, & Van Rhenen, 2009). In order for staff to be able to meet the demands of their work, they need to be able to develop the necessary competences. Moreover, they need to be supported in their work by an environment that facilitates working according to new knowledge and where they can maintain good health.

Workplace interventions have been suggested to be a promising way to improve work environment by managing demands and resources. Such interventions may target individual employees, work groups or entire organizations. In recent years there has been an increased emphasis on organizational-level interventions rather than or in addition to individual-level interventions (EU-OSHA, 2010) because they are focused on changing not only individual behavior but also how the work is organized, thus targeting the sources of job stress (LaMontagne, Keegel, Louie, Ostry, & Landsbergis, 2007; Nielsen, 2013). However, research has shown that such interventions are not always successful in reaching the desired outcomes (Bambra, Egan, Thomas, Petticrew, & Whitehead, 2007; Richardson & Rothstein,

2008). It has been suggested that this may be due to unsuccessful implementation. In fact, it has been argued that the implementation may be equally important to the content of interventions for predicting outcomes (Egan, M., Bambra, Petticrew, & Whitehead, 2009; Murta, Sanderson, & Oldenburg, 2007). Consequently, it has been argued that there is a need for shifting focus from evaluating whether an intervention is effective to focusing on how and why an intervention is effective (Biron, Karanika-Murray, & Cooper, 2012; Cox, Karanika, Griffiths, & Houdmont, 2007; Egan, M. et al., 2009; Murta et al., 2007).

There is a growing consensus in implementation research that a range of different factors related to the intervention, the implementation strategies, the individuals who will use the intervention and the context around the intervention influence the implementation (Damschroder et al., 2009; Durlak & DuPre, 2008). However, there is less knowledge concerning how these factors influence outcomes of interventions implemented in organizations (Egan, M. et al., 2009; Havermans et al., 2016; Murta et al., 2007). An improved understanding of how context and process factors influence outcomes is important for the processes of planning, implementing and evaluating workplace interventions and could be used to improve the likelihood of successful interventions.

2 AIM

2.1 OVERALL AIM

The overall aim of the thesis was to investigate how factors related to the context and implementation process of workplace interventions in healthcare and residential care for older people influenced implementation- and intervention outcomes. This was done by evaluating the context, process and outcomes of three interventions in three different healthcare and residential care organizations with a focus on workplace learning (study I & III) and occupational health (study II).

2.2 SPECIFIC AIMS OF THE STUDIES

Study I: To evaluate the outcomes of a workplace learning intervention on organizational learning and to identify factors influencing the creation of organizational learning in residential care for older people.

Study II: To evaluate implementation fidelity in an organizational-level occupational health intervention and to investigate possible explanations for variations in fidelity between intervention units.

Study III: To investigate how openness to the change content and the change process at both the individual and the group levels affected the outcomes of a participatory training intervention aiming to improve employees' use of information and communication technologies.

3 BACKGROUND

3.1 WORKPLACE INTERVENTIONS

There are different approaches to conducting interventions in workplaces. In the public health and health promotion (HP) disciplines, the workplace has often been used as an arena for delivering interventions with the aim to improve individuals' health behaviors (e.g., smoking cessation, interventions for increasing physical activity, stress management) and thereby improve employees' health and well-being (Cohen, 1985; Shain & Kramer, 2004). Using the workplace as an arena for public health and HP interventions has the advantage of reaching a large number of adults. Furthermore, the workplace can be used for providing social support as well as reminders and reinforcement for maintaining behavior change (Goetzel & Ozminkowski, 2008). This approach has traditionally mainly considered health as the responsibility of individuals and has been focused on changing health behaviors (Shain & Kramer, 2004).

Occupational safety and health (OSH), on the other hand, has been more concerned with risk factors in the work environment. OSH interventions have typically entailed activities that protect employees from occupational strain, injuries and illnesses (e.g., safety training, use of safety gear, modifications in work processes) (Baker, E., Israel, & Schurman, 1996; Hymel et al., 2011). However, there have been increased requests for interventions that integrate activities to improve employees' health and well-being as well as reducing risk factors in the work environment (Baker, E. et al., 1996; Hymel et al., 2011; Noblet & LaMontagne, 2006; Schill & Chosewood, 2013).

Workplace interventions that are concerned with the interplay between individual employees and the environment in which they work can be defined as "interventions targeting the work environment as well as the individual, to create healthier workplaces and organizations and to improve the capacity of workers to protect their safety and health and to maximize their overall effectiveness" (Society for Occupational Health Psychology, 2017, http://www.sohp-online.org/field.htm.). This broad definition is used for defining workplace interventions in the current thesis. Workplace interventions targeting psychosocial and organizational sources of stress have been recommended over or in addition to individual-level interventions (EU-OSHA, 2010; LaMontagne et al., 2007; Noblet & LaMontagne, 2006; Semmer, 2006). The rationale for this is that such interventions have the advantage of reducing sources of job stress rather than helping individuals to cope with a harmful environment and reduce the effects of stress on individuals (DeFrank & Cooper, 1987; Karasek, 2004). In addition, organizational-level interventions are likely to have more long-lasting effects compared to individual-level interventions (Giga, Noblet, Faragher, & Cooper, 2003). Moreover, they have the potential to produce positive effects both for individual employees and for the organization, while individual-level interventions appear to mainly have effects on individual outcomes (Giga, Noblet, et al., 2003; LaMontagne et al., 2007).

In addition to being implemented on different levels (i.e., individual, group, organizational), interventions can also represent different approaches to their design and implementation. An example is participatory approaches, which are generally recommended when conducting workplace interventions (LaMontagne et al., 2007; Nielsen, 2013; von Thiele Schwarz, Lundmark, & Hasson, 2016). Participation entails that individuals at a higher level in an organization intentionally provide opportunities for individuals and/or groups at lower levels in the organization to influence and control aspects of the intervention (Nielsen & Randall, 2013).

Another example is integrated approaches in which OSH and HP are integrated (Baker, E. et al., 1996; Hymel et al., 2011; von Thiele Schwarz & Hasson, 2013) and sometimes also with other processes and systems in the organization (Sainfort, Karsh, Booske, & Smith, 2001; von Thiele Schwarz & Hasson, 2013). Furthermore, workplace interventions can be of different types, depending on the content and the aim of the intervention. Examples include stress management, job redesign, ergonomic interventions, leadership training programs, group development programs and competence development. In the following section the two broad approaches/types of workplace interventions used in this thesis will be described: Occupational health interventions using an integrated approach and workplace learning interventions. All the interventions in the thesis had participatory approaches.

3.1.1 Types of workplace interventions

3.1.1.1 Occupational health interventions using an integrated approach

As stated previously, it has been recommended that organizations should consider using comprehensive approaches that address individual, group and organizational factors for improving employee health (Baker, E. et al., 1996; Giga, Cooper, & Faragher, 2003; Noblet & LaMontagne, 2006; Semmer, 2006; Shain & Kramer, 2004). Several authors have proposed integration of HP and OSH as a way forward (Baker, E. et al., 1996; Hymel et al., 2011; Sorensen et al., 2013). Traditionally HP and OSH practices have been managed separately, with separate budgets, personnel and policies (Baker, E. et al., 1996; Sorensen et al., 2013). This lack of integration inhibits efforts to maximize the overall health and productivity of the workforce and inhibits optimal resource utilization (Hymel et al., 2011; Shain & Kramer, 2004). Integrated approaches tend to be comprehensive and strategic and to consider HP and OSH simultaneously, encompassing individual, group and organizational factors.

It has also been proposed that HP and OSH should be aligned with organizations' business goals and be closely integrated with quality and production processes, e.g., continuous improvement systems (Sainfort et al., 2001; von Thiele Schwarz & Hasson, 2013). On one hand, quality improvement and production processes, have been found to influence OSH and HP management (Grawitch, Gottschalk, & Munz, 2006). On the other hand, employee health, and thereby HP and OSH, have been shown to influence productivity (Gandy, Coberley, Pope, Wells, & Rula, 2014; Goetzel, Ozminkowski, Bowen, & Tabrizi, 2008). Furthermore,

interventions aiming to increase individual productivity without consideration to employee wellbeing may have a negative impact on psychosocial work environment and health (Bambra et al., 2007). Consequently, employee health and well-being and organizational performance are interdependent, implying that performance and productivity aspects should also be integrated in any approaches to improving employee health and well-being.

Integration of HP, OSH and quality improvement and production processes has several potential benefits, including decreasing the risk of unnecessarily complex bureaucracy and separate and/or conflicting procedures, reducing costs (EU-OSHA, 2010) and enhancing use of resources and collaborations between different systems (Rocha, Searcy, & Karapetrovic, 2007). Better integration between systems can also make sure that changes in one system are made with thought to how they will affect other systems, which decreases the risk of unintended consequences (e.g., when a change to increase productivity negatively impacts employee health). Furthermore, integration of HP and OSH to any production and quality improvement system reduces the risk of such interventions being conducted as time-limited, sidelined projects and can allow for the intervention to become a part of the organization – owned and managed by it – which is important for the intervention's sustainability (von Thiele Schwarz & Hasson, 2013).

Few examples of interventions integrating OSH and HP into systems for working with quality improvement have been described in the research literature, thus there is limited knowledge on their implementation and outcomes (von Thiele Schwarz, Augustsson, Hasson, & Stenfors-Hayes, 2015).

3.1.1.2 Workplace learning interventions

The rapid development and changes in organizations, not least in the health and social care sector, require that the level of competence of the workforce meets these challenges (McHugh & Brennan, 1992; Tynjälä, 2008). This calls for continuous updating of employees' competence in order for employees to be effective in their work (McHugh & Brennan, 1992). In addition to being important for effectiveness, sufficient competence, opportunity to make use of competence and opportunities for development are also important aspects of the psychosocial work environment (Hultberg, 2007; Källestål et al., 2004; Theorell, 2003). External demands and conditions of the work that exceed employees' skills or knowledge of how to comfortably handle a situation may result in occupational stress (French, Caplan, & Van Harrison, 1982). Consequently, employee growth and development programs have been identified as one important component in healthy workplaces (Grawitch et al., 2006). Thus, continuous learning has become important for both individual employees and organizations (Tynjälä, 2008).

Workplace learning can be both informal and formal. Informal learning is an important part in any organization and may take place as a side effect to regular work practices (Eraut, 1998, 2004), but it can also be intentional (e.g., mentoring, problem solving activities, practicing of certain skills). However, it has been argued that the rapid change that organizations are facing

requires continuous development of knowledge and skills, which cannot be completely achieved with informal learning (Tynjälä, 2008). Thus, planned and structured learning activities such as workplace learning interventions are often also required.

One of the most common methods for formal learning in healthcare is educational meetings, such as courses and workshops (Brown, Belfield, & Field, 2002; Lloyd & Abrahamson, 1979). A review of the effectiveness of continuing education meetings and workshops in healthcare found that approaches that used both didactic methods (i.e., lecture-based) and interactive methods (i.e., sessions that involved some type of interaction among participants in groups, such as case discussions, role-play, or skill practice) for learning were more effective in improving professional practice than didactic learning alone (Forsetlund et al., 2009).

In order for workplace learning interventions to be effective, it is generally not sufficient for employees to merely acquire new knowledge and skills. These must also be transferred to work practice and produce meaningful changes in work performance (Baldwin & Ford, 1988). Several factors have been identified as influential for this transfer to happen, including learner characteristics (e.g., cognitive ability, motivation), intervention design (e.g., needs analysis, content relevance), and work environment (e.g., transfer climate, support) (De Rijdt, Stes, van der Vleuten, & Dochy, 2013).

Another aspect of transfer is that from individual learning to organizational learning. An assumption is that although learning occurs through individuals, individual learning needs to be captured and embedded in organizational practices, systems and structures in order to be shared and used to develop knowledge and performance in an organization. As such, it is not enough to hold individuals responsible for continuous learning and development without also building organizational capacity to encourage, support and make use of that learning (Marsick & Watkins, 2003). A learning organization has been defined as "one that learns continuously and transforms itself. . . . Learning is a continuous, strategically used process—integrated with and running parallel to work" (Watkins & Marsick, 1996, p. 4). In order for an organization to have this learning potential, it should build continuous learning opportunities for all members; create a culture of questioning, feedback and experimentation; and support collaboration that facilitate the effective use of teams. Furthermore, a shared and collective vision among staff members is important, as are efforts to establish systems for capturing and sharing learning in the organization (Marsick & Watkins, 2003).

Organizational learning culture has been found to predict motivation to transfer learning (Egan, T. M., Yang, & Bartlett, 2004), indicating that such culture could be important in order to benefit from workplace learning interventions. Based on the potential benefits for organizations in improving their learning capacity, improvements in learning climate (e.g., learning organization) could also be considered a beneficial intervention outcome for organizations.

3.2 EVALUATION OF WORKPLACE INTERVENTIONS

The complexity of workplace interventions (e.g., several interacting components, targeting several groups and levels in the organization) has implications for the evaluation of these initiatives. Furthermore, such interventions often target several different outcomes, adding to the complexity by necessitating measurement of multiple outcomes at different time points (Craig et al., 2008). In addition, organizations often also represent highly complex settings, which makes evaluation of workplace interventions even more challenging.

Meta-analyses (Richardson & Rothstein, 2008; Van der Klink, Blonk, Schene, & Van Dijk, 2001) and reviews (Egan, M. et al., 2009; Giga, Noblet, et al., 2003; Parkes & Sparkes, 1998) of studies evaluating organizational-level interventions have shown limited effectiveness of such interventions. It has been argued that ineffective workplace interventions are often not a result of inadequate content or design but rather a lack of consideration to contextual and process factors that may affect the implementation and outcomes of the intervention (Biron et al., 2012; Nielsen & Randall, 2013). Despite this, knowledge about how intervention outcomes are influenced by contextual and process factors is still limited (Egan, M. et al., 2009; Havermans et al., 2016; Murta et al., 2007). One reason for this is the predominant focus on effect evaluation when evaluating workplace interventions. Effect evaluation answers the question of whether the intervention was effective or not. However, it does not provide any answers on *how*, *when* or *why* it was successful in achieving the intended outcomes or not. It has therefore been repeatedly argued that there is a need to evaluate the processes of workplace interventions in addition to evaluating their outcomes (Cox et al., 2007; Griffiths, A., 1999; Murta et al., 2007; Nielsen & Abildgaard, 2013; Nielsen & Miraglia, 2017) and that process evaluation should be linked to intervention outcomes (Biron & Karanika-Murray, 2014; Murta et al., 2007).

3.2.1 Outcomes

When evaluating workplace interventions, different types of outcomes can be considered. Researchers in the fields of evaluation and intervention research (Fraser, Richman, & Galinsky, 2009; Rossi, Lipsey, & Freeman, 2004) have advocated specifying a logic model for interventions that includes intermediate (proximal) and distal outcomes. Distal outcomes are the main effects of the intervention in the longer run, such as employees' health and well-being. Intermediate effects, such as changes in knowledge, attitudes and behavior are mediators to more distal effects. However, there is not always a clear line between outcomes and process factors. Intermediate outcomes, such as attitudes, are also often referred to as process factors (Nielsen & Randall, 2013; Nytrø, Saksvik, Mikkelsen, Bohle, & Quinlan, 2000).

Kirkpatrick (1998) developed a training evaluation model and proposed that evaluation should target outcomes on four levels: 1. *Reactions* refer to the degree to which participants find the training of high quality and relevant, 2. *Learning* refers to the degree to which the participants acquire the knowledge and skills intended, 3. *Behaviors* refer to the participants'

use of their learning in their work practice, and 4. *Results* refer to the intended outcomes occurring in the workplace as a result of the training. Levels 2 (learning) and 3 (behaviors) can be considered to correspond to the intermediate outcomes and level 4 (results) to the more distal outcome.

Similarly, Nielsen and Abildgaard (2013) suggested a framework for evaluating organizational-level interventions. This framework advocates evaluation of effects concerning changes in *attitudes and values* (corresponding to level 1 in the Kirkpatrick model); *individual resources* (level 2), *work procedures* (level 3), *job characteristics* (level 4), *health and well-being, quality and performance* and *OSH management* (level 4).

Both of these models/frameworks suggest the use of multiple outcomes, preferably representing both organizational and employee outcomes, in intervention evaluation. One of the main reasons for including different outcomes in an effect evaluation is that interventions often target several aspects and that outcomes need different time frames to occur. Improvements in competence, for example, are likely to be achieved at an earlier stage compared to changes in behavior (e.g., applying the new competence at work), and changes in behavior are most likely detected before more distal outcomes such as improved health and well-being. It is not unusual for it to seek one or several years before changes in distal outcomes are achieved. In these cases more proximal outcomes serve as important indicators that the intervention has led to improvement and is on the right track—that is, toward the more distal outcomes (von Thiele Schwarz et al., 2016).

The use of multiple outcomes has the potential to increase the commitment of stakeholders by showing that the intervention targets objectives that are important to different stakeholders (von Thiele Schwarz & Hasson, 2013). Furthermore, considering multiple outcomes decreases the risk of unintended consequences that could occur when making a change in one part of a system that is interrelated with other parts of the system (e.g., an intervention to improve performance could have negative consequences for employee well-being and vice versa) (von Thiele Schwarz et al., 2016).

3.2.2 Process evaluation

Process evaluation is used to monitor and evaluate the implementation of interventions and can shed light on the relationship between an intervention and its outcomes (Saunders, Evans, & Joshi, 2005). Thus, process evaluation can highlight individual employees', work groups' and managers' perceptions and actions, for understanding the effects of interventions (Nytrø et al., 2000). Process evaluation can be useful in at least in four ways: 1. for providing continuous feedback to improve interventions, 2. for facilitating replication of interventions in other type of settings, 3. for interpreting the outcomes of interventions (Goldenhar, LaMontagne, Katz, Heaney, & Landsbergis, 2001) and 4. for drawing conclusions concerning the generalizability, applicability and transferability of interventions (Armstrong et al., 2008).

There is a growing consensus that a range of factors can influence implementation of interventions (Damschroder et al., 2009; Durlak & DuPre, 2008; Nilsen, 2015). These factors generally relate to the intervention itself, the implementation strategies, the individuals involved and the context in which the intervention is implemented. However, they have rarely been evaluated as a part of workplace interventions (Murta et al., 2007; Nielsen & Randall, 2013), and only a minority of studies have described how implementation may have influenced outcomes (Egan, M. et al., 2009). Furthermore, the implementation process has mainly been measured post-intervention (Havermans et al., 2016).

Nielsen and Randall (2013) proposed that factors that have an impact on the outcomes of organizational interventions can be grouped into three major elements: *the intervention's design and implementation*, *the context* and *the participants' mental models* (e.g., participants' reactions and attitudes toward the intervention). The intervention and implementation elements determine the maximum level of exposure to the intervention and the context, and mental models can moderate or mediate the link between intervention exposure and intervention outcomes.

3.2.2.1 Implementation outcomes

Implementation outcomes function as indicators of implementation success and is essential to evaluate in addition to intervention outcomes in order to being able to distinguish between implementation effectiveness and intervention effectiveness (Proctor et al., 2011). Without analysis of implementation outcomes, there is a risk of evaluating an intervention that has been described but not implemented, in which case outcomes cannot be attributed to the intervention. For instance, if an intervention is unsuccessful in reaching the intended outcomes, it is important to know whether the failure is the result of an ineffective intervention or of a faulty implementation of the intervention. Otherwise, there is a risk of concluding that the intervention was ineffective when in fact it was the implementation that was unsuccessful (Dobson & Cook, 1980).

Eight implementation outcomes have been proposed: *adoption, acceptability, appropriateness, costs, feasibility, fidelity, penetration* and *sustainability* (Proctor et al., 2009; Proctor et al., 2011). Some of these outcomes overlap with process factors that are proposed to be important to evaluate in conjunction with workplace interventions (Nielsen & Randall, 2013). Acceptability is the perception among stakeholders that an intervention is agreeable, palatable, or satisfactory. Appropriateness is the perceived relevance, compatibility and/or fit of the intervention to a given setting and employees and/or perceived fit of the intervention to address a particular problem. Both of these relate to the mental model element in the framework by Nielsen and Randall (2013). Feasibility is the extent to which an intervention can be successfully implemented and used within a setting. It relates to the contextual element in the Nielsen and Randall (2013) framework. These outcomes/factors will in the present thesis be referred to as process factors. Cost, adoption, penetration and sustainability are not covered in the present thesis. Implementation fidelity measures the extent to which an intervention was implemented as intended by the program developers (Dusenbury et al.,

2003), which makes fidelity a vital outcome to measure in order to be able to distinguish between intervention and implementation effectiveness. Several studies have shown that interventions implemented with high fidelity have had better outcomes compared to interventions implemented with lower fidelity (Abbott et al., 1998; Blakely et al., 1987; Dane & Schneider, 1998; Hansen, Graham, Wolkenstein, & Rohrbach, 1991; Rohrbach, Graham, & Hansen, 1993).

According to a framework for evaluating implementation fidelity proposed by Carroll et al. (2007), implementation fidelity includes adherence to the content, frequency, duration and coverage of an intervention. That is, evaluation of fidelity deals with the degree to which the content of the intervention is delivered to its intended audience as often and for as long as prescribed. The framework also includes factors that may moderate fidelity, i.e., participant responsiveness, intervention complexity, facilitation strategies and quality of delivery. Carroll et al. (2007) use the term *moderators* in their framework; however, others would consider some of these factors to be mediators (Baron & Kenny, 1986). The model has since been modified by the addition of context and recruitment as potential moderating factors (Hasson, 2010). In a study evaluating the implementation fidelity of a continuum-of-care model for frail older persons, all of the proposed moderating factors moderated implementation fidelity in a complex and interrelated way and the effects of the moderators changed over time (Hasson, Blomberg, & Dunér, 2012).

Although the evaluation of implementation fidelity is widely recognized in the implementation literature (Durlak & DuPre, 2008; Proctor et al., 2009; Proctor et al., 2011), fidelity has received less attention in workplace interventions, especially organizational-level interventions. Two recent exceptions exist, however. A study by Schelvis et al. (2016) found that a participatory organizational intervention implemented in two schools was unsuccessful due to poor implementation fidelity and that these could be explained by poor readiness for change, low participation and contextual barriers. In another study, implementation fidelity as well as adaptation to four components of adherence (i.e., content, dose, coverage and timeliness) was evaluated, showing that adaptations were made to all four adherence components on the individual, unit and organizational levels (von Thiele Schwarz, Hasson, & Lindfors, 2015). However, the impact on intervention outcomes was not evaluated.

3.2.2.2 Evaluation of context and process factors

Context

Context is "the environment or setting in which a proposed change is to be implemented" (Kitson, Harvey, & McCormack, 1998, p.150). A division of context into omnibus and discrete context has been suggested (Johns, 2006). Omnibus context refers to aspects such as occupation (who), location (where), time (when) and rationale (why). Discrete context, on the other hand, refers to "specific situational variables that influence behavior directly or moderate relationships between variables" (Johns, 2006, p. 393). In relation to organizational interventions, Nielsen and Randall (2013) operationalized omnibus context as the story told

concerning who the participants of the intervention were and when and where the intervention was conducted. They proposed that the question to ask is "how did the intervention fit in with the culture and conditions of the intervention group?" (Nielsen & Randall, 2013, p. 607). Discrete context was operationalized as specific events that may have influenced intervention outcomes. The question to ask is "which events took place during the intervention phase?" (Nielsen & Randall, 2013, p. 607).

The importance of considering contextual factors when evaluating organizational interventions has frequently been emphasized, as such factors may moderate or mediate the relationship between the intervention and its intended outcomes (Biron & Karanika-Murray, 2014; Fridrich, Jenny, & Bauer, 2015; Nielsen & Abildgaard, 2013; von Thiele Schwarz et al., 2016). Despite this, context has often been overlooked when evaluating such interventions (Egan, M. et al., 2009; Murta et al., 2007). To the best of my knowledge, contextual factors that may impact outcomes of workplace interventions have not been systematically reviewed. However, a systematic review of contextual factors associated with quality improvement success identified organizational characteristics, top management leadership, organizational culture, years involved in quality improvement (i.e., history), data information systems, organizational structure, motivation to change, resources, quality improvement team leadership and board leadership for quality as being associated with quality improvement success (Kaplan et al., 2010). These factors are also likely to be important in workplace interventions.

Looking at individual studies specifically in the area of workplace interventions, Dahl-Jørgensen and Saksvik (2005) found that high job demands involving client interaction hindered participation in an organizational intervention. In line with this, Mikkelsen, Saksvik, and Landsbergis (2000) found that shift work and high job demands caused frequent interruptions of the work related to the intervention, which resulted in a slow learning process. Employee resources, such as little formal education, have also been found to be associated with challenges to participation in a participatory intervention process (Nielsen, Fredslund, Christensen, & Albertsen, 2006).

In addition, discrete contextual factors have been found to influence intervention outcomes. Both changes in project management (Nielsen et al., 2006) and concurrent changes in the organization (Nielsen et al., 2006; Saksvik, Nytrø, Dahl-Jørgensen, & Mikkelsen, 2002) have been found to negatively influence intervention outcomes. Changes in management and turnover among employees have also been found to negatively impact intervention outcomes. This was illustrated by Biron, Gatrell, and Cooper (2010) who found that changes in team composition and high levels of turnover, among both managers and employees, were some of the reasons for implementation failure of an intervention that combined the implementation of a stress risk assessment tool and activities to promote managers' and employees' ownership and responsibility for stress prevention.

Intervention and implementation

Another set of factors to consider in process evaluation of workplace interventions is factors related to the intervention and its implementation (Nielsen & Randall, 2013). The source of an intervention (i.e., who initiated the intervention and for what purposes) may influence engagement among managers and employees. An intervention may be internally initiated based on identified problems in the organization or externally initiated based on identified problems or in response to a need to comply with new legislation. A review by Bambra et al. (2007) found that interventions initiated with the aim to improve employee well-being had more positive effects on psychosocial work environment and health, whereas interventions initiated for performance reasons tended to have no effects or negative effects on health outcomes. Furthermore, if managers or employees do not perceive that the intervention is targeting the problems of the workplace, they are likely to resist participation in the intervention activities (Nielsen & Randall, 2013). This shows the importance of an intervention being preceded by a risk assessment such that the intervention can be tailored to target the needs of the organization (LaMontagne et al., 2007; Nielsen, Randall, Holten, & Rial Gonzale, 2010; Noblet & LaMontagne, 2009).

There are generally many stakeholders involved in the implementation of workplace interventions, and their roles and behaviors are important to evaluate in order to understand implementation and outcomes. Senior management often has responsibility for deciding to adopt an intervention (Nielsen, Taris, & Cox, 2010). Although senior management is most often not actively involved in the implementation process, they have an important role in supporting the intervention by building support, visibility and acceptance for the intervention (Kotter, 1995; Lindström, 1995; Yost et al., 2011) and allocating resources needed to implement the intervention (Nielsen & Randall, 2013). Interventions are more likely to be successful if senior management clearly demonstrates the purpose of the intervention and provide long-term support (Giga, Cooper, et al., 2003). Senior management can impede participation in interventions by restricting the time employees are allowed to participate in intervention activities. Furthermore, lack of support of the intervention from senior management may reduce commitment from line managers and employees (Saksvik et al., 2002).

Line managers (i.e., the managers who work closest to the staff on the floor) have an essential position when it comes to occupational health because they are often the ones responsible for employees' work environment issues (Hasson, von Thiele Schwarz, Villaume, & Hasson, 2013; Skagert, 2010). Furthermore, the role of line managers in driving implementation has been emphasized both in the fields of implementation science (Damschroder et al., 2009; Greenhalgh, Robert, Macfarlane, Bate, & Kyriakidou, 2004) and when it comes to implementing organizational interventions (Nielsen, 2013). Some go as far as to say that less than wholehearted long-term engagement and support from managers in implementation will lead to implementation failure (Repenning, 2002).

Some studies have illustrated how managers can influence outcomes of workplace interventions. Line managers' support in implementation of a participatory intervention for continuous improvements predicted employee participation in the intervention, which predicted their appraisal of its benefits (Coyle-Shapiro, 1999). In addition, line managers' active involvement in implementation partially mediated the relationship between an intervention and the intervention's effects on working conditions (Nielsen & Randall, 2009). Furthermore, employees who perceived that their managers' attitudes and actions supported the implementation of a team intervention also reported better well-being and job satisfaction after the intervention (Nielsen & Randall, 2009).

However, because of managers' key role in implementing organizational interventions, they can also obstruct implementation, e.g., by showing employees that they do not support the intervention or by restricting employees' opportunities to participate in intervention activities (Dahl-Jørgensen & Saksvik, 2005). For instance, line managers' perception of stress as an individual phenomenon and as the concern of higher levels of management limited their commitment to an organizational stress intervention (Biron et al., 2010). Thus, line managers are vital in implementation of workplace interventions. However, the decision to engage in organizational interventions is often made by senior management, sometimes with little consideration of line managers' competence and/or motivation to drive the implementation (Nielsen, Taris, et al., 2010). Thus, there is a need to evaluate managers' attitudes and actions concerning such implementations and to investigate their influence on implementation and intervention outcomes.

As mentioned previously, stakeholders' participation in the intervention and its implementation has been identified as a key feature in workplace interventions (LaMontagne et al., 2007; Nielsen, 2013; von Thiele Schwarz et al., 2016). There are four main reasons for how participation of employees in developing and implementing interventions may improve interventions. First, employees have expert knowledge regarding the context in which they work which others such as occupational health specialists, external consultants and researchers may lack. Consequently, their expertise can be used to optimize the fit between the intervention and the context (LaMontagne et al., 2007). Second, participation may also increase employees' control, support and sense of fairness and justice, which are central aspects of job stress (Karasek, 2004). Third, participation has been identified as an intervention component of its own, as indicated by several studies that have identified participation as one mechanism for achieving positive intervention outcomes (Le Blanc, Hox, Schaufeli, Taris, & Peeters, 2007; Lines, 2004; Nielsen & Randall, 2012; Nielsen, Randall, & Albertsen, 2007). Furthermore, participatory processes in interventions can help ensure that the intervention is continuously revised and modified based on changes in the organization and in the needs of employees and that they can stimulate local ownership of the intervention, which are both important factors in the sustainability of an intervention over time (Giga, Noblet, et al., 2003).

Participatory workplace interventions have been found to produce positive outcomes such as improved psychosocial factors at work (Bourbonnais, Brisson, & Vézina, 2011; Kobayashi, Kaneyoshi, Yokota, & Kawakami, 2008; Mikkelsen et al., 2000), improved employee health and well-being (Bourbonnais et al., 2011; Mikkelsen et al., 2000) and improved OSH and HP work (von Thiele Schwarz, Augustsson, et al., 2015). Some studies have investigated how participation is linked to implementation and intervention outcomes. Lines (2004) found that more frequent participation was negatively associated with resistance to change and positively with organizational commitment and goal achievement. Kobayashi et al. (2008) found more positive outcomes concerning psychosocial work environment and employee health in departments where participation in planning, implementation and monitoring workshops was higher compared to departments with lower participation rates. In a team intervention conducted in older people care, participation (both frequency and quality) was associated with autonomy, social support and well-being after the intervention (Nielsen & Randall, 2012). Furthermore, employees' perceptions of having an influence on intervention content were related to lower job stress and higher job satisfaction post-intervention (Nielsen et al., 2007).

3.2.2.3 Mental models

Most process evaluations of workplace interventions have considered employees as more or less passive recipients of interventions. Frameworks for process evaluations mostly focus on evaluating which components have been delivered to and received by employees, the extent to which the intervention was conducted according to plan and the degree to which employees participated in intervention activities (Egan, M. et al., 2009; Murta et al., 2007) have.

However, in recent years there has been an increased understanding that employees are not passive recipients. Rather they act as active participants in implementation and interventions. Participants experiment with intervention activities, evaluate them and try to find meaning in them (Greenhalgh et al., 2004). Furthermore, they "develop feelings about them, challenge them, worry about them, complain about them, "work around" them, gain experience with them, modify them to fit particular tasks, and try to improve or redesign them—often through dialogue with other users" (Greenhalgh et al., 2004, p. 598).

This indicates that evaluation of how employees perceive an intervention and how these perceptions may influence implementation and intervention outcomes is an important part of process evaluation of workplace interventions (Nielsen, 2013; Nielsen & Randall, 2013). In fact, Hasson et al. (2014) found that employees' perception of the impact of an intervention was more important than actual exposure to the intervention activities. Improvements in outcomes were found to be greater for employees who reported being exposed to the intervention changes compared to those who did not perceive changes. However, the greatest improvements were found among employees who perceived that the changes brought about by the intervention had improved their work conditions as compared to employees who

perceived the intervention changes as neutral or negative, implying the importance of perceptions rather than the exposure itself (Hasson et al., 2014).

Readiness for change[1] has been recognized as an important determinant for implementation (Damschroder et al., 2009; Durlak & DuPre, 2008; Greenhalgh et al., 2004) but has rarely been linked to intervention outcomes in workplace interventions (Nielsen & Randall, 2013; Randall, Nielsen, & Tvedt, 2009). Readiness for change is usually conceptualized as entailing two dimensions; motivation and capability to implement change (Weiner et al., 2008). Other concepts and definitions focus only on the motivational aspect. Openness to change has for instance been conceptualized as the extent to which employees support a change and their positive expectations about the potential consequences of the change (Miller et al., 1994; Stevens, 2013).

In order for employees to support change, they need to perceive that a change is needed, that the change will produce positive outcomes and that they will be capable of implementing change and be motivated to actively engage in the implementation of change (Weiner et al., 2008). One central aspect of readiness for change is outcome expectancy, i.e., estimation that a given behavior or an intervention will lead to certain outcomes (Bandura, 2004). Thus, in relation to workplace interventions, outcome expectancy relates to employees' beliefs that the intervention will produce beneficial outcomes for them personally and/or for the organization.

Some longitudinal studies have evaluated readiness for change in workplace interventions. In one study, employees' baseline readiness for change was found to predict employees' participation in job redesign (Cunningham et al., 2002). Another study showed that employees' baseline readiness for implementing a new information system was linked to their satisfaction with the new system after a month of using it (Jones, Jimmieson, & Griffiths, 2005). Furthermore, a recent study evaluating the influence of outcome expectancy on the outcomes of a stress management course found that both individual and organizational outcome expectancy predicted the perceived impact of the course (Fridrich, Jenny, & Bauer, 2016). However, existing studies have mainly focused on evaluating readiness on a general level, most often readiness for the overall content of the intervention.

The process of conducting interventions involves both deciding on the broad approach that should be adopted, i.e., the content of change, as well as deciding which intervention format would be the best strategy to achieve the change, i.e., the process of change (Michie, van Stralen, & West, 2011). It has been suggested that readiness for change should be evaluated for all components in a change since individuals may hold different attitudes and beliefs

[1] Other terms often used include openness to change (Miller, Johnson, & Grau, 1994), organizational readiness for change (Weiner, Amick, & Lee, 2008), readiness for organizational change (Armenakis, Harris, & Mossholder, 1993), commitment to organizational change (Herscovitch & Meyer, 2002), attitudes toward change (Elias, 2009; Lines, 2005) and receptivity to change (Frahm & Brown, 2007)

toward the different components (Stevens, 2013). This suggests that both openness to the change process and the change content may influence intervention outcomes.

Moreover, readiness for change has mainly been analyzed at an individual level. This line of work has been criticized for assuming that individual employees are independent from their work group (Coghlan, 1994; Weiner, 2009) and thereby failing to recognize how social interactions may impact readiness and change processes (Armenakis et al., 1993; Weiner, 2009). Employees working closely together interact and discuss their context with each other. This may over time create common views of the group (Kozlowski & Hattrup, 1992; Kozlowski & Klein, 2000). Thus, employees in a work group may develop similar mental models for how they understand and react to their work environment (Mathieu, Heffner, Goodwin, Salas, & Cannon-Bowers, 2000). This also relates to self-categorization processes, which proposes that individuals who strongly identify with a group to which they belong, e.g., a work group, tend to assimilate to the specific attributes of the group (Hogg & Terry, 2000). Consequently, individuals in a work group are likely to have similar beliefs and attitudes. In the context of workplace interventions, this indicates that employees working together may interpret and react in a similar way to an intervention. Thus, it may also be important to consider the individuals' shared mental models in work groups in relation to workplace interventions.

In sum, a range of context and process factors may influence the implementation and outcomes of an intervention, indicating that workplace interventions do not exist in a vacuum. These factors should be taken into consideration when evaluating workplace interventions. Improved understanding of the influence of context and process factors is important to increase our knowledge of how to plan, implement and evaluate workplace interventions in order to improve the likelihood of successful intervention outcomes.

4 OVERVIEW OF THE STUDIES

The thesis includes three studies based on three intervention projects. A graphic overview of the studies is presented in Figure 1.

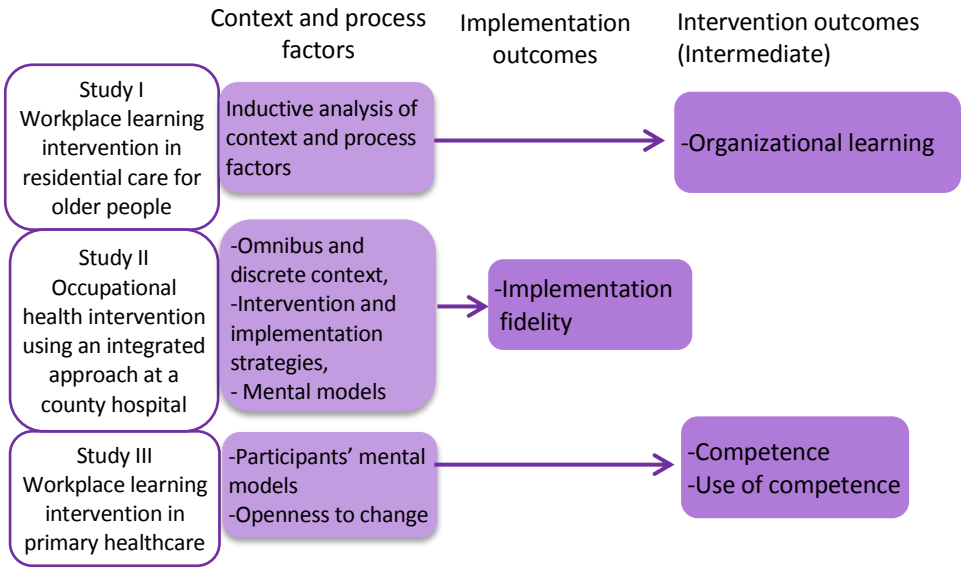

Figure 1. Overview of the thesis including types of interventions, setting, context and process factors and type of outcome.

All interventions were participatory workplace interventions targeting staff working in healthcare and residential care for older people. The interventions were implemented at the organizational/setting level, thus targeted all employees working at the facilities/departments/centers included in the interventions. Because the interventions were based on needs assessments in the respective organizations they differed in content and aims.

The focus in this thesis was not primarily to evaluate the effectiveness of the interventions (See [Astnell, von Thiele Schwarz, Hasson, Augustsson, & Stenfors-Hayes, 2015; Beck, Jakobsson, & Edberg, 2015; Beck, Jakobsson, & Edberg, 2014; Mosson, Hasson, Augustsson, & von Thiele Schwarz, 2013; von Thiele Schwarz, Augustsson, et al., 2015] for effect evaluations) but to investigate how factors related to the context and implementation process influenced the outcomes of the interventions. The contextual factors and process factors differed between the studies, even though some of the factors overlap. The contextual factors concerned the inner organizational context rather than external factors. The process factors concerned the roles and behaviors of key stakeholders as well as employees' perceptions of the intervention and implementation strategies. The outcomes of interest varied across the three studies. Study II focused on an implementation outcome (i.e., implementation fidelity), while studies I and III measured intermediate intervention outcomes.

5 METHODS

The methods section starts with an overview of the designs of the studies followed by a description of the Swedish care system and the specific methods used for each study in the thesis. An overview of the methods in each study is presented in Table 1.

Table 1. Overview of the designs, data sources for measuring context, processes and outcomes, response rates for questionnaires and analyses in the three studies.

	Study I	**Study II**	**Study III**
Design	Mixed method, embedded design	Mixed method, convergent parallel design	Pre-post design
Data source *context and process*	Staff questionnaires (6-month follow-up: n = 75)	Staff questionnaires (same as for outcomes) at two time points	Staff questionnaires (same as for outcomes) at two time points
	Interviews with managers (6- and 12-month follow-up: n = 4)	Interviews with managers (4-month follow-up: n = 6)	
	Interviews with staff (6-month follow-up: n = 7)	Interviews with key individuals (4-month follow-up: n = 7)	
Data source *outcomes*	Staff questionnaires at three time points	Staff questionnaires at two time points	Staff questionnaires at two time points
		Kaizen notes (from baseline to 8-month follow-up: n = 202)	
Response rates (questionnaires)	Baseline: n = 225 (94%)* 6-month follow-up: n = 198 (83%) 12-month follow-up: n = 192 (80%) Panel sample: n = 171 (71%)	Baseline: n = 183 (88%) 6-month follow-up: n = 161 (76%) Panel sample: n = 141 (69%)	Baseline: n = 1990 (79%) 18-month follow-up: n = 1539 (64%) Panel sample: n = 1042 (41%)
Analysis	Independent sample *t*-test	Analysis of variance	Multilevel analysis
	Qualitative content analysis	Qualitative content analysis	

*number of respondents (response rate)

5.1 DESIGNS

The intervention studies had quasi-experimental (I, II) and pre-post designs (III). The use of randomized controlled trials has traditionally been the main choice in intervention research (Guyatt et al., 1995). However, the usefulness of these types of designs for evaluating workplace interventions has been questioned (Cox et al., 2007; Griffiths, A., 1999; Nielsen, 2013; Nielsen & Miraglia, 2017). First, the nature of workplace interventions implies that randomization of individuals to intervention conditions is often impossible and that randomization needs to be made at the unit or organizational level. Second, it may also be difficult to find a control group that is comparable to the intervention group since

organizations and/or units within organizations have their own structures and cultures that make them unique. This implies that the use of a control group does not guarantee that biases are avoided. Third, organizations may resist the use of a control condition since they do not want to withhold the intervention from parts of the organization (Nielsen & Miraglia, 2017). Except for problems related to random allocation to intervention or control condition, the use of experimental designs has also been criticized for being inadequate for evaluating the complex and changing world of organizations (Cox et al., 2007; Griffiths & Schabracq, 2002). As described in the background section, this critique includes the predominant focus on effect evaluation, which provides little information on *why* and *how* an intervention worked or not. It has therefore been argued that evaluation of workplace interventions calls for alternative designs and that effect evaluation needs to be complemented with process evaluation (Cox et al., 2007; Egan, M. et al., 2009; Murta et al., 2007).

In order to evaluate both the processes and outcomes of interventions, the use of mixed methods has been recommended (Biron & Karanika-Murray, 2014; Nielsen & Randall, 2013). Mixed methods has been defined as "the type of research in which a researcher or team of researchers combines elements of qualitative and quantitative research approaches (e.g., use of qualitative and quantitative viewpoints, data collection, analysis, inference techniques) for the broad purposes of breadth and depth of understanding and corroboration" (Johnson, Onwuegbuzie, & Turner, 2007, p. 123). Evaluation of interventions implemented in real world situations, such as in a workplace, is a complicated task since it gives very little opportunity to control the conditions surrounding the intervention. There is a range of different factors that may influence the process and outcomes of the interventions, and the relationships between variables are complicated (Cox et al., 2007). As such, mixed methods could be helpful when evaluating whether an intervention works and why (Farquhar, Ewing, & Booth, 2011) since it provides an opportunity to gather and analyze different types of data covering both the breadth and depth that are required to answer these questions (Johnson et al., 2007). Furthermore, a mixed methods design is useful when the research question of interest cannot fully be answered using only quantitative or qualitative methods (Creswell & Plano Clark, 2011).

There are at least six major types of mixed methods research designs (Creswell & Plano Clark, 2011): convergent parallel designs, explanatory sequential designs, exploratory sequential designs, embedded designs, transformative designs and multiphase designs. An embedded design was used in study I. This type of design is characterized by collection and analysis of both qualitative and quantitative data within a traditional qualitative or quantitative design (e.g., a qualitative approach is embedded into an experimental study). One reason for using this design was that a single data source would not be sufficient for answering the research question (Creswell & Plano Clark, 2011). In relation to study I, this implied that intervention outcomes were evaluated with questionnaires in a quasi-experimental design. This data provided answers to whether the intervention produced the anticipated outcomes or not. However, the data did not provide any information regarding how and why the intervention was or was not effective. Thus, qualitative data from

interviews with line managers and staff as well as quantitative process data on participants' perceptions of the intervention were used to retrospectively understand and explain the intervention outcomes. Thus, the different data sources were used to answer different questions (i.e., whether the intervention was effective or not and how this could be understood and explained).

Study II had a convergent parallel design. The purpose of this type of design is to acquire different but complementary data on the same issue in order to investigate the research question (Morse, 1991). Convergent parallel designs are characterized by a concurrent use of qualitative and quantitative data in order to explore the same phenomenon, and they allow for triangulation (Creswell & Plano Clark, 2011). In study II, data were collected and analyzed in order to evaluate the implementation fidelity (documents and questionnaires) of the intervention as well as context and process factors influencing fidelity (interviews and questionnaires). The combination of quantitative and qualitative data provided a more comprehensive picture of implementation fidelity and the factors influencing fidelity than only one of these sources could, and the different data sources were used to corroborate the findings.

Study III had a pre-post design. A baseline questionnaire survey was conducted in order to assess pre-intervention values for outcomes and for measuring process factors. The questionnaire survey was repeated 18 months later in order to evaluate improvements in outcomes. The whole organization was included in the intervention; thus, there were no comparison group.

5.2 BRIEF DESCRIPTION OF THE SWEDISH HEALTHCARE SYSTEM

The responsibility for providing healthcare and care for older people to Swedish inhabitants is divided among 20 county councils/regions and 290 municipalities in Sweden. The county councils/regions are obligated to ensure that everyone who lives in Sweden has good health and equal access to healthcare (Swedish Association of Local Authorities and Regions, 2017) and are responsible for providing primary healthcare as well as hospital care. Primary healthcare is the first instance in the healthcare system and provides services that do not require inpatient care or advanced medical equipment. Primary healthcare also guides patients to the suitable care instance in the system. Care that requires hospital treatment is provided by county hospitals or regional hospitals, and highly specialized treatments are provided by seven university hospitals. Care for older people, including residential care and home-based care, is the responsibility of the 290 municipalities.

The studies in the thesis cover all three levels: residential care for older people provided by a municipality (study I), hospital care provided by a county hospital (study II) and primary healthcare (study III).

5.3 DESCRIPTION OF THE METHODS – STUDY I

In this section, the methods for the workplace learning intervention in residential care for older people are described. The aim of study I was to evaluate the outcomes of a workplace learning intervention on organizational learning and to identify factors influencing the creation of organizational learning in residential care for older people.

5.3.1 Setting

The intervention was conducted in Malmö, the third largest city in Sweden with approximately 330,000 inhabitants. At the time of the study, the city consisted of ten different urban areas (changed to five areas in 2013). The workplace learning intervention was conducted in three residential care facilities located in three of the areas of Malmö. Six care facilities, in the same areas, served as a comparison group. Two of the participating facilities provided both dementia care and general care for older people. One facility provided general care for older people only. The facilities were selected by senior management on the basis that they should be comparable to other care facilities in Malmö, not better or worse, and that they were not undergoing any major reorganizations or changes.

5.3.2 Intervention

The aim of the intervention was to support nursing staff in providing palliative care by providing direct support in terms of improved competence and indirect support in terms of a collective platform for reflecting on work practices as well as for concrete improvement work. The logic model for how the intervention was hypothesized to affect immediate, intermediate and distal outcomes is presented in Table 2.

The content and design of the intervention was developed based on an extensive needs analysis in the organization, guidelines concerning palliative care and empirical findings of prior interventions targeting palliative care and care for older people. The intervention was based on a study circle model where participants reflected and discussed palliative care based on their own expertise and work experience. It also entailed components where participants learned to question and improve work practices. The intervention consisted of parallel meetings for nursing staff members (nurses' assistants and assistant nurses) and workplace leaders (line managers and nurses), cross-professional workshops (nursing staff members and workplace leaders), and reading materials and practical assignments. An overview of the intervention is presented in paper I (Figure 1). The reason for separate groups was that the study circle for leaders focused on how they could support nursing staff members in providing palliative care. Both study circles consisted of seven sessions with preparation by reading or conducting a practical assignment before each session. The focus of the three joint workshops was to make plans for how to transfer what was learned during the study circles to daily practice and for how to improve the palliative care as well as care in general. External study circle leaders facilitated all study circle sessions and workshops. All study circles and workshops were conducted at the care facilities during regular working hours. A steering group including the project management, a research and development manager and managers

for health and social care in the three urban areas participating in the intervention met regularly to plan and discuss the intervention.

Table 2. Logic model for the workplace learning intervention in residential care for older people.

Core inputs	Immediate outcomes	Intermediate outcomes	Distal outcomes
Study circles for nursing staff and workplace leaders with a facilitator Cross-professional workshops with a facilitator Reading material and practical assignments	Nursing staff: Increased knowledge regarding palliative care Opportunity to reflect on and question work practices Leaders: Opportunity to reflect on and question own leadership activities Support from the colleagues, facilitator, and workplace leader	Changed attitudes toward care recipients Increased feelings of safety at work Improved work satisfaction Ideas for improvement of work practices Increased collective learning Increased leader support	Concrete improvements and guidelines to develop work practices Improved quality of care Decreased use of healthcare resources among care recipients Higher satisfaction with care and feelings of safety among relatives/families

The logic model covers the whole intervention. Consequently, not all outcomes were relevant for study I. The hypothesized logic for how the intervention could lead to improvements in the learning organization dimension was that the core inputs of the intervention would lead to immediate impacts such as increased knowledge, opportunity to reflect on work for both staff and workplace leaders, and support from colleagues, the facilitator and workplace leaders. These immediate impacts were hypothesized to lead to ideas for improvement of work practices, increased collective learning and increased leader support, which, in turn, could lead to concrete improvements and guidelines to develop work practices.

The intervention has been evaluated and reported in other studies, showing that the nursing staff increased their focus on the situation of residents and focused more on the social aspects of the care than before the intervention (Beck et al., 2014). Staff also experienced less criticism from workplace leaders (line managers and registered nurses) after the intervention (Beck et al., 2015). However, staff reported being more critical of the medical and nursing care (Beck et al., 2014), as well as having a more negative perception of the leadership after the intervention. Furthermore, nursing staff members' job satisfaction decreased after the intervention (Beck et al., 2015).

5.3.3 Participants and data collection

In the intervention group, 89 nursing staff members, five registered nurses and four managers from the three care facilities participated in the study. The control group consisted of 115 nursing staff, 11 registered nurses and nine managers. A total of 13 study circle groups were formed for nursing staff in the intervention group. Each group consisted of colleagues working together, except for one group that could not be formed of colleagues due to a low number of participants. Managers and registered nurses across the facilities formed a separate group.

5.3.3.1 Quantitative data collection

Questionnaires were distributed to all nursing staff in the intervention group and control group at baseline and at 6- and 12-month follow-ups in order to evaluate the intervention outcomes. The questionnaires were distributed at the care facilities and answered during working hours. Several scales were included to measure intervention outcomes; however, in the present study, the focus was on organizational learning. Organizational learning was evaluated using the previously validated Dimension of the Learning Organization Questionnaire (DLOQ) (Joo & Shim, 2010; Lien, Hung, Yang, & Li, 2006; Yang, Watkins, & Marsick, 2004). The DLOQ measures changes in an organization's climate, culture, structures and systems that influence how individuals learn (Marsick & Watkins, 2003). The DLOQ covers learning at the individual, group and organizational levels. Since the intervention targets individuals, work groups and work units, the three indices for individual learning and group learning (continuous learning, inquiry and dialogue, and team learning) were used. "Continuous learning" represents the efforts made by an organization to create continuous learning opportunities. "Inquiry and dialogue" represents an organization's effort to create a climate of questioning, feedback and experimentation. "Team learning" refers to the team's collaboration. For information on items included and internal consistencies of indices, see Table II in paper I. Response options were a six-point Likert scale ranging from "almost never true" to "almost always true." Response rates and respondent characteristics are presented in tables I and III in the paper.

The participants in the intervention group also responded to a questionnaire measuring their perceptions of the overall quality, relevance and usefulness of the intervention at the last study circle meeting. Response options ranged from 0 to 10, with 0 representing "very poor" and 10 representing "very good" quality/relevance/usefulness.

5.3.3.2 Qualitative data collection

Semi-structured interviews were conducted with seven nursing staff members from the intervention group at the 6-month follow-up. Convenience sampling was used to identify informants for the interviews. Nursing staff members who had indicated (in their written consent to participate in the questionnaire survey) that they were willing to be interviewed were contacted and asked to participate. The interview questions concerned nursing staff members' perception of the content, process and immediate and intermediate outcomes of the intervention. The four managers were interviewed at the 6-month follow-up and again approximately one year later. The questions at the first interview focused on the same topics as the nursing staff interviews. The second interview focused on what had happened concerning palliative care and work practices at the care facilities during the year after the intervention had ended. Thus, the interviews focused both on individual and organizational aspects and outcomes. The interviews lasted between 30 and 60 minutes and were conducted at the care facilities.

5.3.4 Analysis

5.3.4.1 Statistical analysis

Statistical analyses were conducted in order to evaluate the outcomes, improvements in organizational learning, of the intervention. The analysis started with a principal component analysis for the three DLOQ indices in the questionnaire. The results showed a four component solution and the continuous learning index was divided into two different indices: continuous learning 1, which included items measuring staff openness to continuous learning, and continuous learning 2, which measured staff perceptions of support for learning. Internal reliability was assessed using Cronbach's α, which ranged from 0.79 for the continuous learning 2 index to 0.90 for the inquiry and dialogue index. All indices were normally distributed; therefore, parametric tests were used. Baseline values for the four DLOQ indices differed significantly between the intervention and control groups. We therefore chose to create change scores (mean differences from baseline to follow-ups). Independent sample *t*-tests were performed using the change scores to assess changes over time in the DLOQ indices between the intervention and control groups. The statistical analysis mainly concerned the outcome evaluation. However, mean values for participants' perceptions of the interventions' usefulness, relevance and quality were also analyzed using descriptive statistics.

5.3.4.2 Content analysis

To understand and explain the intervention outcomes, the interviews with staff members and line managers were then analyzed using conventional content analysis (Hsieh & Shannon, 2005). Conventional content analysis was chosen since we did not have any preconceived categories for what we believed would explain the outcomes. We therefore inductively derived categories from the interviews. The analysis was conducted by two researchers who independently read the interview transcripts in order to get an overview of the whole content. The two researchers discussed the content and thereafter independently read the transcripts again and highlighted key thoughts and concepts related to the research questions. These concepts were coded and sorted into categories. The researchers discussed the categorization, and changes were made to eliminate discrepancies. The researchers thereafter agreed on how the categories should be labeled and abstracted.

5.4 DESCRIPTION OF THE METHODS – STUDY II

In this section, the methods for study II are described. The aim of study II was to evaluate implementation fidelity in an organizational-level occupational health intervention and to investigate possible explanations for variations in fidelity between intervention units.

5.4.1 Setting

The intervention was conducted in Enköping, a municipality located in eastern Sweden with 43,000 inhabitants. Enköping has a county district hospital that offers intensive care, emergency care, surgery, rehabilitation, radiology, geriatric care internal medicine and

hospital controlled home care. Approximately 500 employees are employed at the hospital. The hospital had three separate work processes that were important for the intervention study: 1. They used a participatory system for continuous quality improvement at the department level; 2. They worked with health promotion for employees both at the organizational and department level; 3. They worked with occupational safety and health according to Swedish regulations (AFS 2001:1).

The hospital had worked with a system for quality improvement, kaizen, since 2009. Kaizen is one of the most commonly used approaches in lean methodology (Pettersen, 2009; Radnor, Holweg, & Waring, 2012) and is a structured and participatory approach for continuous improvement (Jacobson, McCoin, Lescallette, Russ, & Slovis, 2009). This approach engages employees in continuous improvement based on the assumption that employees, who are the ones closest to the work processes, are best suited to identify areas that need to be improved and to implement action plans (Ulhassan, von Thiele Schwarz, Westerlund, Sandahl, & Thor, 2015). Kaizen is used to encourage rapid identification of problems that arise in the work process, facilitating understanding of the underlying reasons for the problems and testing of solutions (Holden, 2011).

At the hospital, the quality improvement work with kaizen entailed that all employees were engaged in identifying problems and areas for improvement in their own departments. The departments were free to adapt the improvement work to fit their own context and work processes. This meant that the improvement work differed somewhat between departments. However, all departments were to have employees engaged in identifying areas for improvement at their own workplace and write them on kaizen notes (see Figure 2). The departments also should have 1-3 employees serving as kaizen representatives with the responsibility of managing the improvement work. Additionally, they should hold regular meetings (ranging from every week to once a month across departments), where the work groups discussed the problems, decided on solutions, and tested and evaluated solutions. The kaizen representatives were supported by a kaizen coordinator in the human resource (HR) department, for example through bi-monthly meetings. Most issues raised on kaizen notes were related to work processes and quality of care.

The hospital also worked with health promotion for employees. The hospital allowed employees to spend one hour during work time on exercise, if the workload allowed it. It also provided a gym where employees could exercise for free. If employees preferred to exercise somewhere else, they could receive financial support to cover the cost. Every department had 1-2 employees functioning as health representatives. Their role was mainly to pass on information concerning health promotion activities to their colleagues. The health representatives were supported by a health coordinator in the HR department, for example through bi-monthly meetings.

The hospital also worked with OSH according to Swedish regulations. This included that department managers and safety representatives (with a role to monitor the work environment

management at the workplace) conducted an annual risk assessment and formulated action plans for identified risks. However, these action plans often remained unimplemented.

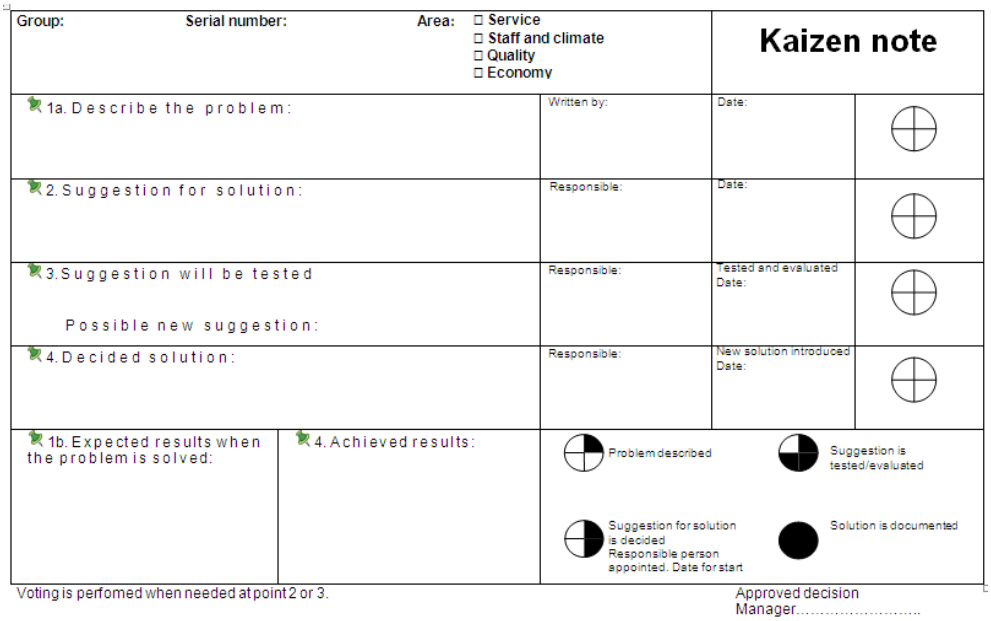

Figure 2. Illustration of the kaizen note that was used for working with continuous improvements at the hospital. The kaizen note was developed by ©*KAIZENsupport*. The note has been translated from Swedish.

5.4.2 Intervention

The organizational-level occupational health intervention was conducted at six of the 12 hospital departments. Allocation to intervention and control groups was made using cluster randomization. All departments were matched based on working processes around kaizen (i.e., frequency of kaizen meetings) and characteristics of the departments (i.e., number of employees and type of care). From each matched pair, one department was randomized to the intervention group and the other department to the control group. The intervention group consisted of an emergency department, internal medicine ward, outpatient internal medicine clinic, surgery, surgery ward and team of internal medicine physicians.

The intervention consisted of an integration of the above described HP, OSH and quality improvement work. The already implemented quality improvement system, kaizen, was used as the base for the integration, and OSH and HP were integrated into this system. The principle of integration of HP, OSH and kaizen was that the existing kaizen system would be used rather than creating new structures. Another important principle was a high level of employee involvement, just as in the existing kaizen work. The intervention entailed two core components:

1. All improvement suggestions, regardless of topic, were to be analyzed from an OSH and health perspective.

2. All employees were to be engaged in identifying problems/areas for improvement concerning OSH and HP and write them down on kaizen notes. These were then discussed in the work group, tested and evaluated, just as with other improvements.

In addition, the integration implied some changes in the roles and responsibilities of the kaizen and health representatives. These were that both kaizen and health representatives should structure their work around the kaizen system. This entailed directing employees' suggestions, ideas and requests concerning OSH and HP to the kaizen notes and helping their coworkers to analyze the improvement suggestions' health consequences. The intervention also entailed joint meetings for all kaizen and health representatives at the intervention departments. These meetings were led by the kaizen coordinator and the health coordinator from the HR department. Except for these parts, variation between intervention departments in how they conducted the integration was allowed and expected.

The logic behind the intervention was that integration of OSH and HP into the existing quality improvement system would lead to continuous improvement of these areas, which would in turn lead to improvements in work environment and employee health. The intervention, just like the kaizen system in general, was built on employee involvement, which is the recommended approach for conducting workplace interventions (LaMontagne et al., 2007; Nielsen, 2013; von Thiele Schwarz et al., 2016). By involving employees, their unique knowledge and experience of their own work situation could be used to improve the work environment and employee health (LaMontagne et al., 2007). Furthermore, the participatory process in conducting continuous improvements implied that improvements could be based on the needs of employees and changes in the organization (Giga, Noblet, et al., 2003). In addition, the intervention entailed that all improvements (regardless of which area the improvement concerned) were made with consideration to OSH and HP, therefore decreasing the risk of conducting changes that could have a detrimental effect on employees' health. The logic model for how the intervention was hypothesized to affect immediate, intermediate and distal outcomes is presented in Table 3.

The control group continued working with kaizen in the same manner as before. Based on an organizational decision, the control departments also integrated the annual OSH risk assessment into the kaizen work, but besides this, they did not integrate OSH and HP.

Table 3. Logic model for the organizational-level occupational health intervention.

Core inputs	Immediate outcomes	Intermediate outcomes	Distal outcomes
1. All improvement suggestions, regardless of topic, are analyzed from an OSH and health perspective. 2. All employees identify problems/areas for improvement concerning OSH and HP and write them on kaizen notes. These are discussed in the work group, tested and evaluated.	OSH, HP and quality improvement are discussed in each work group on a regular basis and thus are integrated. Work environment and employee health are considered in all improvement work, thus decreasing the risk of unintended negative consequences. Employees are engaged and involved in improving their own work environment and health.	Issues concerning work environment and health can be detected at an earlier stage and are made more visible. Ideas for improvements concerning work environment and health are formulated and tested.	Improvements concerning work environment and health are made by all staff members on a continuous basis. Improved physical and psychosocial work environment Improved health of employees Higher satisfaction among employees

The logic model covers the whole intervention project. Study II focused on evaluating implementation fidelity. Thus, the focus was on evaluating to what degree the two core components of the intervention were implemented. The specified outcomes in the logic model would be the effects of these two core components being implemented. This was not evaluated in study II but has been evaluated and reported in other studies showing that the intervention increased the HP and OSH work at the intervention departments (Astnell et al., 2015; von Thiele Schwarz, Augustsson, et al., 2015) and improved employees' understanding of the relationship between work and health as well as improved their engagement in continuous quality improvement work. A trend toward improved workability and productivity was also found (von Thiele Schwarz, Augustsson, et al., 2015).

5.4.2.1 Implementation strategies

To implement the intervention (i.e., the integration of OSH, HP and quality improvement), four main implementation activities were performed in the intervention group. These were: 1. Workshops for kaizen representatives and health representatives and line managers from the participating departments; 2. Coaching; 3. A brochure, co-created by the kaizen coordinator and health coordinator, kaizen and health representatives and researchers, aimed to be used to inform and involve employees in the departments and 4. Feedback about the process and outcome evaluations. However, since study II focused on the initial implementation phase, some of these implementation strategies had just started (i.e., coaching and feedback) or had not yet been conducted (i.e., the brochure).

In total, four workshops were conducted during the intervention. These were led by the kaizen coordinator and health coordinator together with the research group. At the time of study II, two workshops had been conducted. The first workshop introduced the intervention and aimed to create a common understanding of the intervention's aim and the integration approach and to help the line managers and kaizen and health representatives to start making preparations for the intervention in their departments. Furthermore, the workshop also aimed

to promote a broader understanding of HP since the previous general assumption was that it simply meant physical exercise. The second workshop was conducted two months later and provided an opportunity for kaizen and health representatives and line managers to share experiences of the initial phase of the intervention and discuss problems that might have occurred.

The kaizen coordinator and health coordinator in the HR department and the line managers in the intervention departments were offered support from a certified coach in the research group (Coaching Healthcare Improvement Teams, Dartmouth Medical School, and the Dartmouth Institute). The intention with the coaching was to support the integration by capturing ideas, helping with barriers and providing tools and methods for change. The coaching was needs-based, which meant that the number of coaching occasions differed between individuals. At the time of study II, only the kaizen and health coordinators from the HR department had received coaching. They in turn coached the kaizen representatives and health representatives at the department level who supported their colleagues. Thus, a train-the-trainer approach was used (Orfaly et al., 2005).

The results from the baseline questionnaire were used to provide feedback at the department level, for both the intervention and control groups, concerning work environment and employee health. The intervention departments were encouraged to use the results to identify areas for improvements that could be planned, tested and evaluated as part of the quality improvement work, i.e., kaizen. However, all departments were free to use the information as they wished.

The intervention was conducted using an interactive research approach (Svensson, Brulin, Ellström, & Widegren, 2002). The idea for the intervention was created in collaboration between the researchers and a local project group (including the kaizen coordinator, the health coordinator, the HR manager and the manager for the development unit) at the hospital. However, the hospital owned and managed the intervention. The research group and the coach supported the kaizen coordinator and the health coordinator in the HR department in the integration of OSH, HP and quality improvement work with the activities described above, as well as in project group meetings where the hospital project group and the research group participated. Also, external communication of the project was conducted in collaboration. The hospital project group and the research group met regularly with the higher management at the hospital to keep them involved and up to date. The research group was responsible for evaluating the process and outcomes of the intervention.

5.4.3 Participants and data collection

Study II concerned the implementation process and implementation outcomes of the intervention. Therefore, only participants from the intervention departments were included. In total, 200 healthcare staff worked at the intervention departments. Six of these had a role as kaizen representatives, six were health representatives and four had a combined health and kaizen representative role. All departments had one department manager, i.e., line manager.

5.4.3.1 Quantitative data collection

A Web-based questionnaire was distributed to all employees at baseline and at the 6-month follow-up in order to measure implementation fidelity and context and process factors. The questionnaire was based on the previously validated Intervention Process Measure (IPM) which measures appraisals of intervention processes (Randall et al., 2009). The IPM consists of five subscales: line manager attitudes and actions, exposure to components of the intended intervention, employee involvement, employee readiness and intervention history. Items from the subscale *exposure to components of the intended intervention* were used to assess implementation fidelity at the 6-month follow-up. Items from the subscales *line manager attitudes and actions, employee involvement, employee readiness* and *intervention history* were used to assess implementation factors at baseline and the 6-month follow-up. The items were tailored to the specific contexts, as recommended by the scale developers (Randall et al., 2009). The tailoring entailed specifying the intervention, e.g., that the items measuring manager support were specified for measuring managers' support for the specific intervention, i.e., the integration.

A four-item scale based on the group process subscale from the Survey of organizations: A machine-scored standardized questionnaire instrument (Taylor & Bowers, 1972) was used to assess the contextual factor, group process, at baseline. Group process concerned how employees perceived their work group regarding aspects such as planning and coordination, problem solving, preparedness for new challenges and efficiency. The factor structure of the index was supported by a principal component analysis. Cronbach's α was .91. The response alternative for all items was a VAS scale ranging from 0 (disagree completely) to 100 (fully agree).

5.4.3.2 Qualitative data collection

All line managers and health and kaizen representatives at the intervention departments were contacted by e-mail with an invitation to participate in an interview. All six line managers accepted the invitation. Seven representatives accepted the invitation, resulting in a representation of both the health and kaizen representative role for all departments. The semi-structured interviews were conducted four months after the intervention had started and concerned the initial implementation of the intervention (i.e., how they worked with the integration of OSH and HP with kaizen at the departments) and facilitators and barriers to implementation. Managers were also asked about their role as leaders in the implementation process.

All kaizen notes (n = 202) that had been produced from the start of the intervention to eight months into the intervention were collected from the six intervention departments and registered into a database. The number of kaizen notes varied between departments: department 1, 28 notes; department 2, 69 notes; department 3, 40 notes; department 4, 31 notes; department 5, 34 notes and department 6, 0 notes.

5.4.4 Analysis

5.4.4.1 Quantitative analysis

To investigate differences concerning context and process factors between the three fidelity groups, one-way analysis of variance (ANOVA) was conducted with the Bonferroni and Dunnett's T3 post hoc tests. Changes in mean values from baseline to follow-up for the category *changes in mental models* were analyzed using repeated measure ANOVA. Statistical significance was set at a two-tailed p value of $< .05$.

5.4.4.2 Qualitative analysis

Interviews were analyzed with qualitative content analysis using a directive approach (Hsieh & Shannon, 2005). The framework for evaluating organizational-level interventions (Nielsen & Randall, 2013) was used as a framework for coding the interviews. The transcribed interviews were read independently by two researchers to get an overview of the content. The transcripts were then read again to identify text sections and concepts related to the aim of the study. These text sections were coded and sorted according to the categories in the framework. Sections of importance for the aim of the study but not covered by the framework were also given a code. One researcher, who had not been involved in the analysis, compared the two researchers' categorizations. Discrepancies were discussed until consensus was reached.

Kaizen notes were analyzed by one researcher to assess implementation fidelity to the two core components of the intervention. The first component was regarded as fulfilled if expected health outcomes had been analyzed and noted on the kaizen note. The second component was regarded as achieved if the kaizen note concerned OSH and/or HP. In cases where the fidelity to the two components was unclear, the note was discussed with another researcher until consensus was reached.

5.5 DESCRIPTION OF THE METHODS – STUDY III

In this section, the methods for the workplace learning intervention in primary healthcare are described. Study III aimed to investigate how openness to the change content and the change process at both individual and group levels affected the outcomes of a participatory training intervention aiming to improve employees' use of information and communication technologies.

5.5.1 Setting

The intervention was conducted in Stockholm, which is the capital and largest city in Sweden with approximately 900,000 inhabitants. The amount of inhabitants is continuously increasing due to increased life expectancy and people moving to Stockholm from other parts of the country. Stockholm has both privately and publicly owned primary healthcare centers. Study III was conducted in all of the 78 publicly owned primary healthcare centers (Stockholm Healthcare Services, SLSO), including general practitioner clinics and centers

with a focus on rehabilitation (e.g., physiotherapy and occupational therapy). Approximately 2,500 healthcare professionals were employed at the participating primary healthcare centers at the time of the study.

5.5.2 Intervention

The third intervention was a workplace learning intervention aiming to improve employees' competence and skills in working with information and communication technologies (ICT). The intervention intended to improve psychosocial work environments for employees by supporting them in developing competencies needed for keeping up with changing demands regarding using ICT in their daily work and thereby also protect their employability and reduce stress. The intervention also aimed to improve quality of care for patients.

The intervention consisted of eight cross-professional workshops with different ICT themes: basic computer knowledge, searching for information, electronic health records, electronic systems for statistical reports and working with electronic information and communication according to existing laws and regulations. These themes were developed by a team of local stakeholders including the project management and process instructors, who were twelve employees from the participating centers with a specific interest in ICT.

One employee from each primary healthcare center was appointed as workshop facilitator and was responsible for leading the ICT workshops at his or her own center. The workshop facilitators were coached by the process instructors. All employees at the primary healthcare centers were invited to participate in the workshops. Each workshop had approximately 8-10 participants, and a workshop theme was repeated until all employees at the center had had the opportunity to participate.

The workshops built on discussions and participation from all participants rather than lectures. The workshop facilitator presented the ICT theme followed by practical demonstrations as well as dialogue and discussion concerning the ICT theme and how employees could use it in their regular work practice.

The logic of the intervention was that the cross-professional workshop would support employees in using ICT in their work in terms of improved competence as well as support from colleagues and facilitators. The network model would facilitate knowledge exchange between professions as well as between centers. The logic model for how the intervention was hypothesized to affect immediate, intermediate and distal outcomes is presented in Table 4.

Table 4. Logic model for the workplace learning intervention in primary healthcare.

Core inputs	Immediate outcomes	Intermediate outcomes	Distal outcomes
Cross-professional workshops with a facilitator including discussions about ICT and practical application of ICT Network meetings for workshop facilitators led by process instructors Network meetings for process instructors	Opportunity to discuss, learn about and practically test ICT Opportunity to share ideas and learning in the work group Support from colleagues and the facilitator Increased knowledge exchange between professions and centers	Increased competence concerning ICT Use of ICT competence Improved understanding of each other's perspectives in use of ICT Shared learning and opportunity to improve the work practices concerning ICT use Increased opportunity to influence content and structure of ICT systems	Improved work practices concerning ICT Improved work satisfaction among employees Reduced stress among employees Improved quality of care

The logic model covers the intervention project as a whole. In study III, only the outcomes ICT competence and use of ICT competence were included. Study III focused on evaluating the impact of employees' openness to change on these outcomes. An evaluation of the intervention's effects on employees ICT competence was previously reported elsewhere. This evaluation showed that employees' self-rated competence increased from baseline to follow-up (Mosson et al., 2013).

5.5.3 Participants and data collection

All employees (n = 2,530) working at 78 primary healthcare centers in SLSO were invited to participate in the intervention and in the two questionnaire surveys used to evaluate the intervention. Individuals who answered both surveys (baseline and 18-month follow-up), provided answers to all variables included in study III and gave their consent to use their answers in research were included in the study. The study population consisted of 1,042 employees in total, which gives a longitudinal response rate of 41.2%.

A Web-based questionnaire was distributed to employees by e-mail at baseline and directly after the intervention had ended (18-month follow-up). The baseline questionnaire included items measuring employees' self-rated competence concerning ICT and employees' ratings of their openness to change content and change process, as well as of their ratings of the work group's openness to change content. The follow-up questionnaire included the same competence items as in the baseline survey, as well as items measuring employees' self-rated use of acquired competence.

5.5.3.1 Measures

A Web-based questionnaire was developed through collaboration between the researchers, the project management at SLSO and the process instructors. The questionnaire included both previously validated scales and scales developed for the specific intervention. The questionnaire was piloted in ten primary healthcare centers prior to the baseline measurement, and a few minor changes in wording were made as a result.

Individual-level openness to the process of change was assessed with three items from the readiness for change scale in the IPM (Randall et al., 2009) and adapted to fit the intervention. Cronbach's α was .92 at T1.

Individual-level openness to the content of change was assessed with eight items from the usefulness dimension of the validated technical acceptance model (Davis, 1989; Davis, Bagozzi, & Warshaw, 1989). Cronbach's α was .92 at T1.

Group-level openness to the process of change was measured with a single item: "At my workplace, we are positive towards the use of ICT." Individual responses were aggregated in order to obtain work group openness to change. For details concerning justification for aggregation, see paper III.

Competence was measured using a scale with 17 items developed for the specific intervention. The items measured the intended learning outcomes of the intervention and were developed using Adaptive Reflection (Savage et al., 2011). Adaptive Reflection is a process in which individuals with content expertise reflect on which competencies are important to the topic of interest, in this case, which competencies regarding ICT that primary healthcare employees needed in their work, and how the learning can be designed to ensure that relevant competencies are attained (Savage et al., 2011). Cronbach's α was .86 at T1 and .88 at T2.

Use of acquired competence was measured using a three-item scale targeting the third level of the training evaluation model proposed by Kirkpatrick, which focuses on evaluation of participants' use of new competencies and skills in their daily work practice. The scale measured participants' self-reported use of acquired competence concerning ICT at T2. Cronbach's α was .67 at T2.

The response alternatives for all items were VAS scales ranging from 0 (disagree completely) to 100 (fully agree).

5.5.4 Analysis

Study III concerned hypotheses at both the individual level (i.e., individual-level openness to change content and change process) and group level (i.e., group-level openness to change content). Because of the hierarchical structure of the data, we used multilevel analyses (Raudenbush, S. W., & Bryk, A. S., 2002). Multilevel refers to a hierarchical or nested data structure, such as people within organizational groups. The general concept behind multilevel analyses is that people interact with the social context to which they belong, such as a work group. This means that people are influenced by the social groups to which they belong and that the properties of those groups are influenced by the people in the group (Hox, Moerbeek, & van de Schoot, 2010). In our case, individual employees (level 1) were nested in work groups (level 2).

The multilevel analysis was conducted using the HLM 7.0 software (Raudenbush, S. W., Bryk, A. S.,Cheong, Y. F., & Congdon, R. T., 2004). Maximum likelihood estimation was used due to the relatively large number of level 2 units. The analysis started with an intercept-only model (Raudenbush, S. W., & Bryk, A. S., 2002) in order to estimate the within- and between-group variance for the two outcomes and to investigate whether the use of multilevel analysis was appropriate. ICC(1) and *F* ratios were calculated for the two outcomes to assess the degree of dependence of individuals within the work units they belonged to. Hypothesis 1 was tested by using openness to change process at T1 as a predictor of ICT competence and use of acquired competence at T2. Hypothesis 2 was tested by using openness to change content as a predictor of ICT competence and use of acquired competence. The analysis of hypothesis 3 started with an investigation of rWG, ICC(1) and ICC(2) in order to investigate justification for aggregating the data to the group level. Hypothesis 3 was then analyzed by using group-level openness to change content as a predictor of ICT competence and use of acquired ICT competence. Consequently, four different models were calculated for each of the two outcomes. For the ICT competence outcome, we controlled for ICT competence at T1. However, for use of acquired ICT competence, no such control could be made as this had only been measured at T2.

5.6 ETHICAL CONSIDERATIONS

All participants received written information about the study before their participation. This included information that participation was voluntary and that participants could withdraw from the study at any time. Participants were guaranteed confidentiality and anonymity. Informed consent was obtained for all questionnaire surveys in the beginning of the questionnaire by respondents answering whether or not they allowed for their answers to be used in research. Informed consent from interview respondents was obtained in writing before the interview started. The projects were approved by the Regional Ethical Review Boards in Lund (study I ref no. 2009/527) and Stockholm (study II ref no. 2011/1420-31/5 and study III ref no. 2011/1130-31/5).

6 SUMMARY OF FINDINGS

This section describes the key results in relation to the aim of the thesis, which is to investigate how factors related to the context and process of workplace interventions influence implementation and intervention outcomes. The results section starts with an overview of the contextual and process factors identified to influence outcomes of the three workplace interventions. Thereafter follows a brief summary of the key findings from each of the studies.

6.1 OVERVIEW OF CONTEXT AND PROCESS FACTORS INFLUENCING OUTCOMES

The findings on context and process factors that influenced implementation and intervention outcomes from the three studies were sorted using the framework for evaluating organizational interventions proposed by Nielsen and Randall (2013). An overview of the findings is presented in Figure 3.

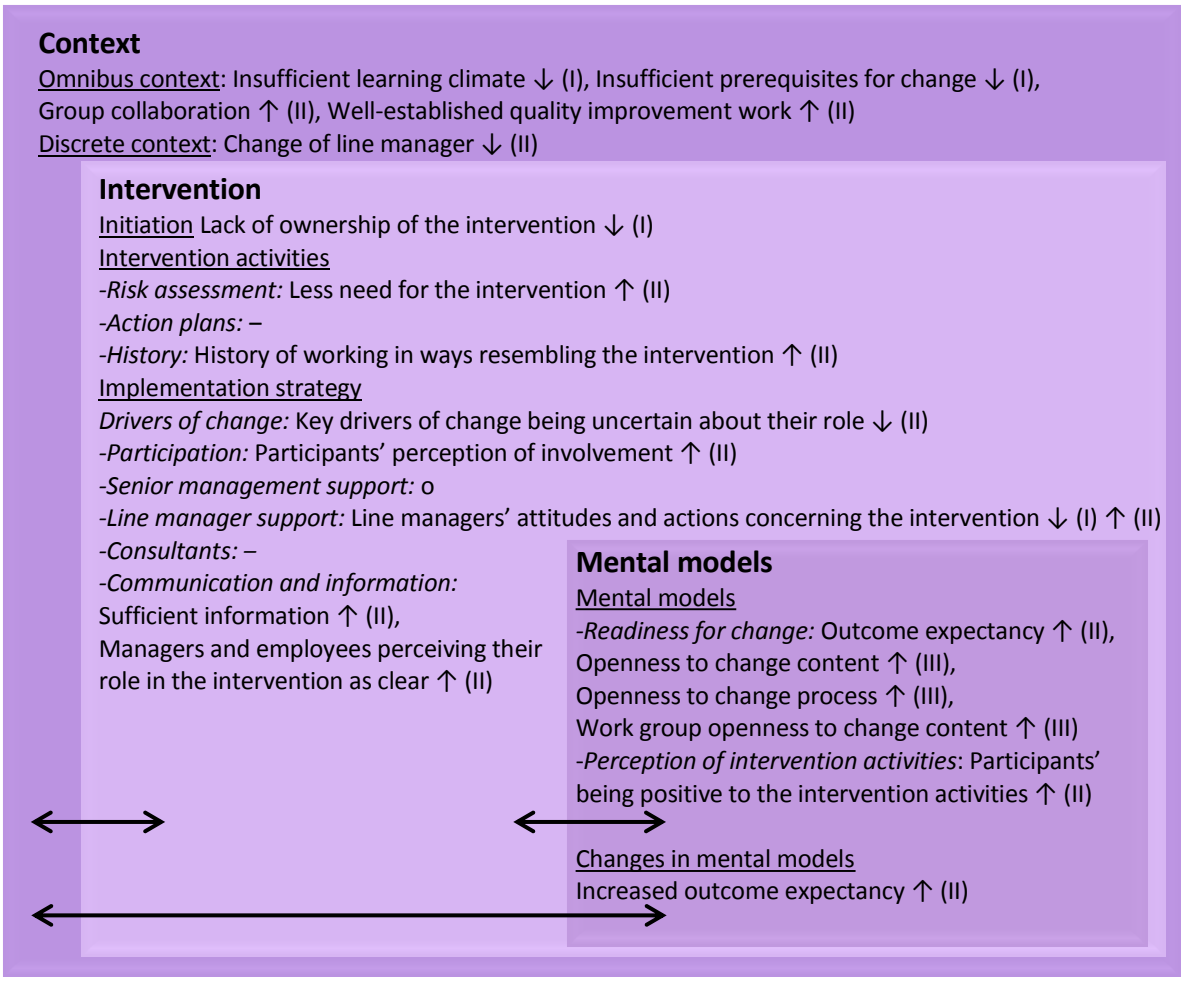

Figure 3. Context and process factors influencing outcomes of the three workplace interventions sorted according to the framework proposed by Nielsen and Randall (2013). Positive influence of a context or process factor on outcomes is marked with a [↑]. Negative influence is marked with a [↓]. [–] indicates that these factors have not been measured, and [o] indicates that no conclusions concerning the influence of the factor on outcomes could be made.

6.2 KEY RESULTS—STUDY I

6.2.1 Intervention outcomes

The results showed that participants perceived the intervention as relevant, useful and of high quality (with mean values above 8.46 on the 10-point scale) and reported some learning at the individual level. However, the intervention had no significant effect on employees' perceptions of organizational learning as measured with the DLOQ questionnaire. Figure 4 shows changes in mean values over time for the four organizational learning indices. Factors found to influence the effects on organizational learning are presented below.

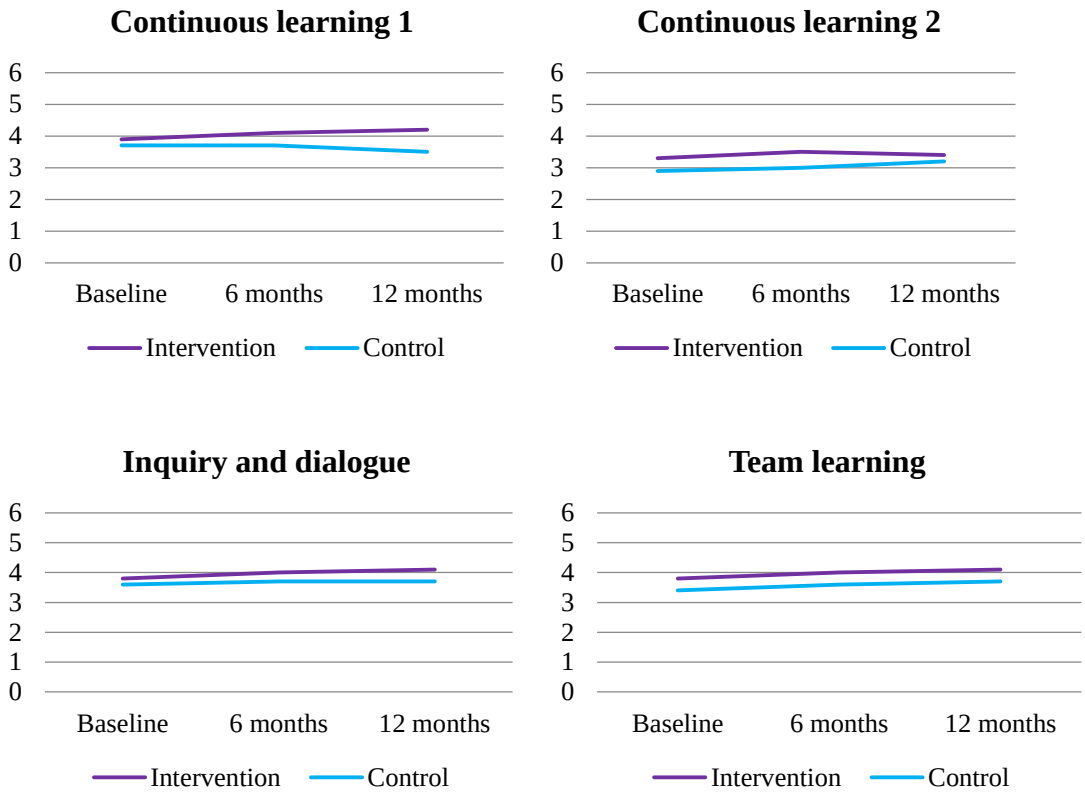

Figure 4. Changes in mean values over time for the four DLOQ indices in the intervention and control groups.

6.2.2 Factors influencing creation of organizational learning

The interviews with nursing staff and managers revealed factors that provided insights into the lack of effect on organizational learning. These factors were as follows.

6.2.2.1 Context

Insufficient learning climate: The interviews revealed that discussions and reflections on work practices in the facilities were rare and that staff lacked a shared vision for the care. Managers had previously not been fully aware of the challenges that staff perceived in their work. Although the discussions on work practices with colleagues and managers had been

appreciated during the intervention these were not remained after the active phase of the intervention had ended.

Insufficient prerequisites for changes: Nursing staff perceived that there was not enough time or manpower to work according to what was learned from the intervention. This mainly concerned aspects of the work not directly included in the care, such as taking time to talk to the residents which created a feeling among staff of being insufficient in their nursing roles. Line managers perceived that they did not have enough knowledge or time to implement new work practices. There was a lack of systems and routines for capturing knowledge in the organization.

6.2.2.2 Intervention initiation

Unclear responsibilities: It was unclear who had the responsibility to implement what was learned from the intervention. Directly after the intervention line managers emphasized their own role in implementing changes based on the intervention. However, at the second interview managers failed to see their importance in creating continuous learning and perceived the intervention as a time-limited project initiated by senior management and the researchers. Consequently they did not feel ownership of the intervention or that they had a responsibility for its survival. Staff perceived it to be the responsibility of line managers and/or nurses to implement changes based on what was discussed during the intervention.

6.2.2.3 Implementation strategy, line managers' attitudes and actions

Lack of incitements for continuous learning: The intervention was viewed as a time-limited project that mainly could benefit the individuals while it lasted. Staff personalities were viewed as more important than staff development and learning.

6.3 KEY RESULTS – STUDY II

6.3.1 Implementation fidelity

Implementation fidelity was evaluated for the two core components of the intervention: 1. All improvement suggestions, regardless of topic, should be analyzed from an OSH and health perspective; and 2. Employees should identify areas for improvement concerning OSH and HP and write them on kaizen notes. Results from the kaizen notes and questionnaires showed that implementation fidelity for both components regarding content and frequency differed between intervention departments (paper II, table 2). Based on the level of fidelity, departments were grouped into low-fidelity (three departments), medium-fidelity (one department) and high-fidelity (two departments) groups.

6.3.2 Context and process factors influencing implementation fidelity

Contextual factors and process factors influencing implementation fidelity were evaluated based on Nielsen and Randall's framework for evaluating organizational-level interventions (Nielsen & Randall, 2013). The results from staff questionnaires and interviews with kaizen and health representatives and line managers showed variations between the fidelity groups in most of the categories included in the framework. The high-fidelity group had generally more positive contextual and process factors compared to the other groups, in particular compared to the low-fidelity group. For an overview of how the groups differed in context and process factors see Table 5. The differences between the fidelity groups concerning these factors are also described below.

Table 5. Favorable context and process factors for the three implementation fidelity groups.

Context and process factor	High fidelity	Medium fidelity	Low fidelity
CONTEXT			
Omnibus context	xx	x	–
Discrete context	xx	xx	–
INTERVENTION & IMPLEMENTATION			
Risk assessment (need for the intervention)*	x	xx	xx
History	xx	x	–
Senior management support	x	x	x
Line manager support	xx	–	–
Drivers of change	x	x	–
Participation	xx	x	–
Information and communication	xx	x	–
MENTAL MODELS			
Readiness for change (outcome expectancy)	xx	xx	–
Perception of intervention activities	xx	x	–

xx = to a high extent; x = to a certain extent; – = to a lesser extent
*For risk assessment, xx indicates a high need for the intervention, and x indicates a certain need for the intervention.

6.3.2.1 Context

Omnibus context: The high-fidelity group had better established kaizen work and employees reported higher mean values for group collaboration compared to the other groups.

Discrete context: The low-fidelity group had two departments that had undergone changes in management just before or during the initial phase of the intervention.

6.3.2.2 Intervention activities

Risk assessment: The high-fidelity group reported significantly higher mean values for having minimal risk for work-related sick leave compared to the other groups (i.e., possibly less need for the intervention).

History: In the high-fidelity group employees reported significantly higher mean values for already working in ways that resembled the intervention before the intervention started compared to the low-fidelity group.

6.3.2.3 Implementation strategy

Senior management support: All groups perceived that senior management showed that the intervention was prioritized but did not help to facilitate the intervention.

Line manager support: Employees in the high-fidelity group reported that their managers supported the intervention by showing it was prioritized, engaging employees in the

intervention and encouraging continuous quality improvement as well as HP. There were no differences in how managers perceived their role in the intervention.

Drivers of change: Kaizen and health representatives in the low-fidelity group were uncertain concerning their role in the intervention and therefore remained passive.

Participation: In the high-fidelity group employees were more involved in the quality improvement work in general as well as in the intervention compared to the other groups.

Communication and information: In contrast to the other groups, the managers in the high-fidelity group found their own and their employees' roles in the intervention to be clear. Employees in the low-fidelity group reported significantly lower mean values for receiving sufficient information and for knowing what was expected from them.

6.3.2.4 Mental models

Readiness for change (outcome expectancy): Employees in the low-fidelity group reported lower expectations that the intervention would benefit their health. Managers and drivers of change in the low- and medium-fidelity groups expressed hesitation at the intervention as they were reluctant about the quality improvement system that formed the basis for the intervention.

Perception of intervention activities: Employees in the high-fidelity group reported being positive about the intervention. The intervention was perceived as natural and a good way of working as it was based on an already existing work structure. Managers and drivers of change in the high- and medium-fidelity groups felt the intervention provided a structure for working with issues concerning employee health and work environment and made employees more involved. The low-fidelity group did not see the benefit with the intervention and had been satisfied with the old way of working.

Changes in mental models: Employees' belief that the intervention would benefit their health increased significantly from baseline to six months' follow-up in the high- and medium-fidelity groups but not in the low-fidelity group.

The results of the study demonstrated that implementation fidelity varied extensively within the organization, despite the same implementation strategies' being used. The contextual factors and process factors outlined above provide an explanation for these differences.

6.4 KEY RESULTS—STUDY III

Results showed that individual-level openness to both change *process* and change *content* as well as *group-level openness to change content* at baseline predicted the outcomes of the intervention at 18 months' follow-up, such that higher openness to change was related to more positive intervention outcomes. More specifically, individual-level openness to the change process at baseline predicted intervention outcomes, improvements in ICT competence and use of acquired competence, at T2. Individual-level openness to change content predicted use of acquired competence but not improvement in competence at T2. Also, group-level openness to change content at baseline predicted use of acquired competence at T2.

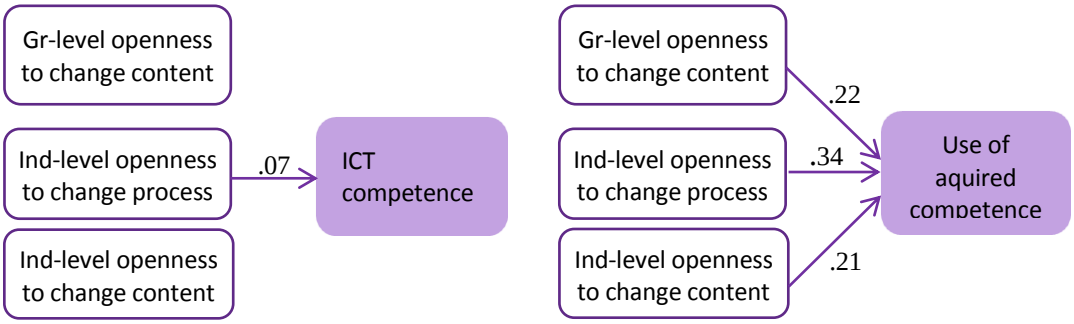

Figure 5. Multilevel models predicting improvements in ICT competence and use of acquired competence at T2. Data are presented as unstandardized coefficients. ICT competence at T1 has been controlled for. Only the significant ($p < 0.5$) relationships are presented.

7 DISCUSSION

The overall findings from the three studies showed that both context and process factors influenced implementation and intervention outcomes. More specifically, low ownership of the intervention among stakeholders, an insufficient learning climate, insufficient prerequisites for change and managers' attitudes and actions were found to hinder the creation of organizational learning in study I. Factors related to the omnibus and discrete context, to the intervention and implementation as well as to participants' mental models were found to explain differences in implementation fidelity between intervention departments in study II. In study III, baseline individual-level openness to both change process and change content as well as group-level openness to change content predicted intervention outcomes at follow-up. The discussion chapter starts with a general discussion of these findings, followed by a section on implications of the findings for planning, implementing and evaluating workplace interventions and finally a methodological discussion. The discussion chapter provides an overall interpretation of the findings. A more detailed discussion for each study is provided in the papers.

7.1 CONTEXT

7.1.1 Good soil to start with

Contextual factors were found to influence implementation and intervention outcomes in studies I and II (context was not assessed in study III). In study I, a poor organizational learning climate was identified as hindering the creation of organizational learning. This poses a paradox as workplaces with poor learning climates could benefit the most from interventions that aim to improve learning, but they are hindered by the same insufficient learning climate. The "soil" for learning and development in residential care for older people has previously been found to be poor and it has been suggested that care for older people may be in need of more fundamental changes than can be performed on a work group basis (Westerberg, 2004). Also, employees' pre-intervention well-being and job satisfaction have been found to be connected to more positive intervention outcomes (von Thiele Schwarz, Nielsen, Stenfors-Hayes, & Hasson, 2017). These findings suggest that certain preconditions may be needed in order for workplace interventions to succeed.

A climate that promotes learning has been emphasized as important for increasing the absorptive capacity of new knowledge as well as being essential for ongoing quality improvement (Greenhalgh et al., 2004). Although staff reported learning at the individual level, the intervention was unsuccessful in improving the learning climate (i.e., organizational learning). Neither was it successful in facilitating implementation of planned improvements. Marsick and Watkins (2003) suggested that in order for individual learning to advance organizational learning, the organization must be receptive to individuals' efforts to use their learning and strive to enable, support and reward the use of what has been learned. Such climate is built by managers and other organizational members. In the current organization, staff perceived that managers hindered the use of what was learned by deciding on ways of

working that did not correspond with the new knowledge (managers' perceptions of the intervention and their role in the intervention are discussed further in the *line manager* section later in the discussion). Furthermore, staff felt that there were inadequate prerequisites in the organization for working according to what was learned, which indicates that learning was not being enabled, supported or rewarded.

7.1.2 Intervention's fit to the environment

It was found in study II that the high-fidelity group had a contextual advantage compared to the medium- and low-fidelity groups as they already had a well-established quality improvement system, which was the basis for integrating HP and OSH. This implied not only good starting conditions, as discussed in relation to study I, but also a good environment-intervention fit (Randall & Nielsen, 2012), implying that the intervention matched well to the systems and processes that were in place in these departments. This has previously been related to successful implementation (Greenhalgh et al., 2004). Furthermore, variations in environment-intervention fit have been proposed to be a possible explanation to the frequently reported inconsistencies in intervention outcomes of organizational-level interventions (Randall & Nielsen, 2012). This means that in some contexts and situations an intervention may be suitable and powerful while the same intervention may be inappropriate and weak in another context. The results from study II showed that the intervention fit well into the context of some departments but less well into other departments despite efforts to allow flexibility in the use of the quality improvement system to allow adaptation to local circumstances. This indicates that environment-intervention fit relates not only to the fit between an intervention and an organizational context but also to micro contexts within the same organization.

7.1.3 Improving in small steps

Another explanation as to why departments with well-functioning quality improvement work achieved higher implementation fidelity may be related to the perceived complexity of the intervention. Interventions that are perceived to be less complex are generally easier to implement (Damschroder et al., 2009; Greenhalgh et al., 2004). Since the high-fidelity group had already established quality improvement work, the intervention was perceived as less complex for employees and managers in this group, as indicated in the interviews. This is also linked to the notion that making change happen in smaller steps is easier. An intervention that can be broken down into more manageable parts is more likely to be adopted (Plsek, 2003; Rogers, 2003). While managers and employees in the medium- and low-fidelity departments needed to simultaneously put the quality improvement system into regular use and to integrate OSH and HP into this system, employees and managers in the high-fidelity departments could concentrate on integrating OSH and HP into an already well-known system.

One possible way to adapt the intervention to fit better with the departments that had a poorly implemented quality improvement system could have been to start with implementation of

this system. This should optimally have been preceded by an analysis elaborating barriers to implementing the system (Baker, R. et al., 2015). The fact that they had not yet managed to implement the system, even though the nature of it allowed for adaptations' being made to fit the local conditions, indicated that there might have existed barriers for implementation. It is likely that these departments needed additional support, such as from the kaizen coordinator, in putting the system into use (i.e., tailored implementation) (Baker, R. et al., 2015). However, the resistance to implementing the quality improvement system also raises the question whether the existing system was the best method for all departments. Perhaps flexibility concerning the choice of quality improvement system could have facilitated the quality improvement work.

7.1.4 Changes occurring during the intervention

Some discrete contextual factors, including change of line manager and concurrent projects, were also found to influence outcomes. Changes in management occurred in study II and were found to negatively influence outcomes. This is likely to be connected to the crucial role that line managers have in implementation of interventions (Nielsen, 2013; Randall et al., 2009). New managers need to handle several competing interests, including the need to familiarize themselves with a new staff group, with the work processes at the department as well as with the intervention. As such, a new manager may need more time to get acquainted with the intervention before being able to fully support employees in implementing the changes. Furthermore, it has been argued that it takes time for employees to build trust and to be comfortable with sharing their own views and opinions with a new manager (Nielsen & Miraglia, 2017). This could particularly hinder implementation of participatory interventions, such as the interventions in this thesis, as they are built upon employees' and managers' co-creating the intervention by discussion, reflection and problem solving.

Concurrent changes are generally undesirable, but highly frequent, when conducting workplace interventions. In study I an attempt was made to find "stable" workplaces that would not undergo any changes during the intervention. However, despite this, changes in management and discussions concerning downsizing occurred during the intervention, which illustrates the impossibility of controlling organizations and intervention groups in organizational research (Nielsen & Miraglia, 2017). Even if it were possible to find stable organizations for an intervention study, the results from such an intervention would likely have limited generalizability (i.e., external validity) (Griffiths, A., 1999) as organizations, not least in healthcare and residential care for older people, face continuous changes. Therefore, it could be argued that instead of trying to avoid concurrent changes, there is a need for researchers to be aware of how concurrent changes may influence outcomes and to integrate concurrent changes in the planned intervention and in evaluation frameworks (Frykman, Hasson, Athlin, & von Thiele Schwarz, 2014; Nielsen, Taris, et al., 2010). By planning for potential changes in advance and monitoring the discrete context during the intervention, potential threats of concurrent changes that may hinder intervention implementation can be detected and activities to avoid them can be undertaken (Frykman et al., 2014). Actions that

could be used to avoid this are likely to differ depending on the type of change (e.g., changes in management, concurrent projects, or restructuring or downsizing) and should be investigated in further studies. However, integration of an intervention into already existing systems and structures ties the intervention to stable parts of the organization, thus possibly making the intervention less vulnerable to changes in the organization.

7.2 INTERVENTION AND IMPLEMENTATION

7.2.1 Initiation, roles and ownership

The three interventions differed in how they were initiated. Study I was initiated by senior management and researchers, study II was initiated and co-created by a local project group at the hospital together with researchers and study III was initiated by senior management. One challenge when an intervention is initiated from a higher level in the organization than where it will be implemented is to establish ownership of the intervention at lower levels in the organization (Biron et al., 2010). This was evident in study I, in which neither line managers nor staff perceived themselves as owners of the intervention or responsible for its sustainability (i.e., that reflections about work practices and improvement efforts were continued after the active intervention phase with study circles and workshops had ended). While staff expected the line managers and registered nurses to make changes in work practices based on what was learned from the intervention, managers were uncertain whether it was them, the external study circle leader or higher management who was responsible. This illustrates the challenges with establishing ownership for an intervention when the intervention is initiated and conducted by others than the ones who are involved in the intervention. This could possibly have been improved by involving line managers and employees more explicitly in the process of designing and implementing the intervention (von Thiele Schwarz, Richter, & Hasson, planned publication 2018).

External support may increase commitment to workplace learning (Gustavsson, 2009); however, in study I the use of external study circle leaders seems to have accentuated the perception that someone else was responsible for the intervention and its sustainability. It has been argued that external consultants need to assure that an infrastructure for continuing the intervention is established before withdrawing their support and leaving the responsibility for maintaining the intervention to the local stakeholders (Dahl-Jørgensen & Saksvik, 2005). The workshops in study I—in which managers and employees discussed what had come up during the study circles and made explicit plans for how that should be used to improve work practices—were one way to plan for the sustainability of the intervention that could possibly have increased ownership. Despite this, little happened after the external study circle leaders withdrew. One possible explanation was that explicit plans for how and when the intervention should be followed up and the improvement plans should be implemented were missing. Moreover, no one was assigned formal responsibility for these parts. Thus, clearly defined roles for the stakeholders involved were lacking (Biron & Karanika-Murray, 2014; von Thiele Schwarz et al., 2016). Perhaps greater involvement by senior managers in following

up on the intervention and in the implementation of improvement plans could have increased the sustainability of the intervention.

Study III was also initiated by senior management. However, this study used internal facilitators instead of external facilitators as in study I. Internal facilitators (e.g., local champions who are actively involved in implementation) have been identified as a determinant for successful implementation (Damschroder et al., 2009; Helfrich, Weiner, McKinney, & Minasian, 2007). The lack of process data permits limited conclusions concerning how the initiation may have influenced intervention implementation and outcomes in study III. However, based on previous research indicating the benefits of local champions, it is possible that the use of internal facilitators may have helped increase local ownership of the intervention at the participating centers and thereby limited some of the challenges that may result from a top-down implementation process and from the large number of participating centers. Possibly the establishment of ownership in study I could have been helped by using internal facilitators instead of or in addition to external facilitators.

In study II it was clearly emphasized from the start that the stakeholders at the hospital owned the intervention rather than the researchers. This was also displayed by the co-creation of internal (e.g., workshops for managers and key drivers of change at the intervention departments) and external (e.g., collaboration in external communication about the project) intervention activities by the local project group and researchers. Despite this, the hospital stakeholders, especially initially, referred to the intervention as the researchers' project. Ownership of the new way of working gradually increased among the stakeholders, and at the end of the project they had expanded to use the integrated approach in the control departments as well as integrating additional processes into the quality improvement system (A. Berg, personal communication, 27 June 2017). These developments indicated the successful creation of local ownership and highlighted the importance of letting the process of creating local ownership take time.

Possible facilitators for this were the gradual withdrawal of external support during the intervention as well as the active stakeholder involvement at all levels in the organization (senior management, the project group, line managers and employees) (Nielsen & Randall, 2013). The successful creation of local ownership may also be related to intervention design. It has been suggested that integrating organizational-level occupational health interventions with strategic management and organizational practices could be a promising way of fitting an intervention into an organization (Bauer & Jenny, 2012; Nielsen, Randall, et al., 2010; von Thiele Schwarz, Augustsson, et al., 2015; von Thiele Schwarz et al., 2016). Thus, this can help make the intervention a part of the organization, owned and managed by it and decreasing the risk of the intervention's being considered a temporary, sidelined activity (von Thiele Schwarz & Hasson, 2013; von Thiele Schwarz et al., 2016).

As indicated above, efforts were made in all the intervention projects to ensure local participation and ownership (e.g., an extensive needs analysis, a steering group and workshops where improvements plans were made [I], a co-creation approach, high degree of employee involvement, gradual withdrawn of external support and integration of the intervention into an organizational system [II], a network model with local workshop facilitators [III]). However, it should be noted that there were different prerequisites for ensuring participation and ownership. For instance, it is likely to be more challenging to create local ownership in 78 primary care centers, than in one hospital.

7.2.2 Highly motivated change agents

In study II the high implementation fidelity departments had employees who were highly motivated in the key roles of the intervention, which supports the importance of the drivers of change when implementing workplace interventions (Nielsen & Randall, 2013; Nytrø et al., 2000) and raises the question of how to recruit them. Recruiting drivers of change for a specific intervention, such as in studies I and III, has the advantage of ensuring that they are dedicated and willing to engage in that particular intervention. On the other hand, drivers of change for a specific intervention (e.g., an intervention-specific steering group) are by definition temporary and may not be well positioned to make sure that the intervention is aligned with other organizational processes and structures (von Thiele Schwarz et al., 2016).

In study II, already existing roles were expanded. This may help to ensure sustainability of the intervention and help the alignment into other processes and structures of the organization (von Thiele Schwarz et al., 2016). However, the use of already existing roles and groups also implies that the roles change to involve responsibilities and tasks that may not have been agreed upon by the person holding the original role. This was the case in the low-fidelity group where employees in general were skeptical toward the quality improvement system and not particularly involved in the quality improvement work. The intervention implied that employees who had agreed to be local health representatives based on an interest in HP issues were now expected to take responsibility also for the quality improvement work, which they were reluctant to do. This may have limited their motivation to drive the intervention. Thus, it should be considered how roles change in an intervention and how these new tasks and responsibilities fit those who hold the roles. Nevertheless, the use and expansion of existing roles and groups have been recommended above establishing intervention-specific roles and groups. This include adding formal responsibilities to the job descriptions of local employees and managers, such as responsibilities for monitoring and follow-up (von Thiele Schwarz et al., 2016). This could have been one possible way to improve the sustainability of the intervention in study I where the sustainment of the intervention was unsuccessful, at least partly due to lack of ownership and unclear responsibilities among line managers and staff.

7.2.3 Line managers

Employees' perceptions of line managers' support for the intervention, as well as managers' attitudes and actions related to the interventions, influenced implementation outcomes (II)

and intervention outcomes (I). In study I, managers' attitudes negatively influenced their actions related to the intervention. Managers perceived the intervention to be a time-limited individual learning opportunity for staff and lacked incitements for taking actions to support the transfer of individual learning to organizational learning. Furthermore, managers considered staff personalities to be the most important resource in nursing, which is in line with previous findings in the context of care for older people (Törnquist, 2004). This implied that staff development may have been considered less important. These findings emphasize the importance of investigating line managers' attitudes concerning an intervention before it is implemented.

The managers further expressed a lack of competence for leading the implementation of workplace interventions. It is possible that the managers needed support in developing a role to facilitate learning at the workplace (Gustavsson, 2009). Possibly, the managers could have benefited from pre-intervention training (e.g., training in intervention-specific leadership behaviors) in order to effectively drive the implementation (von Thiele Schwarz et al., 2016). It could be argued that given their vital role and the substantial responsibilities that rest on managers when it comes to implementing interventions, it should be investigated whether they have the competence required for doing so in an efficient manner. Furthermore, all managers may not be ready for an intervention and their role in its implementation but may need support before and during the intervention in how to lead the implementation.

In a similar manner, in study II employees' perception of their managers' support for the intervention, the quality improvement system and HP influenced the level of implementation fidelity. Departments with high support from managers also had higher implementation fidelity. One explanation is that manager support affected employees' opportunities to participate in the intervention. For example, line managers have been found to obstruct participation by limiting the time allocated to the intervention (Dahl-Jørgensen & Saksvik, 2005). Another explanation may be related to employees' incentives for spending time and effort on the intervention. Employees are unlikely to pursue an implementation that they feel is neither supported nor rewarded, but may instead focus on other tasks that are. Priority and a clear direction are crucial for employees to know what to focus on (Frykman, von Thiele Schwarz, Muntlin Athlin, Hasson, & Mazzocato, 2017; von Thiele Schwarz & Hasson, 2013). Furthermore, it has been shown that a positive implementation climate (i.e., a climate where implementation of change is expected, supported and rewarded) (Klein & Sorra, 1996) is related to implementation effectiveness (Jacobs et al., 2015). Line managers are vital in creating such a climate by expressing expectations that employees should participate in intervention activities, providing support that enables participation and rewarding participation in intervention activities.

Altogether, the findings suggest that *managers' attitudes* and *actions* as well as *employees' perception of manager support* in relation to the intervention are all important to monitor in conjunction with workplace interventions.

7.2.4 Participation

All interventions had a participatory design. However, participation was only evaluated in study II. The results showed that employees in the high-fidelity group reported having better opportunities to influence the intervention as well as being more involved in how HP was conducted in their department. Furthermore, employees in the high-fidelity group also participated more in the quality improvement work in general and to some degree also in the intervention activities compared to employees in the lower fidelity groups. It is possible that greater opportunity to influence the intervention implied a greater fit between the intervention and the context (LaMontagne et al., 2007) as well as ownership of the intervention (Giga, Noblet, et al., 2003) in the high-fidelity group. This may have enhanced employees' perception of the intervention as relevant, useful and beneficial, which may be connected to the higher implementation fidelity in this group. However, it is also possible that high implementation fidelity implied greater opportunity for employees to influence the intervention. The design of the study did not allow for testing the direction of this relationship.

Certain preconditions may be needed in order for participation to be successful, as illustrated in the implementation of a teamwork intervention where it was found that pre-intervention autonomy and job satisfaction predicted employees' participation in the development and implementation of the intervention (Nielsen & Randall, 2012). It is possible that because employees were used to participating in continuous improvement work, they also showed increased participation in HP and in the integration of HP and OSH with the quality improvement system. In addition, employees in the high-fidelity group reported higher mean values for group process (i.e., employees' perceptions of their work groups' problem-solving ability, efficiency and preparedness for new challenges) compared to the low-fidelity group. It is possible that a more positive group process in the high-fidelity group facilitated participation in the intervention as group problem-solving ability and preparedness for new challenges can be considered to be of great importance for engaging in an intervention focusing on continuous improvement of HP and OSH. However, employees' perception of their group as efficient, having a good problem-solving ability and ready for challenges may also be a result of their work groups' having worked with a participatory approach for quality improvements, thus developing these abilities.

7.3 MENTAL MODELS

7.3.1 Outcome expectancy and openness to change

Findings from study II showed that employees' outcome expectancy at baseline and perceptions of the intervention at six months differed between the fidelity groups, being more positive in the groups with higher fidelity. The results from study III showed that being more open to the change, both concerning the process of change and the content of change, at baseline predicted intervention outcomes at follow-up.

These findings support previous research emphasizing the importance of creating positive attitudes and expectations concerning intervention outcomes in order to increase motivation to participate in change efforts (e.g., workplace interventions) (Holt, Armenakis, Feild, & Harris, 2007; Kotter, 1995; Weiner et al., 2008). Outcome expectancy changed significantly from baseline to six months' follow-up in the high- and medium-fidelity groups but not in the low-fidelity group (study II). It is possible that employees in these departments had experienced positive initial effects of the interventions, which may have increased their positive expectation that the intervention could be beneficial to them.

It has been suggested that outcome expectancy may be especially important in the beginning of an intervention. However, as the intervention proceeds, these expectations are likely to be replaced with actual outcome experiences. Actual experiences of positive outcomes have been identified as important for long-term motivation and sustained behavior change (Frykman et al., 2014). The low-fidelity departments had most likely not experienced positive initial effects since the intervention had not yet been implemented. Instead they may even have experienced initial negative effects of their efforts to initiate change, such as, for example, additional work tasks related to the intervention. Negative initial consequences in combination with a lack of positive effects imply a risk for decreased participation and engagement in intervention activities, which points to the importance of continuously monitoring implementation progress and giving feedback to employees about progress until positive effects are noticed (Damschroder et al., 2009; Greenhalgh et al., 2004).

The findings in study III showed that employees' *openness to the process of change* predicted improvements in competence and use of acquired competence. *Openness to the content of change* at both individual and group level predicted use of acquired competence. Openness to the process of change had somewhat higher predictive value compared to individual- and group-level openness to change, indicating that employees' acceptance of the planned process (i.e., interactive learning in work groups) was more important than their being open to ICT in general. Furthermore, all aspects of openness better predicted the use of acquired competence than improvements in competence. This may be explained by the near to mandatory participation in the intervention. The learning workshops were conducted during working hours and employees were expected to participate. It is likely that participation led to improved competence whether employees had high openness to the process and content of change or not. However, in order to transfer the competence into actual behaviors at the workplace, more effort may be required from employees. In that case, openness to change is likely to be of higher importance.

The results that employees with a higher level of openness to the content and process of the intervention in study III achieved better outcomes may be understood in light of person-intervention fit. This means that an intervention is more likely to be effective for employees for whom the intervention has a good fit (Randall & Nielsen, 2012). The reasons for a good person-intervention fit may be several. An intervention may, for example, be a poor fit for employees who do not perceive a problem in their work environment or perceive that the

intervention is addressing the wrong problem (Nytrø et al., 2000). In study III people experiencing low openness to change may have been the people who already had a high competence in working with ICT and consequently did not perceive a need for the intervention. However, competence at baseline showed a weak positive correlation with *openness to the change process*, indicating that this did not seem to be the case. Furthermore, ICT competence at baseline was moderately correlated with individual-level *openness to the change content* (i.e., ICT). This is not surprising, as it would be natural that employees with high ICT competence would be positive about using ICT in their work and probably have positive experiences from using it, thus being more open to the change of content. Employees with lower ICT competence at baseline may not have experienced the benefits as clearly, as low competence may possibly have hindered optimal ICT use.

A possible explanation for how openness to the change process in study III influenced outcomes is related to another aspect of person-intervention fit. Perhaps the participatory intervention process fit better with some individuals' preferences than others. Although a participatory approach is recommended in workplace interventions (LaMontagne et al., 2007; Nielsen, 2013), all employees may not be equally comfortable with engaging in a participatory process (Nielsen et al., 2006). Learning strategies that do not fit with participants' preferred learning strategies may be ineffective (Flottorp et al., 2013). Thus, one possible explanation is that participants who had higher expectations and were more comfortable with the collective learning approach participated more in the learning process and consequently gained the most in terms of improved competence.

Group-level openness to change predicted self-rated use of acquired competence but not improvements in competence. This may be related to a higher dependence on the group when attempting to make use of learning compared to when developing new competencies. This is supported by the transfer of training literature that has identified support from colleagues and manager as an important determinant for transfer of training to actual work practices (Blume, Ford, Baldwin, & Huang, 2010; Grossman & Salas, 2011). On the other hand, the participatory process and co-creation of learning would imply that group-level openness to change would also be important for the development of competence. Again, it is possible that the near to mandatory intervention approach and the use of workshop facilitators implied that the groups' openness to change was less important for participating in the learning workshops and thereby improve competence.

The impact of work group openness to change on intervention outcomes suggests that creating shared positive mental models for an intervention may be a powerful way to achieve positive intervention outcomes. However, likewise, shared negative beliefs about an intervention could potentially lead to implementation failure.

7.4 IMPLICATIONS FOR PRACTICE AND RESEARCH

The findings from the three studies have implications for the planning, implementation and evaluation of workplace interventions, which may facilitate practitioners' and researchers' work with workplace interventions. This section highlights the main implications but does not claim to cover all aspects that must be considered in the planning, implementation and evaluation of workplace interventions. For an overview of the implications see Figure 6.

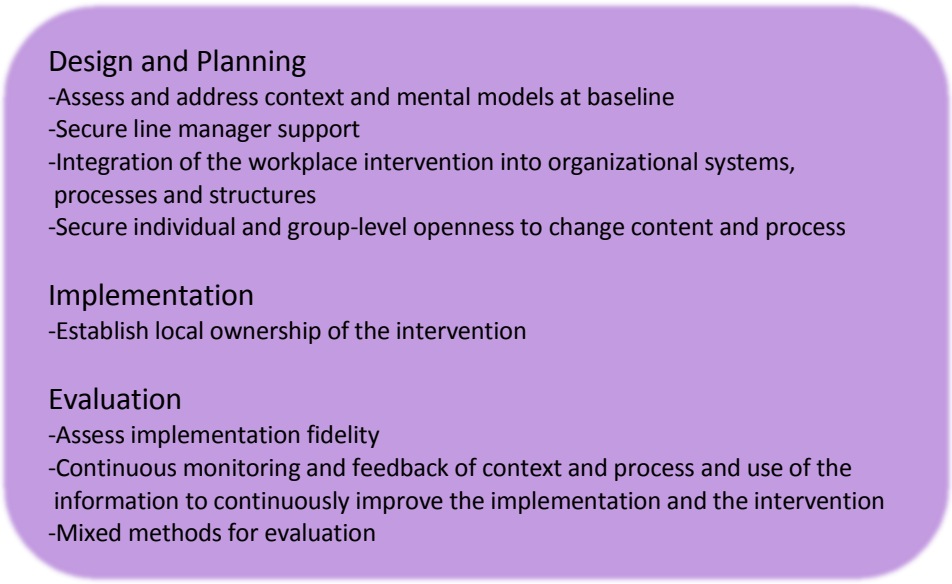

Figure 6. Overview of implications for the design and planning, implementation and evaluation of workplace interventions.

7.4.1 Design and planning

7.4.1.1 Assess and address context and mental models at baseline

The influence of contextual factors and participants' mental models (e.g., openness to change) on implementation and intervention outcomes highlights the importance of assessing these factors before the intervention is conducted. This information can be used to improve the likelihood of successful implementation and intervention outcomes. Since intervention outcomes depend on the intervention content, the context and the implementation process, one or several of these aspects can be modified to change outcomes. This includes tailoring the intervention to fit the context and/or adjusting the context to fit the intervention, i.e., improving environment–intervention fit. This may also be achieved through tailoring the intervention to fit the mental models of the participants, i.e., enhancing person–intervention fit (Randall & Nielsen, 2012), or through tailoring the implementation strategies (Baker, R. et al., 2015). Tailored implementation could, for example, include making supportive interventions, such as efforts to enhance openness to change or leadership training in implementation, before implementing the intervention. Both assessment and actions are best done at department or group level since variation within an organization is common.

7.4.1.2 Secure line manager support

Line managers had a great influence on the outcomes; it is recommended that measures are taken to secure line manager support for interventions. Line managers' attitudes and beliefs about the intervention should be investigated prior to its implementation, for these may influence line managers' support and engagement. If managers hold negative attitudes of the intervention, how to increase manager buy-in should be considered (e.g., by listening to managers' misgivings and trying to find solutions to them). Managers may be hesitant with respect to an intervention for several reasons; for example, they may have correctly identified that the intervention does not fit the local context, they may perceive that there is no need for the intervention, they may feel that they do not have the competence needed to drive the implementation or they may have so many competing projects and tasks that another project may feel impossible to handle. Thus, line managers' reactions to the intervention may contain a lot of important information. Similar to what was described in the previous section, the actions that should be taken depend on the reason underlying the hesitancy.

Furthermore, it is worthwhile to recognize that line managers may need tailored support in order to be able to drive implementation. This could include intervention-specific leadership training (von Thiele Schwarz et al., 2016). Additionally, attention should be paid to the fact that line managers are part of a larger organization and they need support, clear direction and guidelines regarding how to prioritize from senior management. An important prerequisite for line managers' involvement is that the benefits of the intervention for their department, and possibly also for them personally, are clear and aligned with their needs. One way to involve line managers in workplace interventions is to integrate the intervention with systems, processes and structures that the line managers are handling in their daily practice in order to minimize additional and isolated tasks.

7.4.1.3 Integration of the workplace intervention into organizational systems, processes and structures

Aligning workplace interventions with other work structures, systems and processes in the organization may offer several advantages. First, this alignment increases the fit of the intervention and the environment (Randall & Nielsen, 2012). Second, it clearly illustrates in what way the intervention is relevant for organizational outcomes (von Thiele Schwarz & Hasson, 2013; von Thiele Schwarz et al., 2016). Third, it reduces the risk of conflicting work processes that hinder the implementation. Fourth, it reduces the risk of unintended consequences, e.g., that a change aimed at increasing productivity constrains the working conditions for employees (von Thiele Schwarz, Augustsson, et al., 2015). Thus, even if the intervention is not directly integrated with another work system, as was the case in study II, it is beneficial to consider how the intervention can be aligned with other systems and processes and to show how the intervention can be valuable for improving work conditions and employee health as well as for achieving organizational goals (von Thiele Schwarz & Hasson, 2013; von Thiele Schwarz et al., 2016). However, when using preexisting systems and processes for integration, consideration should go to how well-established these are as

well as how employees and managers perceive them since both of these aspects are important for successful integration. If the existing system intended to be used for integration is not considered meaningful and/or not fully implemented prior to commencing the intervention, integration will likely be difficult. Thus, investigation of how the system is perceived and implemented in different departments should be carried out before integration is attempted.

7.4.1.4 Secure individual and group-level openness to change content and process

The findings from study III highlight the importance of assessing and addressing openness to change. It is recommended to measure, when possible, openness to change both for change content and change process as well as at the individual and group levels. If a substantial number of employees show low openness to the planned *content* of the intervention, it would be appropriate to consider whether the potential benefits have been communicated to the employees in a clear and persuasive way. This is vital for employees to understand the need for change and how the intervention can result in positive outcomes that are relevant for themselves and for the organization in which they work (Kotter, 1995). Openness to change is also likely to be affected by experiencing positive effects, as indicated in study II. Thus, another way to improve openness to change could be to ensure that initial positive effects are fed back to employees and managers. If many employees show low openness concerning the *process* of change, it is appropriate to consider whether several implementation strategies can be used or whether it is worth adjusting the planned process. Involving participants in planning the intervention process may help increase openness to change to both the content and process.

7.4.2 Implementation

7.4.2.1 Establish local ownership of the intervention

The findings pointing to the importance of local ownership of the intervention suggest that actions should be taken to establish ownership by involving senior management as well as line managers and employees in the design and implementation of the intervention. Steps should be taken to ensure that the stakeholders involved have clearly defined roles and that there is a plan for how and when the intervention should be followed up, including a clear indication of who is responsible for this. However, the individuals holding these roles also need to perceive them as valuable, meaningful and performable in order for ownership to be created.

Furthermore, as stated above, consideration of how the intervention can be aligned with other organizational systems, processes and structures that are frequently used may help to establish ownership of the workplace intervention. However, these need to be implemented and perceived as useful for integration to be possible.

7.4.3 Evaluation

7.4.3.1 Assess implementation fidelity

Continuous assessment of implementation success is crucial for determining how the planned process proceeds. Implementation outcomes are central here, especially implementation fidelity; this should be assessed in conjunction with implementation of workplace interventions since fidelity to the intervention is not always achieved and may differ even within an organization. In addition to being used for retrospective interpretation of outcomes or as a basis for effect evaluation using adapted study designs (Randall, Griffiths, & Cox, 2005), measurement of implementation fidelity should also be used to monitor progress and provide information on whether the intervention is on the right track or whether measures are needed to improve intervention implementation.

Existing frameworks for assessing fidelity may need to be adapted to fit the purpose of evaluating workplace interventions. It should be noted that implementation fidelity is likely to change over time (Hasson et al., 2012) and that fidelity, therefore, should be assessed at multiple points during the intervention.

7.4.3.2 Continuous monitoring and feedback of context and process

The traditional use of process evaluation has been to retrospectively explain intervention outcomes. It has offered limited help for organizations in which interventions have been conducted. Therefore, it is recommended that context and process be continuously monitored during an intervention. Collection of data concerning implementation process at multiple points enables the capture of changes in context and process over time (Moore et al., 2015) in addition to allowing for a more robust test of the relationships between the implementation process and intervention outcomes (Randall et al., 2009). The monitoring of context and implementation process should be continuously fed back to key stakeholders in the intervention, so the information can be used to continuously improve the implementation and the intervention and thereby increase the likelihood of positive intervention outcomes.

7.4.3.3 Mixed methods for evaluation

Mixed methods were shown to be a useful strategy for process evaluation in the studies presented herein. Thus, they are recommended when conducting process evaluations. Qualitative measures can be used to gather in-depth data on the context and implementation process that is difficult to measure quantitatively. Quantitative measures, on the other hand, are useful for capturing the perceptions of many employees as well as for measuring intervention outcomes. Quantitative process data can further be used to statistically analyze associations between process and outcomes. This could shed light on whether some process variables are especially important as well as how different factors interact.

7.5 METHODOLOGICAL CONSIDERATIONS

A range of choices and considerations have been made during the process of conducting the three studies included in the thesis. Some choices have been made based on considerations of the best methods to answer the research questions of interest while others have been guided by practical feasibility. All these decisions have implications for the internal and external validity of the findings. In the following section, some general methodological considerations will be discussed. More specific methodological considerations for the studies are found in the original published studies.

7.5.1 Choice of designs

All studies had a longitudinal design, which is an important strength when studying changes. We were able to study context and process factors prior to the outcomes in two of the studies (II, III). This offered the advantage of decreasing the risk of retrospective sense making (e.g., when participants try to find explanations of the effects of the intervention, or the lack thereof) compared to assessing the process during follow-up, on the same occasion as the outcomes (Weick, Sutcliffe, & Obstfeld, 2005). The use of self-reporting to assess both independent and dependent variables implies a risk for common method bias (i.e., that variance can be attributed to the measurement method rather than to the constructs being measured) (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). However, this risk was decreased by the use of different methods for measuring independent and dependent variables in study I and partially in study II. In study III, which relied on self-reported questionnaire data only, measures to assure anonymity of responders coupled with the longitudinal design decreased the risk of common method bias (Podsakoff et al., 2003). More objective measures of outcomes may have further lowered the risk for common method bias.

Two of the *interventions* (I, II) had quasi-experimental designs; however, in *study* II, only the intervention group was included since implementation fidelity and process factors could only be assessed in this group. Study III had a one-group pre-post design since the organization wanted all departments to be able to take part in the intervention at the same time. This is a common reason for not being able to use comparison groups in organizational research (Nielsen & Miraglia, 2017). Nevertheless, the pre-post design allowed for baseline measurement of process and outcomes, which is a strength compared to measuring process and outcomes at follow-up only. A comparison group is particularly important when evaluating the effectiveness of interventions and when establishing causal relationships. However, in the studies in this thesis, comparison groups may be considered less important, for the aim was to investigate the influence of context and process factors on outcomes, requiring exposure to an intervention to allow for study.

7.5.2 Choice of methods for data collection

In study III, process and outcomes were measured using questionnaires. This, in combination with a large sample size of units and individuals, allowed for statistical tests of the relationship between process and outcomes. This was not possible in the other studies for

which mixed methods were used. For its part, the use of mixed methods provided a more comprehensive understanding of the context and the implementation process than the use of one data source alone could have. It has been argued that process evaluation of interventions in organizations requires the use of mixed methods in order to capture participants' perceptions about the intervention (quantitative data) and actual observations or information about the context and implementation (qualitative data) (Nielsen & Randall, 2013). In this thesis, mixed methods served both as complementary—i.e., the different data sources provided complementary information about the context, process and outcomes—and confirmatory—i.e., the data was used for triangulation—purposes (Creswell & Plano Clark, 2011).

Using questionnaires to assess context and process in the studies had advantages, such as asking the entire study population about these factors (II, III) as well as allowing for statistical linking between process and outcomes (III) (Abildgaard, Saksvik, & Nielsen, 2016). The qualitative methods (i.e., semistructured interviews and documents) enabled the gathering of profound information about both contextual factors and process factors that could not have been assessed by questionnaires, e.g., discrete contextual factors including changes in management and omnibus contextual factors, including information on existing work practices.

7.5.3 Choice of outcomes and context and process factors

Another important aspect to consider is whether the correct outcomes, context and process factors were assessed and, if so, whether they were assessed using reliable and valid scales. In study I, an inductive analysis of contextual and process factors was used to investigate the lack of effects. Thus, the factors were not specified in advance, decreasing the risk of overlooking to include relevant factors. The process factors measured in study II were guided by a framework of what factors may be important to include in evaluations of interventions conducted in organizations (Nielsen & Randall, 2013) as well as by a scale for measuring process (Randall et al., 2009). This has rarely been the case in process evaluation of workplace interventions (Murta et al., 2007). The framework and scale were helpful in evaluating factors influencing implementation fidelity; our findings support the notion that the proposed factors may impact outcomes of workplace interventions. Furthermore, the risk of overlooking to include important factors in the process evaluation was decreased by using the framework and scale in combination with semistructured interviews about the implementation process. Another important advantage of using a preexisting framework to guide the evaluation is that previous knowledge can be built upon. This facilitates accumulation of knowledge across studies. Given the knowledge that has been developed during the last few years regarding factors that may be important in relation to implementation of interventions and the advantages of using of a framework for evaluation, it is suggested that process evaluations of workplace interventions be guided by an evaluation framework, e.g., the framework proposed by Nielsen and Randall (2013).

Study III focused on one process factor: openness to change. Based on the increased understanding of the potential influence of participants' perceptions on interventions, an improved understanding of how openness to change may impact outcomes of workplace interventions is valuable. However, the focus on openness in study III does not mean that this was the only factor influencing outcomes or that we regarded this to be the only important factor. Rather, the argument is that openness to change should be further evaluated in relation to other process factors.

The choices of outcomes may also raise some questions. In study I, the intervention was unsuccessful in improving organizational learning, which could imply that a formal learning intervention was not enough to impact organizational learning in the workplace. Nevertheless, another study evaluating the effectiveness of the same intervention found improved individual outcomes, such as individual behaviors, in care provision but no improvements in caring climate or the opportunities to provide more person-oriented care (Beck et al., 2015). Similar to our results, this indicates that the intervention improved individual-level outcomes but was ineffective in improving organizational outcomes. This could be explained either by program failure or implementation failure. Our analysis of context and process factors indicated implementation failure when it came to the organizational aspects of the intervention.

In study II, implementation fidelity was evaluated in line with the recommendation to evaluate implementation outcomes in addition to intervention outcomes (Nielsen & Abildgaard, 2013; Proctor et al., 2011). Implementation fidelity has been associated with better outcomes (Abbott et al., 1998; Blakely et al., 1987; Dane & Schneider, 1998; Hansen et al., 1991; Rohrbach et al., 1993); thus, it is important to understand how context and process factors influence implementation fidelity. The intervention outcomes of study II have been evaluated and presented elsewhere (Astnell et al., 2015; von Thiele Schwarz, Augustsson, et al., 2015).

7.5.4 Choice of instruments

It should be noted that all outcomes in the thesis were measured using employees' self-ratings (implementation fidelity in study II was, however, also evaluated with document analysis). For example, employees' competence was evaluated by employees rating their own competence at baseline and at follow-up. This raises the question of the extent to which such a measure captures true competence. The use of pre-posttests measuring self-reported competence introduces the risk for response-shift bias which is a change in participants' metric for answering questionnaires from pre- to posttest due to a new understanding of the concept being studied (Howard & Dailey, 1979). Thus, it is possible that participants changed their understanding of ICT and of their initial ICT competence after participating in the intervention. This would most likely have resulted in an underestimation of the effects on competence when comparing the pretest and posttest (Rohs, 1999). Nevertheless, highly specific items were used rather than an overall assessment of competence which may have reduced the risk for response-shift bias.

Moreover, objective measures may not be feasible for large study samples, as was the case for the current study. Still, future evaluations of workplace learning interventions should strive to include more objective measures in addition to self-reporting when possible, such as pre- and posttest of competence. Also *use of acquired competence* was measured using self-reports. Measures of transfer of training (e.g. use of acquired competence) has shown stronger relationships with influencing variables, such as motivation, than transfer measures based on others' rating (Blume et al., 2010). Thus, different results could have been obtained if more objective measures had been used, such as observations of actual ICT use based on data logs. More objective measures are recommended in future studies evaluating the effects of ICT training as well as in other workplace interventions.

Attempts were made to use previously validated scales to investigate process and outcomes. DLOQ used in study I were previously validated and found to have good validity (Yang et al., 2004). However, DLOQ had not previously been validated in a Swedish context. The scale was translated using a back-translation technique (Maneesriwongul & Dixon, 2004), and a minor pilot test of the translated scale was conducted. In study II, two previously validated scales were used to measure process. The IPM scale measuring process was adapted to fit the context of the intervention, which is a procedure recommended by the scale developers (Randall et al., 2009). Due to the need to keep the questionnaire relatively short to assure a high response rate, some process factors were assessed using single items. For example, readiness for change was assessed with one item measuring outcome expectancy included in the readiness-for-change scale of the IPM. Thus, the conclusion concerning the potential influence of readiness for change on implementation fidelity is limited to outcome expectancy. Similarly, in study III, openness to the process of change was measured with the readiness scale from the IPM. However, only three of the proposed four items in the scale were used. The item measuring self-efficacy to implement change was omitted due to a request from the organization to keep the questionnaire short. This should be included in further analyses of openness to change in workplace interventions. In study III, there was no available scale for measuring competence. Consequently, a new scale was developed following a structured process (Savage et al., 2011). The scale was pilot tested and found to be relevant and acceptable by those answering it. However, it has not been exposed to any further validation.

7.5.5 Participants

All employees in the participating organizations were invited to answer the questionnaires except for employees on long-term leave (e.g., parental or sick leave) and hourly-wage employees. Hence, the entire population could be asked about the intervention process. Response rates were quite high for study I and study II, which increased the internal validity of the findings of these studies. Study III also had a high response rate at the baseline and a fairly high response rate at follow-up. However, due to the use of a panel sample with employees who had responded to both questionnaires as well as provided answers to all relevant predictor and outcome variables, the response rate for the panel sample was only 41

percent. A drop-out analysis showed that dropping out was predicted by younger age, being a physician and low openness to the change process. The fact that younger employees dropped out more frequently may be explained by higher job mobility in this group. The higher attrition among physicians may be explained by physicians' lower openness to the change process at baseline, which was also a significant predictor of nonresponse at follow-up. This is in line with previous research linking higher readiness for change to higher intervention participation (Cunningham et al., 2002). Nevertheless, it is important to reflect on how this may have influenced our results. The higher drop-out rate among employees with lower openness to the process of change implied a smaller variation for this predictor in the study sample. Thus, the effects of employees' openness to the change process with respect to intervention outcomes may be slightly underestimated.

Interviews were conducted with all line managers in the intervention group in study I and II as well as with a sample of employees representing all residential care facilities (I) and departments (II) in the intervention group. The use of more than one source (i.e., managers and employees) provided a better understanding of the context and process. In study I, employees were selected using a convenience sample and the number of respondents was low. As such, the respondents may not have been representative of their work groups. Nevertheless, the fact that employees volunteered to be interviewed implied that the informants had something to say on the topic, i.e., the content, structure and implementation of the intervention. In study II, purposive sampling was used and line managers, kaizen and health representatives representing all intervention departments were interviewed. This sample was chosen because of their in-depth knowledge and understanding of the HP and quality improvement work as well as how the intervention had been implemented at their departments and potential barriers and facilitators for implementation.

The longitudinal interviews of managers in study I provided additional information about how the intervention had been sustained, which was vital for understanding the lack of intervention effects.

7.5.6 Choice of analyses

In study I, the intervention group and the control group differed significantly in their baseline values for the DLOQ indices. Due to these differences, we chose to create change scores for changes in DLOQ between the different measurement points and then to analyze if these change scores differed significantly between the intervention and control groups. However, it should be noted that the use of change scores does not control for baseline differences because of regression to the mean. Baseline values are negatively correlated with change (Vickers & Altman, 2001); thus, since the intervention group had higher scores at baseline, the use of change scores may have underestimated the effects of the intervention. This risk could have been avoided if analysis of covariance had been used instead (Vickers & Altman, 2001). However, interviews with line managers indicated that the differences between the intervention and control groups were not caused by chance and that the intervention facilities in fact were "better" than the control facilities at baseline. The fact that other studies

evaluating the intervention have also showed higher baseline values in the intervention group compared to the control group for different variables may also support this (Beck et al., 2015; Beck et al., 2014). This implies that the lack of differences between the intervention and control groups over time was not caused by regression to the mean. Moreover, the interviews indicated that the lack of effects was caused by implementation failure when it came to the organizational aspects of the intervention rather than as a result of underestimating effects.

Cross-sectional data from the three time points were used for creating the change scores. This means that individuals who did not answer all time points were included in the analysis, which could be considered a limitation. However, the high response rate combined with the fact that the change scores could only be created with data from at least two measurement points resulted in only a small difference between the sample used and the panel sample (i.e., the sample only including individuals who answered the questionnaire at all three time points). Nevertheless, I chose to rerun the analyses for the purpose of this thesis and found that when using the panel sample, the results were the same as those presented in the paper.

7.5.7 Generalizability

Evaluations of organizational interventions have been criticized for focusing on evaluating *what works* and overlooking *how and why* interventions work. In the present thesis, the focus was on investigating the influence of context and process on outcomes, i.e., how and why interventions work. Such knowledge is important for the generalizability of workplace interventions.

The findings in this thesis are based on three participatory workplace interventions conducted in three healthcare and residential care for older people settings. They represent three different examples of workplace interventions and had some features common in workplace interventions (e.g., workshops for competence development) (Brown et al., 2002) as well as unique features (e.g., using an integrated approach) (von Thiele Schwarz, Augustsson, et al., 2015). The inclusion of three different studies in this thesis provided information on nuances in how context and process influence outcomes in such interventions. This increases the generalizability of the results. However, the context and process factors and the instruments and methods used to assess the aforementioned factors differed between studies. Consequently, the present studies did not test the generalizability of the findings by comparing the influence of the same factors operationalized in the same way across interventions and settings.

The workplace interventions were conducted in Swedish healthcare and residential care for older people. Sweden, along with the other Nordic countries, has been found to have a high level of employee involvement in work organization (e.g., the level of control that employees have over their work tasks or employee involvement in wider organizational decision-making) when compared to other countries in Europe (Eurofound, 2013). Thus, the participatory intervention designs used in the studies may be more easily applied in Sweden, where employees are used to being involved in decision-making. Moreover, the health and

social-care sector differ from other sectors, for instance, in that it employs a large percentage of women and entails patient interactions. This means that the findings may not be generalizable to other types of organizations. However, it should be noted that several of the factors that were found to influence implementation and intervention outcomes have also been suggested to be important for other types of interventions in other types of organizations (Damschroder et al., 2009; Nielsen & Randall, 2013).

The results in this thesis provide information concerning which factors could be important to include in process evaluations of workplace interventions and could be important to consider in the planning, implementation and evaluation of such interventions. That said, it is important to remember that the influence of context and process factors on outcomes may, to a certain degree, depend on the content of the intervention. Furthermore, the results do not provide any information regarding what factors would be redundant to include in process evaluations.

It is worth reiterating that the aim of this thesis was not to determine the effectiveness of the workplace interventions or to investigate what intervention content and components should be included in workplace interventions. Rather, the aim was to investigate context and process factors in relation to workplace interventions in order to increase understanding of these influence outcomes and thereby add to the existing knowledge on how to plan, implement and evaluate such interventions.

7.6 FUTURE RESEARCH

The methods used in the current studies did not allow for investigation of the interrelationships between factors. However, it would be relatively safe to assume that several of the investigated factors interacted in a way that facilitated or hindered implementation. The fact that the high-fidelity group in study II had overall favorable context and process factors may be one indication of this. It is also possible that some factors were more important than others or that some factors were only important in combination with other factors. This should be investigated in future studies. Furthermore, some factors may be particularly important during the beginning of an intervention or later in the intervention process. Thus, future studies should investigate when these factors matter during the intervention.

Another important way forward in improving the effectiveness of workplace interventions is to take advantage of the process evaluation for planning and implementing the intervention. In addition to analyzing the needs (i.e., needs analysis or risk assessment) of the organization and choosing intervention strategies depending on these needs, contextual and process factors should also be studied in advance to tailor the implementation strategies. Future research should focus on investigating how assessment of preintervention context and process factors can be used to tailor implementation strategies as well as to evaluate how the use of tailored implementation strategies influences implementation and intervention outcomes.

It is recommended that context and process as well as implementation outcomes be continuously monitored during interventions and subsequently used to improve interventions. Although such a process has the potential to increase the likelihood of successful outcomes, it poses several challenges in terms of evaluating the interventions. Future research should use evaluation methods that allow for the study of continuous change rather than static change.

8 CONCLUSIONS

The findings showed that contextual and process factors influenced the implementation and intervention outcomes. The factors that appeared particularly important in the studies were: stakeholder ownership (or lack thereof) of the intervention, environment–intervention fit (e.g., how well the intervention fitted the existing work practices and systems), line managers' attitudes, beliefs and actions concerning the intervention and employees' perceptions of the intervention, e.g., openness to change. It is thus suggested that these factors be considered when planning, implementing and evaluating workplace interventions.

This thesis highlights the multidimensionality of the *openness to change* concept. Employees' openness to the *content* and to the *process* of change, as well as the work groups' openness to change, may impact intervention outcomes. These findings need to be replicated in further studies. Nevertheless, the findings suggest that it could be beneficial to measure and address all these aspects of openness to change before any attempts to implement workplace interventions are made.

Moreover, this research revealed that implementation fidelity can vary substantially between workplaces, yet the same implementation strategies are used, and the same support is offered. This underscores the importance of continuously measuring the actual degree to which the intervention is implemented in practice in order to recognize potential differences and engage in relevant actions. This finding indicates that implementation strategies may need tailoring to fit the local contexts in an organization. The conceptual framework for implementation fidelity used in the current study was found useful and can guide future evaluations of fidelity in workplace interventions, although it may need to be adapted to specific interventions.

Overall, these findings suggest that successful workplace interventions are shaped by several factors related to the content of the intervention, the context in which the intervention takes place and the process by which the intervention is implemented. Thus, rather than waiting until after an intervention to evaluate why it succeeded or not, context and process factors should be taken into account already when planning and implementing an intervention. Workplace interventions in which context and process factors, as well as implementation outcomes, are continuously monitored and used to tailor the intervention may have greater potential to improve employees' work conditions.

9 SVENSK SAMMANFATTNING

Introduktion: Personal inom hälso- och sjukvård och äldreomsorg behöver ständigt lära sig nya saker och utveckla sin kompetens för att hänga med i den medicinska, teknologiska och sociala utveckling som pågår. Samtidigt upplever de en arbetssituation som karakteriseras av höga krav, ibland i kombination med otillräckliga resurser, t ex vad gäller kunskaper för arbetsuppgifterna, återhämtning, stöd och inflytande över sina arbetsförhållanden. Interventioner som syftar till att öka kompetens och lärande samt förbättra arbetsmiljö och hälsa har lyfts fram som ett sätt att förbättra personalens arbetssituation. Sådana interventioner är dock komplexa och svåra att implementera och utvärdera och har visats ha varierande effekt. Detta kan bero på att faktorer kopplade till kontexten där interventionen implementeras samt till implementeringsprocessen kan påverka effekterna av arbetsplatsinterventioner. Trots att flera faktorer som kan påverka implementeringen har identifierats har dessa sällan kopplats till utfallen av arbetsplatsinterventioner.

Syfte: Denna avhandling syftar till att undersöka hur kontextuella faktorer och processfaktorer inverkar på implementeringsutfall och interventionsutfall av arbetsplatsinterventioner inom hälso- och sjukvård samt äldreomsorg.

Metod: Avhandlingen baseras på utvärderingar av tre olika interventioner. Både kvalitativa och kvantitativa metoder användes för att samla in och analysera data om kontext, process och utfall. Studie I var en lärandeintervention som genomfördes på tre äldreomsorgsboenden. Sex boenden fungerade som kontrollenheter. Interventionen syftade till att öka personalens kompetens i att arbeta med palliativ vård samt till att förbättra arbetsprocesser i verksamheterna. Detta gjordes genom studiecirklar (n = 7) där undersköterskor och vårdbiträden diskuterade och reflekterade kring arbetsprocesserna kring palliativ vård. Enhetschefer och sjuksköterskor hade egna parallella studiecirklar där fokus låg på hur de kunde leda arbetet och stödja personalen i arbetet med palliativ vård. Dessutom ingick tvärprofessionella workshoppar (n = 3) där vårdpersonal och ledare (enhetschefer och sjuksköterskor) diskuterade det som kommit upp under studiecirklarna och utformade konkreta förbättringsförslag utifrån detta. Interventionens effekt vad gäller organisatoriskt lärande (dvs. personalens uppfattning om organisationens ansträngningar för att skapa möjlighet för kontinuerligt lärande, ett klimat som främjar ifrågasättande, feedback och experimenterande och samarbete i arbetsgrupperna) utvärderades med en enkät till all personal på interventions- och kontrollboendena innan interventionen startade samt vid 6- och 12 månaders uppföljning. Kontext och processfaktorer som inverkade på dessa effekter undersöktes med semistrukturerade intervjuer med vårdpersonal vid ett tillfälle (6 månaders uppföljning) och med chefer för boendena vid två tillfällen (6 och 14 månaders uppföljning).

Studie II var en intervention med fokus på hälsofrämjande arbete och arbetsmiljö som genomfördes på ett sjukhus. Sex avdelningar ingick i interventionsgruppen och sex ingick i kontrollgruppen. Interventionen syftade till att förbättra personalens arbetsmiljö och hälsa genom att integrera hälsofrämjande arbete och arbetsmiljöarbete i det existerande kvalitetsutvecklingssystemet, kaizen. Interventionen hade två kärnkomponenter: 1) All

personal skulle vara involverad i att identifiera problem och möjligheter till förbättringar vad gällde arbetsmiljö och hälsa på sin arbetsplats. Dessa noterades på så kallade kaizenlappar som sedan diskuterades i arbetsgruppen. Förslag till åtgärder togs fram, testades och utvärderades. 2) Alla förbättringar som genomfördes inom ramen för kvalitetsutvecklingssystemet, oavsett vilket område de berörde, analyseras utifrån hur de kunde komma att påverka personalens arbetsmiljö och hälsa. Följsamhet till dessa två kärnkomponenter utvärderades med enkäter till all personal på interventionsavdelningarna vid 6 månaders uppföljning och genom analys av kaizenlapparna. Kontext och processfaktorer som inverkade på följsamheten till interventionen undersöktes med semistrukturerade intervjuer med avdelningschefer och nyckelpersoner på samt med enkäter som administrerades till all personal på interventionsavdelningarna innan interventionen och vid 6 månaders uppföljning.

Studie III var en lärandeintervention som genomfördes på 78 vårdcentraler. Interventionen syftade till att öka personalens kompetens och användande av informations- och kommunikationsteknologi (IKT) som används inom primärvård och därigenom förbättra den psykosociala arbetsmiljön, minska stress och öka personalens anställningsbarhet samt förbättra vårdkvaliteten för patienter. Interventionen bestod av tvärprofessionella workshoppar som byggde på interaktivt lärande mellan deltagarna. Workshopparna leddes av interna workshopledare på respektive vårdcentral. *Individernas öppenhet för förändring* vad gällde både *förändringsprocessen* (workshopparna) och *innehållet i förändringen* (IKT) samt *arbetsgruppens öppenhet för förändringens innehåll* (IKT) mättes med enkäter som administrerades till all personal innan interventionen startade. Dessa faktorer användes för att predicera två olika typer av utfall, ökning av IKT-kompetens samt användning av denna kompetens i arbetet. Dessa utvärderades med enkäter till all personal innan interventionen och vid 18 månaders uppföljning.

Resultat: Resultaten visade sammantaget på att både kontextuella faktorer och processfaktorer hade en inverkan på implementeringsutfall (II) och interventionsutfall (I, III). Mer specifikt så förklarades avsaknaden av effekter vad gäller organisatoriskt lärande i studie I av ett lågt lokalt ägandeskap av interventionen, ett otillräckligt lärandeklimat, otillräckliga förutsättningar för förändring samt av enhetschefernas attityder och handlingar i förhållande till interventionen.

I studie II visade resultaten att följsamhet till interventionens två kärnkomponenter varierade stort mellan de sex interventionsavdelningarna trots samma implementeringsstrategier, information och stöd till alla avdelningar. Dessa skillnader förklarades av variation vad gäller faktorer relaterade till *kontexten* (att ha ett väletablerat kvalitetsutvecklingssystem, gruppsamarbete, chefsbyte), till *interventionen och implementeringen* (avdelningschefernas stöd för interventionen, upplevelse av tydlig information, nivå och upplevelse av delaktighet och deltagande, nyckelpersoners roll i interventionen), och deltagarnas *mentala modeller* (tilltro till att interventionen skulle leda till positiva effekter, positiv uppfattning av interventionsaktiviteterna). De avdelningar som hade en hög följsamhet till interventionen

uppvisade generellt mer positiva kontext- och processfaktorer jämfört med de avdelningar som hade lägre följsamhet.

I studie III predicerade individernas öppenhet för förändringsprocessen (workshopparna) och för förändringens innehåll (IKT) samt arbetsgruppens öppenhet för förändringens innehåll (IKT) före interventionen dess effekter efter interventionen. De individer som uppvisade högre *öppenhet för förändringsprocessen* hade ökat sin kompetens mer efter interventionen samt rapporterade i högre grad att de använde sig av kompetensen i sitt arbete. De individer som uppvisade högre *öppenhet för förändringens innehåll* rapporterade högre medelvärden för användande av kompetensen efter interventionen. Detsamma gällde även för *arbetsgrupper med högre öppenhet för förändringens innehåll*.

Slutsats: Sammantaget föreslår resultaten i denna avhandling att arbetsplatsinterventioner formas av flera faktorer relaterade till innehållet i interventionen, kontexten där de implementeras och implementeringsprocessen. Detta betyder att snarare än att vänta till efter en intervention med att utvärdera varför den gav de önskade resultaten eller ej bör kontextuella faktorer och processfaktorer tas i beaktande redan under planeringen och implementering av arbetsplatsinterventioner. Arbetsplatsinterventioner där kontext och processfaktorer kontinuerligt monitoreras och används för att modifiera och skräddarsy interventionen har sannolikt bättre förutsättningar att förbättra personalens arbetsförhållanden.

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