Integration of evidence-based practice in hospital nursing practice

A grounded theory study of clinical nurses' and their ward leaders' challenges and patterns of behaviour

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Summary

Background: In order to improve quality of care, patient safety, and disease outcomes, nurses and other healthcare professionals are requested to integrate evidence-based practice into their daily work. Despite extensive research aimed at facilitating evidence-based practice, it has not been sufficiently integrated into the nursing workplace. Several studies have focused on the determinants that facilitate or hinder the integration process. Fewer studies have focused on the process of integrating evidence-based practice into daily work. Thus, additional research regarding clinical nurses' and their leaders' challenges in integrating evidence-based practice, and the strategies used to resolve these challenges, is needed.

Aims: The overall aim of this doctoral thesis was to gain an understanding of clinical nurses' and their leaders' challenges and patterns of behaviour when attempting to integrate evidence-based practice in their hospital wards, and to understand their challenges in the use of evidence-based practice during clinical patient situations. The specific aims of the three studies included in this thesis were:

I: To generate a theory about the general patterns of behaviour that are discovered when clinical nurses attempt to integrate evidence-based practice into their daily work; and,

II: To explore the processes involved in two different strategies applied to integrate evidence-based practice to understand the complexities and challenges in clinical nurses' daily work better when they attempt to integrate evidence-based practice; and,

III: To generate a theory about patterns of leader behaviour that leaders are engaged in when attempting to integrate evidence-based practice into a clinical setting.

Methods and design: This study was conducted using classic grounded theory methodology. Data were collected from clinical nurses and their leaders from two distinct hospital wards in a large Norwegian hospital trust. Data from the nurses (63), which were comprised of specialist nurses (15), registered nurses (39) and assistant nurses (9), were obtained during ninety hours of participant observation. From this group of nurses, 18 clinical nurses participated in four focus groups and five ward leaders (head nurses, assistant head nurse and teaching nurses) were interviewed individually. Data were collected and analysed concurrently, and the analysis was performed using the constant comparative method. In

Studies I and II, data from observations and focus groups were used. In Study III, we used data from observations, focus groups and individual interviews.

Main findings: Our findings suggest that the clinical nurses managed their core tasks in patient treatment and care before they engaged in evidence-based practice and quality improvement. The theory "keeping on track" helps us to understand the clinical nurses' strategies to maintain the workflow and prioritize their tasks. The multidimensional evidence-based practice integration framework visualizes that it is necessary to address challenges at the individual and systems levels to promote evidence-based practice. Clinical nurses who learned evidence-based practice and strived to develop evidence-based guidelines experienced an increased awareness about the knowledge they used, but they also found it difficult to use new evidence-based knowledge in daily work. Clinical nurses who used some evidence-based knowledge through the huddle board did not visibly reflect on their knowledge use in the same way. At the individual level, clinical nurses in patient situations were found to use evidence-based practice to a certain degree. They had an intuitive approach to using knowledge, and were selective when they considered stepping away from the workflow to search for knowledge in situations that required them to consider how to resolve a problem. At the systems level, the clinical nurses' approach to evidence-based practice was mainly implicit and integrated into daily work, or explicit and organized as a parallel to daily work. Furthermore, the findings revealed that the pattern of leader behaviour in evidence-based practice integration was to create room for evidence-based practice and avoid overextending the clinical nurses. Their strategies made the leaders capable of adjusting their tasks and responsibilities to clinical practice to facilitate evidence-based practice integration. When involving and interacting with the clinical nurses, the leaders were more likely to manage the evidence-based practice integration without overextending the clinical nurses. The overall findings in this thesis may help clinicians and researchers to better understand clinical nurses' and their leaders' patterns of behaviour when they attempt to integrate evidence-based practice into daily work.

Conclusions and implications for practice: By using classic grounded theory methodology, we have developed theoretical perspectives that may contribute to the understanding of how to adjust evidence-based practice integration into daily clinical practice. In order to improve evidence-based practice used in clinical settings, organizational initiatives should be initiated at both the individual and systems levels. To enhance evidence-based practice integration,

organizational initiatives could include using integration tools, such as the huddle board, to facilitate the use of evidence-based guidelines. Such initiatives could be combined with efforts from leaders to highlight evidence-based practice in daily clinical situations. For example, the leaders could link critical reflections to the evidence-based knowledge that is tied to the huddle board. Such efforts would require leaders with an understanding of and competence in evidence-based practice. Furthermore, they would have to understand their role to involve actively highlight evidence-based knowledge in clinical settings. Likely, these interactions between leaders and clinical nurses will strengthen the clinical nurses' awareness of the knowledge they use in specific clinical situations and their abilities to prioritize which tasks to do (and not do) in daily patient situations.

Sammendrag

Bakgrunn: Det forventes at sykepleiere og annet helsepersonell integrerer kunnskapsbasert praksis i sitt daglige arbeid, for å forbedre kvalitet på behandling og pleie, styrke pasientsikkerheten og sikre bedre pasientutfall. Til tross for at det er utført mye forskning for å undersøke hvordan en kan stimulere til økt bruk av kunnskapsbasert praksis, har ikke kunnskapsbasert praksis blitt integrert i sykepleie i tilstrekkelig grad. I mange studier har fokuset vært på faktorer som fremmer eller hemmer bruk av kunnskapsbasert praksis. Færre studier har fokusert på selve prosessen med integrering av kunnskapsbasert praksis i daglig arbeid. Det er derfor behov for mer forskning for å undersøke utfordringer som kliniske sykepleiere og deres ledere har når de arbeider med integreringen av kunnskapsbasert praksis. Det er også behov for å se på hvordan de løser disse utfordringene i daglige arbeidssituasjoner.

Mål og hensikt: Hovedmålet med dette doktorgradsprosjektet var å få en økt forståelse av utfordringer og atferdsmønster til kliniske sykepleiere og deres ledere når de forsøker å integrere kunnskapsbasert praksis i sin hverdag i sykehusavdelinger, og å forstå deres utfordringer når de skal arbeid kunnskapsbasert i kliniske pasientsituasjoner. Hensikten med de tre studiene i denne avhandlingen var:

I: Å generere en teori om generelle atferdsmønstre som avsløres når kliniske sykepleiere forsøker å integrere kunnskapsbasert praksis i sitt daglig arbeid.

II: Å utforske prosessene i to ulike strategier som brukes for å integrere kunnskapsbasert praksis for å forstå kompleksiteten og utfordringene i kliniske sykepleieres daglige arbeid bedre, når de forsøker å integrere kunnskapsbasert praksis.

III: Å generere en teori om atferdsmønstre som ledere er involvert i når de prøver å integrere kunnskapsbasert praksis i en klinisk sammenheng.

Metode og design: Dette prosjektet er gjennomført med klassisk grounded theory metodologi. Data er samlet inn fra kliniske sykepleiere og deres ledere på to ulike geografiske steder i et stort norsk helseforetak. Sykepleierne (63) besto av spesialsykepleiere (15), autoriserte sykepleiere (39) og helsefagarbeidere/hjelpepleiere (9). Vi samlet inn data ved hjelp av observasjon av sykepleierne i 90 timer. Av disse sykepleierne deltok 18 kliniske sykepleiere i til sammen fire fokusgrupper og 5 ledere deltok i individuelle intervju. Lederne

besto av avdelingssykepleiere og fagsykepleiere, samt en assisterende avdelingssykepleier. Data ble samlet inn og analysert fortløpende, og analysen ble gjennomført ved hjelp av den konstant sammenlignende metode. Data fra observasjoner og fokus grupper ble brukt i studiene I, II og III. I studie III ble i tillegg data fra individuelle intervju med lederne brukt.

Hovedfunn: Funnene våre tyder på at kliniske sykepleiere håndterte det de så som sine kjerneoppgaver i behandling og pleie før de engasjerte seg i kunnskapsbasert praksis og kvalitetsforbedring. Teorien "keeping on track" hjelper oss til å forstå strategier kliniske sykepleiere bruker for å opprettholde arbeidsflyten og kunne prioritere sine oppgaver. Det multidimensjonale kunnskapsbasert praksis integrerings rammeverket synliggjør behovet for å adressere utfordringer på både individnivå og systemnivå for å fremme integreringen av kunnskapsbasert praksis. Kliniske sykepleiere som lærte kunnskapsbasert praksis og tilstrebet å utarbeide kunnskapsbaserte prosedyrer fikk en økt bevissthet i forhold til hvilken kunnskap de brukte. De erfarte også at det var vanskelig å ta i bruk ny kunnskap i daglig arbeid. De kliniske sykepleierne som brukte noen kunnskapsbaserte retningslinjer ved bruk av tavler reflekterte ikke bevisst over bruk av kunnskap på samme måte. Kliniske sykepleiere brukte kunnskapsbasert praksis til en viss grad i pasientsituasjoner på individnivå. Deres tilnærming til bruk av kunnskap var intuitiv, og de var selektive i forhold til om de var villige til å gå ut av arbeidsflyten for å søke svar på et spørsmål de ikke visste løsningen på. På systemnivå var sykepleiernes tilnærming til kunnskapsbasert praksis hovedsakelig implisitt og integrert i daglig arbeid, eller eksplisitt og organisert parallelt med daglig arbeid. Videre viste funnene at atferdsmønsteret til lederne i integreringen av kunnskapsbasert praksis var å etablere handlingsrom for kunnskapsbasert praksis uten å overbelaste de kliniske sykepleierne. Med sine strategier gjorde lederne seg i stand til å tilpasse sine oppgaver og ansvar til praksis for å støtte og veilede integreringen av kunnskapsbasert praksis. Lederne var bedre i stand til å håndtere integreringen av kunnskapsbasert praksis uten å overbelaste sykepleierne når de involverte seg og interagerte med sykepleierne. Funnene i denne avhandlingen kan hjelpe klinikere og forskere til bedre å forstå atferdsmønsteret til kliniske sykepleiere og deres ledere når de forsøker å integrere kunnskapsbasert praksis i sitt daglig arbeid.

Konklusjon og implikasjoner for praksis: Ved bruk av klassisk grounded theory metodologi, har vi utviklet teoretiske perspektiver som kan bidra til forståelsen av hvordan en kan tilpasse integrering av kunnskapsbasert praksis til daglig praksis. Organisatoriske initiativ kan iverksettes både på individnivå og systemnivå for stimulere bruk av kunnskapsbasert

praksis i kliniske situasjoner. For å styrke integreringen av kunnskapsbasert praksis, kan organisatoriske initiativ som innføring av risikotavler stimulere bruk av kunnskapsbaserte prosedyrer/retningslinjer. Kombinert med innsats fra ledere kan slike initiativ være med å synliggjøre kunnskapsbasert praksis i daglige kliniske situasjoner. For eksempel kan ledere koble kritisk refleksjon til de kunnskapsbaserte prosedyrene som er knyttet til risikotavlen. Slik innsats fra ledere krever at de har forståelse for og kompetanse innen kunnskapsbasert praksis. Det krever også at lederne har forståelse for sin rolle i å aktivt synliggjøre denne kunnskapen i daglige kliniske situasjoner. Det er mulig at slike interaksjoner mellom ledere og kliniske sykepleiere kan styrke bevisstheten til de kliniske sykepleierne om hvilken kunnskap de bruker i kliniske situasjoner, og hvor kunnskapen kommer fra. Dette vil også kunne påvirke deres evne til å vurdere hvilke oppgaver de skal prioritere å utføre og hvilke de ikke skal utføre i daglige pasientsituasjoner.

List of original papers

I. **Renolen, Å., Høye, S., Hjälmhult, E., Danbolt, L. J., Kirkevold, M.** (2018). "Keeping on track" – Hospital nurses' struggles with maintaining workflow while seeking to integrate evidence-based practice into their daily work: A grounded theory study. *International Journal of Nursing Studies,* 77: 179-188. doi:10.1016/j.ijnurstu.2017.09.006

II. **Renolen, Å., Hjälmhult, E., Høye, S., Danbolt, L. J., Kirkevold, M.** (2019). Evidence-based practice integration in hospital wards – the complexities and challenges in achieving evidence-based practice in clinical nursing. *Nursing Open,* 6: 815-823. doi:10.1002/nop2.259

III. **Renolen, Å., Hjälmhult, E., Høye, S., Danbolt, L. J., Kirkevold, M.** (2019). Creating room for evidence-based practice: Leader behavior in hospital wards. *Research in Nursing and Health*, 1-13. doi:10.1002/nur.21981

Abbreviations/Acronyms

CFIR	Consolidated Framework for Implementation Research
COREQ	Consolidated Criteria for Reporting Qualitative Research
EB	Evidence-based
EBM	Evidence-based medicine
EBP	Evidence-based practice
CASP	Critical Appraisal Skills Programme
HUDDLE	Healthcare Utilizing Deliberate Discussion Linking Events
KK	Kari Kjønsberg
NPT	Normalization Process Theory
PARIHS	Promoting Action on Research Implementation in Health Services

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1 Introduction

The use of evidence-based practice (EBP) has consistently been associated with higher quality treatment and care and improved patient outcomes (McGinty & Anderson, 2008; Melnyk, Fineout-Overholt, Gallagher-Ford, & Kaplan, 2012; World Health Organization, 2016). To improve healthcare, policy-makers worldwide require nurses and other healthcare professionals to implement EBP (Melnyk & Fineout-Overholt, 2015b; World Health Organization, 2016). Unfortunately, the implementation of EBP has been proven difficult, and practice has not changed in line with policy strategies and initiatives (Greenhalgh, 2018; Ioannidis, 2016). Patients today are not sufficiently provided with treatment and care based on the best available evidence, leading to overly large variations in healthcare quality (Institute of Medicine, 2013). During the last few years, several research studies have been conducted to investigate methods of promoting EBP implementation and, thereby, improve patient treatment and care. In nursing, a major aim of previous studies has been to identify facilitators or barriers to the integration of new research evidence into nursing practice (Cochrane et al., 2007; Estabrooks, Floyd, Scott-Findlay, O'Leary, & Gushta, 2003; Funk, Champagne, Wiese, & Tornquist, 1991; Sadeghi-Bazargani, Tabrizi, & Azami-Aghdash, 2014; Solomons & Spross, 2011). Several of the studies have been conducted using survey-based methods or other methods that investigate factors broken free from their contexts (Cochrane et al., 2007; Funk et al., 1991; Solomons & Spross, 2011; Wilson et al., 2015). It seems that research seeking to identify factors that facilitate or hinder the integration of new research evidence into nursing practice has failed to contribute to changes in practice. There is, therefore, a need to angle research methods in the direction of investigating the use of knowledge in a clinical practice context (Cochrane et al., 2007; Greenhalgh, 2018). Research has suggested that tailored strategies addressing specified determinants in an actual context may improve the implementation of EBP and, thereby, healthcare (Baker et al., 2015; Aasekjær, Waehle, Ciliska, Nordtvedt, & Hjälmhult, 2016). In a systematic review of both qualitative and quantitative studies, Greenhalgh, Robert, Macfarlane, Bate, and Kyriakidou (2004) sought to apply a social interactions perspective to better understand the processes occurring in clinical practice when clinicians attempt to integrate EBP into daily work. They stated that research must address the fact that people, often in dialogue with others, are active participants influencing how the implementation of innovations and the integration of new practices in

healthcare occur. For example, people experiment with innovations and evaluate them. They work with innovations and try to improve them or modify them to fit their own practice.

Research findings have contributed important knowledge regarding the determinants influencing EBP integration into clinical practice. Unfortunately, practice has not changed accordingly. Research has suggested that principles tailored to actual contexts and social interactions in practice have an impact on practice changes. Therefore, there is a need for more research to understand the processes occurring in practice when clinicians attempt to integrate EBP. Thus, the main purpose of this doctoral thesis was to gain an understanding of clinical nurses' and their leaders' challenges and patterns of behaviour when attempting to integrate EBP into hospital wards, and to understand their challenges in the use of EBP in clinical patient situations. Classic grounded theory was considered a well-suited methodology for investigating the social interactions, challenges, and strategies that clinicians use.

This thesis is structured into nine chapters. In Chapter 2, the background section starts with descriptions of EBP and the status of EBP integration into hospital clinical practice. The chapter ends with the rationale of the project. Chapter 3 offers an overview of the aim of the dissertation and the three aims of the sub-studies. In Chapter 4, the methodology used in the studies is presented, included reflections on preconceptions and epistemological stance. Research methods are presented in Chapter 5, which concludes with an outline of ethical approval and considerations. In Chapter 6, the findings from the three sub-studies are presented. Chapter 7 provides a discussion of the methodological issues, methods, findings, strengths, and limitations. The conclusions and implications for practice and suggestions for further research are presented in Chapters 8 and 9.

2 Background

This chapter starts with historical perspectives and definitions of EBP, followed by an elaboration on EBP in nursing care. Thereafter, the status of research evidence regarding EBP integration into hospital nursing practice is described. First, the focus is on theories, models, and frameworks aimed at promoting EBP integration. Next, relevant barriers and interventions in EBP integration are outlined. Then, a separate section describing the integration of EB guidelines is included, as this is central to the participants in the studies performed. Thereafter, the importance of leader behaviour and organizational culture in EBP integration are highlighted. The rationale of this project is described at the end of the chapter.

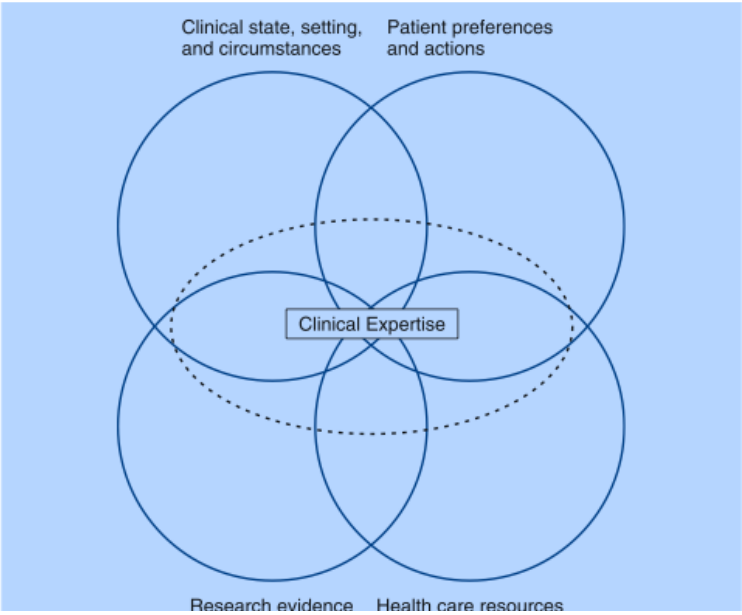
2.1 Historical perspectives and definitions of evidence-based practice

At McMaster Medical School in Canada, the term "evidence-based medicine" (EBM) was established in the 1980s to label the learning strategy using an explicit EBM framework. The learning strategy implied implementing the consulting and evaluating of research literature as a workable method for individual clinicians or clinical teams (Rosenberg & Donald, 1995). Later, EBM was introduced to provide the basis for effective clinical decisions by the systematic use of the best available scientific evidence (Davidoff, Haynes, Sackett, & Smith, 1995; Evidence-Based Medicine Working Group, 1992; Rosenberg & Donald, 1995). This development implied the more effective use of research literature by clinicians in medical decisions, and was characterized as a paradigm shift in clinical practice (Evidence-Based Medicine Working Group, 1992). Sackett, Rosenberg, Gray, Haynes, and Richardson (1996) explained evidence-based (EB) clinical decision-making as a combination of research evidence and other sources of knowledge. They defined EBM as "…the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients" (Sackett et al., 1996, p. 71). The basis of this definition is that individual clinicians are involving, and taking great care of, individual patients in considerations and systematically using the best evidence in a situation. Further, Sackett et al. (1996) described the practice of EBM as integrating individual clinical expertise with the use of the best evidence available to make decisions in care and treatment for the individual patient. They also specified that patients' choices should be integrated.

From the late 1990s, EBP was introduced into nursing (S. J. Brown, 2014). Several authors have published EBP books in relation to topics such as nursing research, education, and

clinical practice during the last 20 years (S. J. Brown, 2014; DiCenso, Guyatt, & Ciliska, 2005; LoBiondo-Wood, Haber, & Titler, 2018; Melnyk & Fineout-Overholt, 2015a; Nortvedt, Jamtvedt, Graverholt, Nordheim, & Reinar, 2012; Polit & Beck, 2016). Additionally, numerous studies have been published in established journals. During these years, the definition of EBP has been elaborated upon in the nursing literature. One definition of EBP is the integration of individual clinical expertise with the best available systematically obtained research evidence that fits the situation, considering patient preferences, and available resources (DiCenso et al., 2005; Polit & Beck, 2016; Sackett et al., 1996). In terms of content, this is identical to Sackett's definition of the practice of EBM. Further, DiCenso et al. (2005) have refined a model for EB clinical decisions, first developed by Haynes et al. (Haynes, Devereaux, & Guyatt, 2002). In this model, clinical expertise is characterized as the means of integrating the other components in the model. This model encourages a way of thinking, considering these components in decision-making: research evidence, the patient's clinical state, the setting and circumstances, patient preferences and actions, and health care resources (Figure 1).

Figure 1 Model for evidence-based clinical decisions



(DiCenso, Guyatt & Ciliska, 2005, Figure 1-1, p.5). Figure 1-1 was printed in *Evidence-Based Nursing: A Guide to Clinical Practice*, page 5. Copyright Elsevier 2005. It is printed in this thesis with permission from Elsevier. The Figure was modified from Figure 2 in: Haynes, R. B., Devereaux, P. J. & Guyatt, G. H. Clinical expertise in the era of evidence-based medicine and patient choice. (2002) *Evidence-Based Medicine*, 7 (2), p. 36-38. Copyright 2002. The Figure is reproduced in the modified form in this thesis with permission from BMJ Publishing Group Ltd.

Another view on EBP is described by Melnyk and Fineout-Overholt (2005, 2015b). They present EBP as a problem-solving strategy that integrates the best suitable research evidence with clinical expertise and patient preferences, whilst considering the available resources and local circumstances in clinical decisions (Melnyk & Fineout-Overholt, 2015b). The seven critical steps in the process of applying EBP in everyday activities, according to Melnyk and Fineout-Overholt's description (2015b), are: cultivate a spirit of inquiry, formulate a clinical question, search for the best research evidence, critically appraise the research evidence, integrate the research evidence into EBP in clinical decisions, evaluate the outcomes of practice changes, and disseminate the outcomes of the change.

The described definitions of EBP are articulated with small or no differences. Already in 1996, Sackett et al. (1996) highlighted the elements that are included in the newer definitions; the understanding of EBP in this thesis is based on the described definitions. EBP may apply in decision-making in the performing of EBP in individual patient treatment and care situations. EBP also appears in an organizational perspective in, for instance, the developing and integrating of EB guidelines to address patient needs in particular patient situations/populations (Polit & Beck, 2016). Working in line with EBP means providing treatment and care based on evidence. The concept of evidence in health care has been interpreted in relation to proof and rationality (Rycroft-Malone et al., 2004), mostly interpreted as research evidence and, more specifically, research evidence from quantitative approaches, testing efficiency in medical treatment (Evidence-Based Medicine Working Group, 1992; Kitson, 2002; Martinsen & Eriksson, 2009). Evidence is also about seeing and realizing, as well as the fact that what we know must be made visible and valid (Martinsen & Eriksson, 2009). As such, evidence relates to a broad range of knowledge sources. Evidence may also be objective knowledge from healthcare databases and expert opinions (S. J. Brown, 2014). Striving for combinations of use of suitable evidence from different research methods, clinical expertise, and patient experiences in a local context might be optimal in clinical decision-making in EBP (Rycroft-Malone et al., 2004).

To access the growing amount of research evidence, it is recommended that clinicians read rigorous summaries of actual findings, rather than reading single studies, assessing the quality and making conclusions themselves (S. J. Brown, 2014). Such systematic reviews are at the top of the evidence hierarchy for medical treatment, together with meta-analyses (DiCenso, Bayley, & Haynes, 2009; Sackett et al., 1996). The evidence hierarchy builds on the effort

made to facilitate access to updated high-quality research by filtering those studies of high quality from those of low quality. This implies that these pre-appraised resources represent the best research evidence, higher valued in the hierarchy (DiCenso et al., 2009). To support use of the pre-appraised research evidence, Brian Haynes (2001, 2006) at McMaster University proposed an "S pyramid" visualizing the levels of research evidence. The levels mentioned from the top-down are: systems, summaries, synopses of syntheses, syntheses, synopses of single studies, and studies (DiCenso et al., 2009). The principle of the pyramid is that summarized evidence is more rigorous than single studies, and that "quality-appraised" evidence is more rigorous than evidence not appraised (DiCenso et al., 2009). Further, the rigour of the methods used to produce the evidence is valued in the hierarchy, with randomized controlled trials ranked at the top and qualitative research ranked at the bottom (Polit & Beck, 2016). Nevertheless, the main importance is to ensure that the research evidence has been subject to scrutiny (Rycroft-Malone et al., 2004) and that an important issue in EBP is using the best-available evidence to answer the clinical question (Long, Gallagher-Ford, & Fineout-Overholt, 2015; Sackett et al., 1996).

Clinical expertise is essential for critical reflections and provides for the integration of the other components in EBP (DiCenso et al., 2005; Haynes et al., 2002). This may imply considering which research evidence to integrate into individual patient situations or exploring patient preferences (Dang et al., 2015). The ability to use theoretical knowledge in clinical practice depends on the learning processes and learning resources in individual practical exercise (Ellström, 2006). The more professional experience one has, the more competence and expertise one might achieve in a field. The experts acquire relevant competences mainly by training over a long period of time and receiving immediate feedback about their achievements. It takes a long time and requires a significant amount of practice to put abstract theoretical knowledge into effect (Smeby, 2013). Clinical reasoning and clinical judgment developed in clinical expertise are essential skills in EBP (DiCenso et al., 2005; Long et al., 2015). Clinicians make use of reasoning in interpretation of the situation considering factors such as the patient history, the results of the patient examination, the patient needs assessment, and the available research evidence (DiCenso et al., 2005). Clinical judgment competences influence how clinicians attend and respond to an issue based on how they understand the situation and/or how they decide to take action (or not) (Long et al., 2015; Tanner, 2006). For example, clinical judgment may be used to facilitate a decision-making relationship with the patient (Long et al., 2015). Further clinical judgment may be the basis

for making possible the application of general knowledge (e.g., research evidence) in individual patient situations (Grimen, 2009).

In collaboration with patients and their next of kin in decision-making, healthcare providers may contribute to achieving the best outcomes for each patient. What patients prefer and value in a particular healthcare setting is crucial in EBP. Clinicians could use their clinical expertise to identify patients' preferences and take their wishes into consideration (Long et al., 2015). In clinical decisions, DiCenso et al. (2005) argue that both patient preferences and actions must be considered. Personal preferences and values (e.g., choosing to increase physical activity) may differ from actions (e.g., finding it difficult to change behaviour). Considering this, healthcare professionals may better understand particular patient situations. Clinicians' considerations of the patient's clinical state, setting, and circumstances will influence the way in which the patient deals with the situation and responds to suggestions or interventions (DiCenso et al., 2005).

Most decisions in health care have resource implications. In decision-making, considerations regarding available resources are decisive for the possible benefits in each situation. In addition, a decision's outcome and actual consequences are important in EBP. In decisions, clinical experts must weigh the advantages and disadvantages, as well as and the benefits and risks for each individual patient. Clinicians are also responsible for considering their influence on the health of the society, for example, in preventive care (DiCenso et al., 2005).

2.2 Evidence-based practice in nursing care

Nursing theories have, in the 20th century, guided nursing practice as one of several knowledge sources. Some perspectives are: the human-to-human relationship in nursing (Travelbee, 1971), a focus on clinical wisdom and ethics (Benner, 1984, 1991), and a focus on helping the person perform tasks or fend for themselves to maintain health or obtain a peaceful death (Henderson, 1966; Orem, 2001). Florence Nightingale, as a pioneer during the Crimean War in the 1850s, supported her hygiene campaign with research, using quality improvement data and statistics to prevent soldiers from dying (Carroll, 1992). Since the 1920s, the nursing profession has conducted and published scientific research (S. J. Brown, 2014). Both theories and research evidence contribute with theoretical knowledge that is an important basis for practical knowledge in nursing (S. J. Brown, 2014; Norwegian Ministry of

Education and Research, 2014; Norwegian Ministry of Health and Care Services, 2014; Thornquist, 2009; World Health Organization, 2016). Theoretical knowledge is about "knowing that" and "knowing why", while practical knowledge is about "knowing what" and "knowing how" (Thornquist, 2009). Practical knowledge is the knowledge acquired through experiences as professionals, in which the person who experiences the situation acquires the knowledge (Grimen, 2008). Reflection on practice may make us think through situations learned from experience and, to a certain extent, generalize the knowledge so that it is applicable in other situations (Ellström, 2006). Ellström (2006) highlights the notion that each individual's readiness for learning in practice is a result of previous learning. Nursing is about obtaining experience to develop perceptual awareness, skills, and competence based on theoretical and practical knowledge to care for sick people in different situations (Benner, 1984). Nursing is also about organizing work, which means managerial responsibilities such as maintaining an overview and coordinating activities (e.g., overseeing bed utilization and facilitating patient transfers) (Allen, 2015).

When EBP was introduced into nursing, it reenergized nurses' use of research (S. J. Brown, 2014). In research studies, education, and clinical practice, the attention on, and investment in, EBP have focused mostly on research evidence. The interactions of research evidence with clinical expertise, patient preferences, and contextual factors have received less attention (Eriksson & Martinsen, 2012; Kovarsky, 2008; Norlyk, Haahr, Dreyer, & Martinsen, 2017; Rycroft-Malone et al., 2004). When clinical nurses are asked about their perceptions of knowledge use, they indicate that they seem to value personal experience, as well as knowledge learned in nursing school and in conferences, together with knowledge from procedures and colleagues (Adib-Hajbaghery, 2007; Bischoff & Hinojosa, 2013; Yoder et al., 2014). For nurses, experience seems to be a central knowledge source that they largely rely on in identifying their work (Bischoff & Hinojosa, 2013; Bonis, 2009; Yoder et al., 2014) and through which they may relate the other sources of knowledge. However, it may have been an evolvement in direction that nurses are more ready for EBP implementation than they were some years ago (Mallion & Brooke, 2016; Melnyk et al., 2012; Pravikoff, Tanner, & Pierce, 2005; Saunders & Vehvilainen-Julkunen, 2016). Wallin, Boström, and Gustavsson (2012) have suggested connections between clinical nurses' self-reported use of research and EBP performance in their validation of a measure regarding nurses' EBP capability beliefs. They found a consistent pattern of associations between nurses practising EBP and their capability beliefs, and between their research utilization and capability beliefs. This is consistent with

other literature indicating that an individual's EBP beliefs are related to one's ability to change practice in line with EBP (Kaplan, Zeller, Damitio, Culbert, & Bayley, 2014).

EBP may improve clinical treatment and care by encouraging nurses to use the best available research evidence in clinical decisions (Davidoff et al., 1995; Evidence-Based Medicine Working Group, 1992; Stevens & Staley, 2006). For example, this may occur when nurses in a hospital trust are guided by graded recommendations from an updated EB guideline, based on the best available evidence. To practice in an EB way, the thoughtful use of standardized research findings could be integrated into individualized patient treatment and care.

2.3 Integrating evidence-based practice in hospital clinical nursing

Improvements in healthcare delivery can be achieved by projects or programmes designed to achieve quality improvement in particular settings. These include an array of methods that accommodate practical problem-solving, introducing EB activities or applying theory-driven systems to generate and evaluate changes (Lynn et al., 2007). To improve clinical practice by integrating EBP, available research findings must be translated into health care settings for use by healthcare professionals (Melnyk, 2012). Although access to research evidence is enormous, it does not seem to be easily accessible to nurses (Forsman, Rudman, Gustavsson, Ehrenberg, & Wallin, 2012; Kajermo et al., 2010; Mallion & Brooke, 2016; Squires et al., 2011). From clinical and health services research, one consistent finding is that the translation of research evidence into practice and policy fails, with the consequence that patients do not benefit from advances in healthcare (Grimshaw, Eccles, Lavis, Hill, & Squires, 2012). It has been stated that it may be, on average, 17 years from the time when research is planned and new knowledge is generated through research until the time when that knowledge is integrated into routine clinical practice (Green, Ottoson, Garcia, & Hiatt, 2009; Green, Ottoson, García, Hiatt, & Roditis, 2014). Despite several years of research, it is still unclear how strategies for integrating EBP should best be generated (Baker et al., 2015; Bosch, van der Weijden, Wensing, & Grol, 2007; Wensing et al., 2014).

Further, this section describes the current state of the relevant existing research findings that may influence EBP integration in clinical nursing. Before doing that, I will clarify the use of the concepts "implementation" and "integration" in the thesis. Implementation is the process from the time when an organization decides to adopt an intervention to the time when the

intervention is routinized in the organization (Klein & Sorra, 1996). Implementation refers to an introduction of some new way of thinking, acting, or organizing into a social system of any kind, and it must be understood as a continuous and interactive accomplishment (May, 2013b). May and Finch (2009) differentiate between the implementation, embedding, and integration of new practices. They describe implementation as the social organization of the work necessary to adopt new practices, while embedding concerns making new practices into routine practices. Integration is the sustaining of routine practices in their contexts. In the research literature, an inconsistent use of different terms (e.g., implementation, integration, adoption, incorporation, application, the doing, uptake) without specification of the meaning makes the review of the literature challenging. In this thesis, routinizing and sustaining new practices is the main focus. We term this "integration". The routinization and maintenance of new practices in this context means that integrated new practices are naturally used in actual everyday clinical practice. Implementation (understood as the social organizing of the adoption) is a decisive preface of integration, but it is not the main focus in this thesis.

Hospital nursing practice is a complex practice. Integration of EBP requires skills and situational judgment from different sources of evidence based on both research evidence and experience with what works. By reflecting carefully on one's own practice, one will acquire practical wisdom that will help one make contextual judgments regarding what is likely to work for the people in the specific situation in the given organization with existing constraints (Greenhalgh, 2018).

2.3.1 Theories, models, and frameworks aimed at promoting evidence-based practice

A systematic use of theories in planning, performing, and evaluating the implementation/ integration of EBP may help create an understanding of whether changes in practice can be possible (Grol, Bosch, Hulscher, Eccles, & Wensing, 2007). In this thesis, a specific existing theory does not constitute the basis for the research. The argument, therefore, is that conducting research based on an existing theory may influence the researcher to collect data regarding what, beforehand, has been defined as important (Hartman, 2001). Rather, this review presents selected relevant theories, models, and frameworks that help illustrate the complexity in practice changes. To understand and promote the effective integration of EBP, several implementation/integration theories, models, and frameworks have been developed. In a thematic analysis of theoretical models, 47 conceptual models addressing EBP and

translational science were found and classified to guide clinicians and researchers in finding a suitable model. (Translational science can be explained as an effort to transfer scientific knowledge into use in practical situations) (Mitchell, Fisher, Hastings, Silverman, & Wallen, 2010). Because of the inconsistent use of terminologies and definitions in theories and models, and because of overlapping theories and theories missing key elements, Damschroder et al. (2009) established the Consolidated Framework for Implementation Research (CFIR) by synthesising existing implementation theories. In this framework, they encompassed five common terms that could be used to guide evaluation of the implementation/integration of interventions in context, based on the contribution of existing implementation/integration research. These interacting domains were the intervention itself, the inner and outer settings (i.e., the context), the people involved, and the process of implementation/integration (Damschroder et al., 2009). These domains may guide the researcher or clinicians in building knowledge about which factors work in the actual setting (Damschroder et al., 2009).

At about the same period of time, May et al. (May, 2013a, 2013b; May & Finch, 2009; May et al., 2009) developed the Normalization Process Theory (NPT) based on empirical studies. The NPT provides a framework for exploring and understanding how new practices are integrated into their social contexts, focusing on the manner in which the social actions of workers contribute to the implementation, embedding, and integration of new practices (May & Finch, 2009; May et al., 2009). The NPT was developed based on the recognition that the integrating of interventions requires a focus on social processes that may influence the integration. The NPT highlights the actors involved, the intervention itself, and the organization (May et al., 2009). Findings from research studies indicate that use of the NPT highlights the importance of stakeholders' involvement to create a better understanding of an intervention and its possible benefits or obstructing factors in the setting (Foss, Knutsen, Henni, & Myrstad, 2017; Gould, Hale, Waters, & Allen, 2016; Hall, Wilson, Stanmore, & Todd, 2017).

Facilitation models aim to support learning and action in teams by helping people in a group change their attitudes, skills, and practices to achieve a goal (Greenhalgh, 2018). The PARIHS (Promoting Action on Research Implementation in Health Services) framework is one popular, frequently used facilitation model for integrating EBP in teams (Greenhalgh, 2018; Schaffer, Sandau, & Diedrick, 2013; Seers et al., 2018; Wallin, Estabrooks, Midodzi, & Cummings, 2006). The PARIHS framework is a conceptual framework describing how

research findings may successfully improve practice when equal attention is given to the method of facilitating the changes, the context into which the changes are integrated, and the content of the evidence implemented (Kitson, Harvey, & McCormack, 1998; Kitson et al., 2008). Theoretical models based on identifying facilitators and barriers to the uptake of new knowledge may be useful to a certain extent. However, they may also represent a too-rational view of knowledge use by overlooking the complexities involved in generating, exchanging, and using knowledge in practice (Greenhalgh, 2018).

2.3.2 Barriers to evidence-based practice integration

Though several studies have identified factors that facilitate or hinder the integration of new research evidence into the nursing practice (Cochrane et al., 2007; Estabrooks et al., 2003; Funk et al., 1991; Sadeghi-Bazargani et al., 2014; Solomons & Spross, 2011), practice has not changed accordingly (Greenhalgh, 2018; Ioannidis, 2016; Kajermo et al., 2010; Melnyk et al., 2012; Yoder et al., 2014). There are indications that a decrease in nurses' perceptions of barriers has not led to increased use of EBP (C. E. Brown et al., 2010; Carlson & Plonczynski, 2008). In their multi-institutional study, C. E. Brown et al. (2010) suggested that barriers have a low impact on research use and EBP performance among hospital nurses, and that it may be wrong to focus too much on the barriers. The findings may indicate the need for a perspective that is broader than simply looking at barriers to achieving practice changes through EBP integration. In this thesis, the most central barriers to EBP integration in clinical hospital nursing practice are briefly described to explain their positions in the research literature and what they are about.

The barriers to integrating EBP among nurses seem to not have changed throughout the last two decades (Melnyk et al., 2012). The most common individual barriers are lack of time, knowledge, and skills (Chiu et al., 2010; Mallion & Brooke, 2016; Melnyk et al., 2012; Yoder et al., 2014). Lack of skills is reported in the literature search and in the assessment of the quality of knowledge (Cadmus et al., 2008; Chiu et al., 2010; Pravikoff et al., 2005). Work overload has also been identified as a barrier to EBP integration (Adib-Hajbaghery, 2007; Cochrane et al., 2007; Solomons & Spross, 2011). Higher reported levels of emotional exhaustion have been associated with lower levels of research utilization (Estabrooks, Midodzi, Cummings, & Wallin, 2007). Lack of authority to change clinical practice has been reported by nurses (Adib-Hajbaghery, 2007; Solomons & Spross, 2011), and research has

suggested that it may be challenging to incorporate activities associated with EBP into daily work (Aitken et al., 2011; Pitkänen, Alanen, Rantanen, Kaunonen, & Aalto, 2015). Such activities could be activities organized in parallel with daily patient care, such as searching for the literature and participating in journal clubs and EBP groups (Aitken et al., 2011; Pitkänen et al., 2015). Aitken at al. (2011) were creating an environment for EBP among nurses in an intensive care unit by implementing a multidimensional programme including the use of EBP champions and mentors, EBP workgroups, journal clubs, and nursing rounds. Challenges, particularly in the EBP workgroup, were gaining sufficient time, maintaining enthusiasm over long periods, and incorporating EBP activities into daily practice. It was also challenging to ensure that nurses had enough time to undertake the EBP activities. Otherwise, the strategies used in combination in this programme helped build a culture of EBP (Aitken et al., 2011).

2.3.3 Interventions to integrate evidence-based practice

Many interventions aimed at improving healthcare professionals' practice or patient outcomes have been integrated and evaluated. This section describes interventions suitable for EBP integration into clinical hospital settings. The interventions are dependent on context, and the improvement of professional practice and healthcare outcomes is mostly small to moderate (Arditi, Rege-Walther, Durieux, & Burnand, 2017; Baker et al., 2015; Flodgren, O'Brien, Parmelli, & Grimshaw, 2019; Flodgren et al., 2011; Forsetlund et al., 2009; Giguère et al., 2012; Ivers et al., 2012). The effect of tailored interventions to address defined determinants of practice tends to vary (Baker et al., 2010; Baker et al., 2015). Some outcomes include EB guideline utilization, examples of multifaceted, collaborative care plans tailored to participants, or the implementation of a targeted falls prevention programme. The addressed determinants were factors acting as barriers or facilitators influencing an intervention aimed at improving practice (Baker et al., 2015).

Educational meetings are continuing medical education activities intended to improve professional practice and patient outcomes. Such educational meetings may contribute to small improvements in professional practice (Forsetlund et al., 2009). The use of educational meetings consisting of interactive and didactic education may improve practice to a greater extent than one of the education methods used alone. Didactic education alone may have some effect, whilst interactive education seems to be least effective (Forsetlund et al., 2009). A possible increased effect of multifaceted interventions rather than single-component

interventions has, in many years, been assumed but not clearly stated (Forsetlund et al., 2009; Grimshaw et al., 2001; Grimshaw et al., 2004). A recent overview of systematic reviews produced no compelling evidence that multifaceted interventions are more effective in changing healthcare professionals' behaviour than are single-component interventions (Squires, Sullivan, Eccles, Worswick, & Grimshaw, 2014). A multifaceted intervention could, for example, be educational meetings in combination with educational outreach visits (i.e., that healthcare professionals gain supervision from a trained person in clinical practice). Educational outreach visits may have a small effect on clinical practice improvement (O'Brien et al., 2007). Squires et al. (2014) emphasize the advantages of implementing interventions that are less complex and less expensive, which may be easier to sustain when implemented.

Interventions based on communication strategies make use of opinion leaders or audit and feedback. The use of opinion leaders may, to a small extent, contribute to changes in healthcare professionals' behaviour and patient outcomes by promoting the use of EBP in clinical practice (Flodgren et al., 2011). In practice, opinion leaders are enthusiastic, pleasant, and reliable people who, through their work, may influence or convince others. Opinion leaders often influence their colleagues working in collaboration with leader teams (Abbott, Foster, Marin, & Dykes, 2014; Flodgren et al., 2011; Mair et al., 2012). Even if the use of opinion leaders may have a small effect on practice, it is unclear what they do and how they do it (Flodgren et al., 2011). Audit and feedback activities intended to improve professional practice may be effective to a small to moderate extent. The assumption in audit and feedback is that healthcare professionals will modify their practice if they receive feedback that their clinical practice performance is inconsistent with existing guidelines or routines (Ivers et al., 2012). With the active involvement of healthcare professionals, the effect may increase. The effect is best in situations such as when healthcare professionals' performance at baseline is poor, the audit and feedback are carried out by a supervisor or a colleague, the feedback is provided more than once, and is given in both verbal and written form. In addition, audit and feedback appear to be most effective when the recipients are non-physicians (i.e., nurses and pharmacists) and when it is directed at both specific goals and action-plans (Ivers et al., 2014; Ivers et al., 2012).

Printed educational material, such as publications in peer-reviewed journals or EB guidelines, delivered personally or through mass mailing, is a commonly used method of distributing information to healthcare professionals (Giguère et al., 2012). The effect of printed

educational material on clinical practice improvements (e.g., attitudes, awareness, knowledge, and skills) is modest, and its impact on patient outcomes is not possible to conclude (Giguère et al., 2012). Other printed material may be computer-generated reminders, which are reminders automatically generated by the computer but delivered on paper to the healthcare professionals (Arditi et al., 2017). The effects of such reminders compared to usual care or other interventions with no reminder component in terms of quality of care and patient outcomes are small. This systematic review includes healthcare professionals but, primarily, physicians are studied. One study investigated nurses only, and the outcome was the quality of care measured by mean deficiencies per day per patient. An example of a reminder generated by the computer could be that there was a deficiency in the Glasgow Coma Score between 7:00 and 13:00 (Arditi et al., 2017). Computer reminders with no paper components have shown small improvements in physician behaviour—no larger than the paper-based reminders (Shojania et al., 2010).

An increasingly used intervention in hospitals is e-learning programmes for nurses and other healthcare professionals. E-learning programmes may be developed for several topics, whereas EBP or EB guidelines could be suitable for e-learning lectures. An existing assumption form research is that e-learning may have some effect on healthcare professionals' behaviour and patient outcomes (Vaona et al., 2018). Such effects are assessed in a recent review concluding that e-learning may make little or no difference as compared to traditional learning. A perception that e-learning is more effective than traditional learning may be misleading. Compared to no intervention, e-learning may be as effective as traditional learning strategies (Vaona et al., 2018). In a study, the use of an e-learning course in blood transfusion in Australia was investigated. The conclusion was that the course provided nurses, physicians, and midwives with a consistent and reliable knowledge base that led to practice changes and improved patient outcomes (Peterson et al., 2017). This course was based on readily available "best practice" knowledge with a focus on practical aspects and real-context situations (hospital ward and patient requiring transfusion).

Patient-mediated interventions aimed at changing healthcare professionals' performance may turn out to have some possibilities in terms of changing healthcare professionals' behaviour (Fonhus et al., 2018). These interventions are strategies that engage and involve patients in their health situations. Strategies in which information is given to patients, or from patients to healthcare professionals, as well as strategies in which patients participate in educational

programmes may all improve the extent to which healthcare professionals follow clinical practice recommendations. The effect on patient outcomes is uncertain, small, or absent. Thus, in patient education strategies, some health outcomes seem to be slightly improved (Fonhus et al., 2018). In this review, one study investigated physicians' use of patient decision aides and found little or no effect on how healthcare professionals follow recommendations in clinical practice. All 25 studies in this review involved physicians, while in five of the studies, nurses and physician assistants were also involved (Fonhus et al., 2018).

2.3.4 Integration of evidence-based guidelines

EB guidelines are one important way of translating research evidence into clinical practice; when used, they may have the potential to improve clinical practice (Grol & Grimshaw, 2003). Unfortunately, clinical nurses' use of guidelines seems to be inconsistent (Gurses et al., 2010; Jun, Kovner, & Stimpfel, 2016). After an introduction of an EB guideline, there is limited knowledge regarding how to secure the sustainability of guidelines (Higuchi, Davies, & Ploeg, 2017). However, the improvement of clinical practice and the reduction in variations in practice are more likely if barriers to the use of guidelines are addressed, and if guideline integration is adjusted to these barriers (Baker et al., 2015; Grimshaw et al., 2004; Scottish Intercollegiate Guidelines Network, 2015).

Clinicians' compliance with guidelines may be affected by factors associated with the guideline and with the integration of the guideline (Cochrane et al., 2007; Gurses et al., 2010; May, Sibley, & Hunt, 2014) as well as with the healthcare professionals and the environment (Fitzgerald, Lethaby, Cikalo, Glanville, & Wood, 2014; Gurses et al., 2010). The content of the guideline, the utility, the strength of evidence, the compatibility, the complexity, and the ability to be tested by the clinicians may affect compliance (Cochrane et al., 2007; Gurses et al., 2010). Furthermore, it is important that guidelines are presented in a workable form that is ready to be integrated into daily work (May et al., 2014) and that the clinicians have personal experience with the guidelines (Traynor, Boland, & Buus, 2010). In addition, clinical nurses' willingness to enact the guidelines and normalize them in practice is a decisive contributor to their integration (May et al., 2014). In other words, these topics may also be stated as barriers that hamper guidelines to be used: discordance between guidelines, complexity, lack of trialability, user unfriendliness, limited accessibility, and lack of local ownership (Fitzgerald et al., 2014). In their review of systematic reviews and overviews, Fitzgerald et al. (2014)

stated that too few studies rigorously assess the effectiveness of the different approaches to guideline integration.

Due to an inconsistent use of guidelines, some guideline producers have developed tools to promote the uptake in clinical practice (Flodgren et al., 2016). Flodgren et al. (2016) have, in their systematic review, identified such tools as sessions with educational training tailored to barriers that are identified in research, as well as educational materials or reminders delivered on paper. This review included few studies, and the healthcare professionals consisted of only physiotherapists and physicians. Given the small number of studies, the authors could not draw robust conclusions about the effect of the evaluated tools. However, tendencies toward healthcare professionals' enhanced compliance with guidelines were identified when a guideline tool was delivered together with the guideline, rather than when the healthcare professionals received only the guideline (Flodgren et al., 2016). One approach to improve the quality of care through the translating of research evidence into clinical practice may be the implementation of EB guidelines introduced through HUDDLES (Healthcare Utilizing Deliberate Discussion Linking Events), which are short structural meetings among interdisciplinary health-care workers (Glymph et al., 2015). Huddles addressing patient safety guidelines have used whiteboards as tools for the registration of information, described mostly in the research literature regarding patient flow and task administration (Mackintosh, Berridge, & Freeth, 2009; Riley, Forsyth, Manias, & Iedema, 2007) and, to a lesser extent, in patient safety in the operating room (Mainthia et al., 2012; Morgan et al., 2015). To the best of our knowledge, there exists little research regarding the use of a huddle with a whiteboard (huddle board) as a visual patient risk-assessment tool introducing EB guidelines.

2.3.5 Importance of leader behaviour

Theories and models attempting to understand leader characteristics and leader styles in integrating EBP are studied (Greenhalgh, 2018). However, to the best of our knowledge, existing EB theories or models do not show which leader actions are most suited to improving clinical practice (Ovretveit, 2010). The interactions between leaders and their co-workers may result in a quality improvement that is in the patients' best interests (Greenhalgh, 2018; Ovretveit, 2010).

The organization of leaders in hospitals, from executive directors to ward leaders, differs between countries and between hospital trusts. In many hospitals in Norway, teaching nurses are located in departments and wards. Teaching nurses, together with ward leaders, may have a role as clinical nurse leaders. A clinical nurse leader is a clinical nurse who is an expert in a field and who motivates, supports, and guides the work of other healthcare professionals to improve patient outcomes. Clinical nurse leaders have the power to act as role models and communicate their values and beliefs about care (Stanley, 2006). Mostly, the teaching nurses do not have formalized recommendations for their competences or work strategies; thus, their activities are performed in different ways. By comparison, the American Association of Colleges of Nursing (American Association of Colleges of Nursing, 2013) introduced a new clinical nurse leader role in 2003, intended to educate clinical nurses in assuming accountability for the design, integration, and evaluation of EB informed patient care to improve patient care outcomes. A few years ago, the function was formalized through a master's educated nurse role. Successful implementation of clinical nurse leaders to improve health care quality and safety depends on systematic preparation for clinical nurse leaders' practice and the structuring of their workflow. Support from strong managerial leaders is a prerequisite, as is continuous clinical leader activities such as facilitating communication, strengthening relationships, and supporting team and staff engagement (Bender, 2016).

In health care, research on distributed leadership has evolved throughout the last years. This implies that a team of leaders is performing leader activities collectively (Greenhalgh, 2018). Distributed leadership is suitable in the complexity of health practices, in which changes often occur across different organizational units. This implies that leaders at different levels are sharing responsibilities by together being engaged in the changing efforts (Best et al., 2012; Bolden, 2011). In their literature review, Best et al. (2012) found an almost invariable link between collective leader activities and sustained commitment to change. However, a critical and reflective approach to distributed leadership is crucial, especially regarding possible imbalances in the distribution of power and influence in the organization (Bolden, 2011). Nurse managers who perceived that their superior manager stressed the importance of EBP report higher levels of introduction and discussion of research evidence with staff nurses, as well as a greater extent of research use in quality improvement (Johansson, Fogelberg-Dahm, & Wadensten, 2010). Future research could explore leader activities within contextual factors in EBP integration and possible benefits from collective leader activities in real healthcare situations (Best et al., 2012; Bolden, 2011; Dogherty, Harrison, & Graham, 2010;

Greenhalgh, 2018; Van der Zijpp et al., 2016).

Engagement and enthusiasm from key personnel, such as teaching nurses, opinion leaders, implementation leaders, or champions, may contribute to success in integrating EBP or research evidence (Abbott et al., 2014; Flodgren et al., 2011; Mair et al., 2012). Critical or negative opinion leaders, on the other hand, may act as barriers to integration (Varsi, 2016). Leaders' facilitation of the integration of EBP into clinical nursing seems to have a decisive influence when the leaders hold a coordinating and supporting role (Dogherty et al., 2010; Hauck, Winsett, & Kuric, 2013; Aasekjær et al., 2016). Further, several studies suggest that the support clinical nurses receive from their leaders seems to be important in promoting their use of research (Gurses et al., 2010; Kaplan et al., 2014; Melnyk et al., 2012; Sredl et al., 2011; Yoder et al., 2014). In the process of integrating EB guidelines, van der Zijpp et al. (2016) found that the relationship between managerial leaders and clinical leaders could hinder or enable the integration of EBP. They also found that clinical leaders' individual characteristics could both hamper and, even without support from managerial leaders, keep the process going. Leaders who lack capacity, engagement, and a suitable leader behavioural style may represent barriers to EBP integration (Flottorp et al., 2013). Clinical nurses have identified resistance from their leaders as a possible barrier to EBP integration. The relationship between managerial leaders and clinical leaders is influenced by interactional dynamics in particular contexts, in which there exists little clarification of how this interaction hinders or enables integration of research evidence (Sandstrom, Borglin, Nilsson, & Willman, 2011; Van der Zijpp et al., 2016).

2.3.6 Organizational culture in EBP integration

When attempting to integrate EBP, working in cultures that support EBP in treatment and care makes it easier to practice EB care (Melnyk, 2014). Each culture has a unique social and psychological environment, which is expressed through the practitioners' patterns of behaviour. These expressions visualize the beliefs, ideas, and activities that the organization values (Scott-Findlay & Golden-Biddle, 2005). An including culture characterized by supportive leaders who recognize others' jobs well done is related to the increased use of research (Estabrooks et al., 2007). The extent of the uptake of EBP is determined by the interaction among the characteristics of the evidence, the intended users, and a particular context of practice (Greenhalgh et al., 2004; Titler, 2014). Capacity for change at the

organizational level may be a characteristic that enhances an EBP culture (Atkinson, Turkel, & Cashy, 2008; Flodgren, Rojas-Reyes, Cole, & Foxcroft, 2012). The research literature indicates a relationship between one's beliefs in EBP and the ability to integrate EBP (Kaplan et al., 2014; Melnyk & Fineout-Overholt, 2010; Wallin et al., 2012).

Lack of an organizational culture that supports EBP may act as a barrier to EBP integration (Bergs et al., 2015; Flottorp et al., 2013; Melnyk et al., 2012). For example, issues regarding communication and teamwork can hinder the use of EB recommendations (Bergs et al., 2014). Lack of an organizational infrastructure to support EBP may also hamper EBP integration (Atkinson et al., 2008; Melnyk et al., 2012). This could, for example, be limitations of the information system, a lack of available EB guidelines in the workplace, or a lack of patient safety systems (Flottorp et al., 2013). Changes in infrastructure have been emphasized (Atkinson et al., 2008) but appropriated evaluated organizational infrastructure interventions have been lacking (Flodgren et al., 2012).

Strategies to change organizational cultures so that they are more ready for EBP are studied. Schaffer et al. (2013) have examined and discussed EBP models for organizational change, based on a selection of models that occur most frequently in the literature and that are used in practice. They found some models well-suited for team decision-making processes, as well as some models suited for stimulating critical thinking and influencing the decision-making process. Their main conclusion was that researchers and clinicians should consider how a model may facilitate their EBP projects, guide the process of integrating EBP, contribute to understanding of EBP, and lead to improved practice in the situation (Schaffer et al., 2013). In a systematic review, interventions intended to change the behaviour of healthcare professionals and the organization of care were investigated in terms of promoting weight reduction (Flodgren, Goncalves-Bradley, & Summerbell, 2017). Evidence indicated behavioural change with only little or no effect on patient outcomes. In two studies, organizational interventions implying changes (e.g., changes in who delivers the healthcare and how it is delivered) compared to standard care showed that the use of multidisciplinary teams could improve patient outcomes (Flodgren et al., 2017). In addition, a systematic review revealed that interprofessional collaboration might slightly improve healthcare professionals' adherence to recommended practice (Reeves, Pelone, Harrison, Goldman, & Zwarenstein, 2017). From these systematic reviews, there are assumptions that cooperating

and working in multidisciplinary teams may slightly lead the healthcare professionals in the direction of adherence to recommended practices.

The complex nature of EBP uptake is a process of stating that people are active participants in innovations, often through dialogue with others. People may experiment with the innovations, evaluate them, and modify or improve them in their organizational culture (Greenhalgh et al., 2004). This implies that the integration of new practices is a complex process involving these interactions, which future research must address. There is a need to theorize about the behaviour of the participants in the particular context in which they act (Greenhalgh, 2018).

2.4 Rationale of the project

Despite the extensive previous research regarding the determinants of research use and integration of EBP, this knowledge has not changed nursing practice accordingly (Greenhalgh, 2018; Ioannidis, 2016). Challenges in EBP integration appear in a social context in which the integration of EBP involves interactions between the people involved. As such, there is a lack of an empirically grounded theoretical explanation of how clinical nurses and leaders handle their situations when they attempt to integrate EBP into daily work (Greenhalgh, 2018). Few studies have investigated clinical nurses and their ward leaders in the same study (Jansson & Forsberg, 2016). By doing that, one may better understand their interactions, collaboration, challenges, and behavioural patterns, which may offer new insight into the complexity of integrating EBP into daily work. Further, the knowledge seems sparse regarding hospital clinical nurses' and their ward leaders' situational conditions in practice where the changes are sought (Best et al., 2012; Bolden, 2011; Greenhalgh, 2018; Van der Zijpp et al., 2016).

Thus, more knowledge is needed to understand nurses' challenges and patterns of behaviour in daily work that the tailoring and facilitation of EBP integration must address. To contribute to this understanding, this thesis aimed to explain the challenges and latent patterns of behaviour of clinical nurses and leaders when they attempt to integrate EBP into daily work.

3 Aims

The main purpose of this doctoral thesis was to gain an understanding of clinical nurses' and their leaders' challenges and patterns of behaviour when attempting to integrate EBP into their daily work in hospital wards, and to understand their challenges in the use of EBP during clinical patient situations.

Aim of Study I

In Study I the aim was to generate a theory about the general patterns of behaviour that are discovered when clinical nurses attempt to integrate EBP into their daily work.

Aim of Study II

The aim of Study II was to explore the processes involved in two different strategies applied to integrate EBP to understand the complexities and challenges in clinical nurses' daily work better when they attempt to integrate EBP.

Aim of Study III

Study III aimed to generate a theory about patterns of leader behaviour that leaders are engaged in when attempting to integrate EBP into a clinical setting.

4 Methodology

An essential concern in research is determining which methodology provides the best opportunities to address the purpose of the study (Creswell, 2013; Polit & Beck, 2016). The main purpose of the studies included in this thesis was to investigate the participants' experiences and behaviours, which indicated that qualitative research would be a useful design. Furthermore, we wanted to study the participants' social interactions and latent patterns of behaviour in actual healthcare situations. Clinical nurses and ward leaders work in interprofessional collaboration, and integrating EBP is a social common action in a ward or across wards and other organizational units. Therefore, the studies in this thesis were conducted with grounded theory methodology, which is well-suited for investigating the complex and latent patterns involved in social interactions (Glaser, 1978, 1998; Glaser & Strauss, 1967). Further, use of classic grounded theory provides the opportunity to explain the social field with theory grounded in data from the point of view of the people involved (Glaser, 1998; Lomborg, 2005).

The choice of methodology implies philosophical perspectives, such that ontological and epistemological assumptions must be clarified. These perspectives act as guiding principles for methods to be used and the interpretation of the findings (Carter & Little, 2007; Creswell, 2013). First, this chapter elaborates upon the choice of grounded theory and the background for the choice of classic grounded theory. Herein, I clarify the ontological and epistemological assumptions in this thesis. My pre-understanding and positioning as a researcher is then accounted for. Further, central concepts in classic grounded theory relevant to this thesis are described. These include openness and theoretical sensitivity, theoretical sampling, substantive and theoretical coding, and quality criteria in grounded theory.

4.1 The choice of grounded theory and of classic grounded theory

We considered grounded theory to be an appropriate methodology for exploring what nurses were doing in hospital wards when they attempted to integrate EBP into daily work. This can be argued for because grounded theory is grounded in the question of what is "going on" in the field of research (Gibson & Hartman, 2014; Glaser & Strauss, 1967). Further, the major inspiration, for Glaser and Strauss, was openness in exploring the research field, focusing on a general perspective and problem area, with suspended preconceived concepts (Gibson & Hartman, 2014; Glaser & Strauss, 1967). This openness is congruent with the objective in the

studies in this thesis, which was to explore the clinical nurses' and their leaders' challenges and patterns of behaviour when attempting to integrate EBP into their daily work in hospital wards, and to understand their challenges in the use of EBP in clinical patient situations.

Grounded theory was presented as a new method for generating theory from systematic data collection and analysis in the mid-1960s (Glaser & Strauss, 1967). According to Glaser and Strauss, both formal and substantive theories may be developed. Formal theories are theories developed for a conceptual area (e.g., stigma or socialization). A substantive theory is a theory about what happens in an empirical or substantive area (Gibson & Hartman, 2014; Glaser, 1978). We wanted to develop substantive theories to better understand nurses' challenges in clinical practice in hospital wards. Substantive theories are generated around a core category. The properties relevant to the core category and the main concern are included in the theory as sub-categories. The relationships between the sub-categories, and between the core category and the sub-categories, constitute an integrated whole (Gibson & Hartman, 2014; Glaser, 1978).

The sociologists Barney G. Glaser and Anselm L. Strauss "discovered" grounded theory in their common studies of dying patients in hospitals back in the 1960s (Glaser & Strauss, 1965, 1967). Glaser had obtained his education and experience in mathematics and quantitative research from Columbia University. In particular, he had focused on inductive analysis, rather than on applying his own thoughts to the material. As such, his distancing of traditional deduction is characterized as "a major root in the discovery of grounded theory" (Glaser, 1998, p. 25). Strauss was educated at the University of Chicago, in qualitative traditions influenced by symbolic interaction and pragmatism (Hartman, 2001). He was influenced by the sociologist Herbert Blumer, who was the person who described and imparted symbolic interactionism based on the work of philosopher, sociologist, and psychologist Georg Herbert Mead (Hartman, 2001). Also, through Blumer, Strauss was influenced by pragmatism from the philosopher and researcher John Dewey, based on the thoughts of Charles Sanders Pierce and William James (Hartman, 2001; Nathaniel, 2011). The influence by the teachers and universities that inspired Glaser and Strauss may be connected to several central processes in grounded theory, although Glaser stated that classic grounded theory is not defined by any one theoretical perspective. The ontological perspective may be symbolic interactionism, pragmatism, or any other theoretical perspective, according to Glaser. However, he has also downgraded or almost eliminated the role of

philosophy (Glaser, 1998, 2005; Glaser & Strauss, 1967). Alvesson and Sköldberg (2018) regard symbolic interactionism as the most important source of inspiration for grounded theory. They express that one cannot ignore the fact that several features in grounded theory originate from symbolic interactionism, but state that grounded theory is not tantamount to symbolic interactionism.

Symbolic interactionism is based on the premise that people relate to things on the basis of the meaning those things have to them. The meaning of the things is derived from social interactions with other people. In addition, people handle and change these meanings through continuous interpretative processes in interaction with what they meet (Blumer, 1969). Social interactions are central to symbolic interactionism because the interactions shape a person's behaviour. The person adjusts her/his own activities according to other people's reactions (Blumer, 1969). In pragmatism, pursuant to Pierce and James, the thinking is distinguished by exploration, where meaning and facts are shaped in a continuous interplay between experience, meaning-making, problem-solving and the development of theory. The reality view of Pierce is based on an objective mind-set, but what is real depends on the object and the researcher's capacity to understand and communicate this (Nathaniel, 2011).

After the publication of their book, "The discovery of grounded theory" in 1967 (Glaser & Strauss, 1967), Glaser and Strauss taught and developed the methodology in separate ways (Charmaz, 2011; Simmons, 2011). While Strauss' perspective was in symbolic interactionism and the qualitative traditions from Chicago University, Glaser emphasized the need to suspend preconceptions, including predefined questions and categories. Kathy Charmaz studied with Glaser and Strauss, and recognized the differences between them in an early phase (Simmons, 2011). Strauss established cooperation with nurse Juliet Corbin, and together they wrote a grounded theory book in 1990 (Strauss & Corbin, 1990). This book became very popular among qualitative researchers. Nevertheless, they were also criticized for betraying the original method (Alvesson & Sköldberg, 2018; Hartman, 2001). Shortly afterwards, Glaser wrote a book (Glaser, 1992), which was mostly a criticism of the book by Strauss and Corbin (Alvesson & Sköldberg, 2018; Hartman, 2001). According to Glaser, Strauss diverged from the most central idea of grounded theory—the emergence of categories from data that were not influenced by preconceptions (Hartman, 2001). The differences address mainly preconceptions that, in Strauss and Corbin's approach, imply risks arising

from the fact that the theory is not grounded in data (Alvesson & Sköldberg, 2018; Hartman, 2001).

Over the years, the original version of grounded theory has been elaborated upon (Glaser, 1978, 1998), and other versions have evolved (Charmaz, 2000, 2006, 2014; Clarke, 2003; Corbin & Strauss, 2008, 2015; Wuest, 1995). According to Simmons (2011), most of the variations of the original version can be incorporated under Kathy Charmaz's "constructivist grounded theory". In constructivist grounded theory, research focuses on an interpretive understanding of meaning and the way in which that meaning is constructed (Charmaz, 2000; Gibson & Hartman, 2014).

Before choosing from among the different versions of grounded theory, Hartman (2001) highlights the importance of looking back to the first idea of grounded theory (Glaser & Strauss, 1967), i.e., that all elements in the theory must be grounded in data and the theory must emerge without the influence of any preconceptions. These primary premises of the method are retained in the original version, called classic grounded theory (Hartman, 2001; Simmons, 2011). This does not mean that the researcher does not have preconceptions or knowledge in the field of research; rather, it means that preconceptions are set aside as much as possible (Gibson & Hartman, 2014; Glaser, 2005, 2013). The rationale for choosing classic grounded theory was that the research team: 1) accesses the research field only with a defined perspective and problem area; 2) approaches the research field by exploring what is happening in the wards when people attempt to integrate EBP; and 3) strives for openness and theoretical sensitivity in the research process, with as few predetermined concepts as possible (Glaser, 1978). These perspectives allow the researchers to be as open as possible when meeting the research area.

Considering the aims of the thesis and the variations in grounded theory, the research team judged classic grounded theory as the best-suited approach for these studies. This thesis is written based on the classic grounded theory methodology originally described by Glaser and Strauss (Glaser & Strauss, 1967), and on the subsequent work of Glaser for several years (Glaser, 1978, 1992, 1998, 2001, 2005, 2011, 2013, 2014). EBP integration has been explored mainly through surveys, testing interventions, and a focus on promoting and inhibiting determinants (Cochrane et al., 2007; Estabrooks et al., 2003; Funk et al., 1991; Sadeghi-Bazargani et al., 2014; Solomons & Spross, 2011; Wilson et al., 2015). We wanted to explore

what happens in a hospital ward when nurses attempt to integrate EBP into daily work without being unduly influenced by previous assumptions about why nurses do not practice evidence-based practice, which has been a major focus of previous research. Considering Glaser's argument that classic grounded theory may be applied in relation to different theoretical perspectives, we judged this approach to best fit the research purpose of this thesis (Glaser, 1978; Glaser & Strauss, 1967).

4.2 Pre-understanding

Pre-understanding is the experiences and thoughts we bring into a research project prior to the start of that project. The researcher influences the research process, no matter which project is conducted or which methodology or method is used (Malterud, 2017). Scientific knowledge is a product of the process of knowledge development, assuming different norms and values. The researcher makes value-laden choices, including, among other things, background literature, type of project, methods, and arguments. In positivism, the thinking was that observation could appear independent of the researcher's experience, knowledge, and thoughts (Thornquist, 2009). In Norway, the philosopher Hans Skjervheim (2002) criticized positivism and expressed the idea that we are judged as having a pre-understanding and that we must investigate our own points of view before we can investigate other things. When we start to reflect, we discover that we are in a situation, and then we already have a history. This history will influence the research, though one suggests that it does not. It is essential to understand this and to identify how and where pre-understanding may affect the study (Skjervheim, 2002). Glaser's statements of openness and avoiding the use of preconceived concepts should be understood as meaning that while one may have preconceptions, one endeavours to suspend them and to not draw on their conceptual language (Gibson & Hartman, 2014; Glaser, 2013). However, classic grounded theory has been criticized because of the statement of "no preconceptions", with the argument being that no one can approach a field without any preconceptions. Some have also argued that knowledge is not neutral and that one's preconceptions may improve one's insight into the field of research (Bryant, 2009; Denzin, 2007).

I will clarify my own experiences and pre-understanding, as well as the rest of the research team's positions in the project. For me, this Ph.D. project started with my interest and established knowledge in the research area. In my master's thesis in EBP, I investigated

nurses' experiences of using scientific knowledge in clinical practice. The Ph.D. project was established based on my motivation to further investigate this area, focusing on challenges in the integration of EBP into daily work. The rest of the research team consisted of four researchers from different environments. One woman was a registered nurse and an experienced researcher, including in grounded theory (MK, Ed.D., professor), one woman was a public health nurse and an experienced grounded theory researcher (EH, Ph.D., assistant professor), one man was educated in theology (LJD, Ph.D., professor), and one man was a registered nurse (SH, Ph.D., professor). These researchers all had lengthy experience in qualitative research in different topics and methods, which influenced their pre-understanding and, thereby, the discussions and choices taken in the study. Because of my master's degree in EBP, my knowledge and understanding of EBP may differ from that of most of those working in clinical practice. I needed to remember and consider this when I met the nurses involved in the research. The entire research group represents different levels of knowledge of EBP, which we were aware of and utilized in the discussions among the research team members during the studies.

For many years, I worked as a head nurse in a hospital ward and experienced several challenges in terms of changing practices with new evidence and achieving quality improvement. In some situations, we succeeded in integrating new EB knowledge or new routines; in other situations, we did not. According to my experience, several determinants influence each other and the integration process. It seemed as if interpersonal and environmental factors play a crucial role. In my master's education in EBP, my experience was that research evidence was more highlighted than were clinical expertise and patient preferences. So, how can a focus on research evidence in EBP comply with nurses' beliefs about the knowledge sources they trust? A criticism of EBP has been that it demonstrates a simplification of knowledge use, where direct use of research evidence in clinical situations is the focus (Boge & Martinsen, 2006; Heggen & Engebretsen, 2009; Mantzoukas, 2008).

In practice, I have seen several individual nurses updating themselves and striving to integrate EB knowledge or work in line with EBP. Probably, individual persons may improve their own practice with respect to individual patients and inspire their colleagues. However, these individuals may not transfer this practice to the group of nurses working together in teams to perform nursing care and quality improvement in the ward. I think it is crucial to understand challenges and interactions in the ward environment. Therefore, difficulties and complexities

in nurses' daily work in attempting to integrate EBP into clinical practice in hospital wards caught my interest and provoked my curiosity. I believe that my experiences in clinical practice enhanced my sensitivity to investigate and understand what was happening in daily work. Further, I suggest that theorizing practice could help enhance the understanding of practice for researchers and managers who wish to integrate EBP or EB knowledge. I am aware of this pre-understanding. By using classic grounded theory, I endeavoured to suspend my pre-understanding during the research process.

4.3 Central concepts in classic grounded theory

The literature describes several central concepts in classic grounded theory. Here, I will present those relevant to the grounded theory process in the studies included in the thesis. First, openness and theoretical sensitivity are described. Then, theoretical sampling and substantive and theoretical coding are elaborated upon. Last, the quality criteria in grounded theory are discussed.

4.3.1 Openness and theoretical sensitivity

Theoretical sensitivity is an important issue in grounded theory, and it is central to the attitude of being open (Gibson & Hartman, 2014; Glaser, 1978). Theoretical sensitivity means that the researcher has knowledge in, and sensitivity to, the field or area of research, as well as the ability to understand what is going on in the field. Furthermore, theoretical sensitivity means that the researcher is aware of what a theory is, how a theory might work in an area, and how a theory can be developed and utilized (Gibson & Hartman, 2014). By reading several grounded theories from different research areas, a researcher can train her theoretical sensitivity to express the relationships between categories in a theory (Glaser, 2005). Several possible relationships between categories are described through theoretical codes; the more theoretical codes one is aware of, the better one is able to develop a theory that fits in the studied area (Gibson & Hartman, 2014; Glaser, 1978, 2005). In working on this thesis, I have been reading grounded theories unrelated to EBP integration. Being open in grounded theory means that the researcher explores what is going on in the investigated area without a specific research question. The researcher should be open and sensitive to the information that emerges (Glaser, 1998, 2013; Glaser & Strauss, 1967). The main point of openness is that the researcher is open to what might emerge in the research process, with preconceived concepts

or ideas suspended throughout the duration of the study. Conducting research based on established theory may cause the researcher to collect data about what, beforehand, the researcher supposed was important; consequently, it may be difficult to see new aspects (Hartman, 2001). When one analyses the data based on a theoretical framework, it is difficult to generate a new theory because the researcher will have trouble seeing the new and important content in the data (Hartman, 2001).

The openness in classic grounded theory is achieved by an inductive inquiry requiring the researcher to identify the realities of the participants' daily experiences. Initially, systematic data collection starts with a focus on a general perspective and problem area. The researcher meets the field of research with an open mind as to what might emerge in the research process, with preconceived concepts or ideas suspended. In observations, the researcher tries to observe or hear what the participants do or say. In focus group discussions and individual interviews, the researcher does not use preconceived concepts; rather, the researcher uses open questions, letting the participants talk about their concerns (Glaser, 2013; Polit & Beck, 2016). For example, a semi-structured or a thematic interview guide may be used. The researcher starts the coding process with open coding, naming events line-by-line and ensuring that all events may be relevant from the beginning. When codes and categories emerge, the data collection and analysis can be more focused on selective events. This is further described in section 4.3.3.

Regarding the aspects of openness, the timing of the literature review must also be clarified. Glaser has stated that one should avoid conducting a literature review in the substantive area in which the research is to be done before the grounded theory is nearly completed or finished (Glaser, 1998; Glaser & Strauss, 1967). This delay allows the researcher to remain open to emerging codes and categories, with no influence from existing knowledge in the specific area. However, the researcher should be theoretically sensitive, which may require knowledge of the literature. The researcher might also need to read documents early in the research process to better understand the substantive area under study (Glaser & Strauss, 1967). Further, Glaser (1998) acknowledged the need for conducting a preliminary literature review to comply with requirements for satisfying universities and funding agencies. These perspectives are somewhat confusing and contradictory. Concerns and debates regarding how to approach and use existing literature in grounded theory research have arisen over the last several years (Dunne, 2011; Giles, King, & de Lacey, 2013). This Ph.D. project started with

my interest and established knowledge in the research area. I had to read the literature to build a fundament for the research proposal and to identify the gaps in the research area. During the research process, I have been searching for new and relevant updated literature adjusted to emerging concepts and theory development, as well as for areas for further research recommendations. Last, I have searched for new literature in the process of finishing the thesis with an overall perspective of the area. Fundamentally, these searches for literature conflict with the methodological statements. In line with today's requirements for research that meets academic standards (Dunne, 2011), I could not have omitted these searches for literature. To meet the requirements in grounded theory, I focused on suspending my preconceptions and staying open during data collection and analysis. Further, the research team formulated thematic interview guides based on the classic grounded theory approach, not guided by the literature review. The literature reviews have also influenced my theoretical sensitivity by enhancing my ability to understand the complexities of what takes place inside wards.

4.3.2 Theoretical sampling

Data collection and analyses are performed concurrently in grounded theory. This means that the researcher collects data, and then analyses the data before collecting the next data (Glaser, 1978; Glaser & Strauss, 1967). Theoretical sampling is a core issue guiding the collection and analysis of data. The researcher collects, codes, and analyses the data, and then, based on emerging codes and categories, decides what data to collect next and where to collect them (Glaser, 1978, 1998; Glaser & Strauss, 1967). The emerging codes are used to develop the theory as a continuous activity. At the starting point, the researcher collects data based on a general perspective and problem area in the field. When codes emerge, the researcher decides where and how to collect the next data based on preliminary codes and categories. The places of research, participants, methods, and situations are selected based on a theoretical purpose and relevance, assumed to inform the emerging concepts (Glaser & Strauss, 1967). Theoretical sampling requires continuous thought, consideration, and choices on the part of the researcher. To find wards relevant to the aims of this thesis, we mapped out hospital wards that were committed to integrating EBP. From among the actual wards, we chose to start with a ward working with an EBP project. Further, during data collection and analysis, we followed the theoretical sampling procedure, which is outlined in detail in the methods chapter, Section 5.3. The choices we made during the research process were based both on my

considerations as lead researcher and on several discussions among the research team members. We have strived to comply with the requirements in classic grounded theory by remaining open and determining where to go next to find new data that fit with the emerging categories and emerging theory.

4.3.3 Substantive and theoretical coding

Coding organizes the data and the conceptual codes establish relationships between the data and the emerging theory. There are two main types of codes; substantive codes and theoretical codes. The coding process starts with substantive coding, consisting of open and selective coding. Afterwards, the theoretical coding takes place (Glaser, 1978). In open coding, the researcher names events in the data line-by-line, without thinking of relevance and with preconceptions suspended. By continuing open coding, the researcher asks questions about the data that, summarized, will indicate what is "going on" in the field. These questions are: "What is this a study of? What category does this incident indicate? And what property of what category does this incident indicate?" (Glaser, 1998, p. 123). During analysis, the constant comparative method is used to compare events with events and categories with categories, to explore events, and to form categories and their properties into a theory. Conditions, causes, contexts, and consequences relevant to the people's actions may also be brought up in the analysis. For example, the conditions say something about the relationships in which something happens. When the researcher starts to understand what happens in the data and can form a core category, selective coding begins. In selective coding, the researcher names events in the data relevant to the core category and the related categories. The core category now becomes a guide for further theoretical sampling. This means that the researcher looks for participants and situations that may contribute information relating to the core category (Glaser, 1978).

Theoretical coding establishes new connections between ideas from the substantive area. The theoretical codes conceptualize how the substantive codes relate to each other (Glaser, 1978). During the analysis, when codes and categories emerge, a deductive element in grounded theory is introduced. This means that the researcher formulates hypotheses based on assumptions about relationships between emerged categories and properties formulated in memos about data from the inductive phase (Glaser, 1978, 2005). As such, the deductive element in grounded theory originates from the inductive coding of the data, not from

preconceived concepts (Glaser, 1978). When writing memos, the researcher writes down thoughts about relationships between emergent events from the empirical data. In the process, the researcher uses thoughts, inspired by what she/he believes and by assumptions of what she/he may see in the data. In this thesis, memo-writing was influenced by my pre-understanding regarding my thoughts about relationships between categories based on my experience, theoretical knowledge, and competence. The hypothesis expressed in memos contained suggestions that had to be verified by continuing the constant comparison of events to determine whether they were related to the emerging theory (Glaser & Strauss, 1967). In grounded theory, writing memos is central from the beginning of the data analysis, as memos are places to store your emerging ideas during the analysis process (Glaser, 2014). Through the development of the theory, theoretical coding and conceptualization contribute to separation from participants and local context (Lomborg, 2005). Glaser (1978) specifies that theoretical codes without integrated substantive codes are empty abstractions. Substantive codes give meaning to the abstractions. One theoretical code conceptualizes how the substantive codes may relate to each other through a hypothesis in an emerged theory (Glaser, 1978). Glaser has listed several theoretical codes that the researcher should be aware of, in order to be sensitive to which theoretical codes may be suitable to a theory. Such codes can be a basic social process, the degree family, the strategy family, a process, or the loop family. For example, a process has at least two stages, phases, or transitions, and refers to something that happens over time (Glaser, 1978, 2005).

4.3.4 Quality criteria in grounded theory

Glaser and Strauss (1967) stated that the quality criteria in grounded theory were that a theory should fit, work, and have relevance. Later, this was elaborated on to also include modifiability as a criterion (Glaser, 1978). These criteria must be met for the theory to qualify as a grounded theory (Glaser, 1978, 1998). When a theory fits, codes and categories are generated systematically from empirical data, not by preconceived concepts or pre-existing categories (Glaser, 1978). Fit is an aspect of validity and is strengthened by the analysis of data using the constant comparative method. When a grounded theory is well-developed, it verifies itself by the constant comparison of events with events (Glaser, 1998). A theory generated with grounded theory methodology must also work. This means that the theory must explain what has happened and what is happening in the area of research. This can be seen when the theory explains and interprets the actual behaviour of the participants in the

social field, and also predicts future behaviour (Gibson & Hartman, 2014; Glaser, 1978). The relevance of a theory describes a situation in which the theory explains how the participants in the research area resolve their main concern. As such, the theory must be relevant to the problems that are the main concern of the people in the setting and to the action in the area it is meant to explain (Gibson & Hartman, 2014; Glaser, 1998). Modifiability refers to the ability to modify the theory by comparing new relevant data to the existing theory. This may ensure that the theory changes according to changes in the research field (Glaser, 1998). A grounded theory is neither right nor wrong; it has more or less fit, workability, relevance, and modifiability (Glaser, 1998).

5 Methods

This chapter consists of an overview of the settings, the participants, and the methods used in data collection and analysis in the three sub-studies. Furthermore, ethical approvals and considerations are described. An overview of the studies included in this thesis is given in Table 1.

Table 1 Overview of Studies I, II and III

Study	**Study I**	**Study II**	**Study III**
Aim	To generate a theory about the general patterns of behaviour that are discovered when clinical nurses attempt to integrate evidence-based practice into their daily work.	To explore the processes involved in two different strategies applied to integrate EBP into nursing practice.	To generate a theory about patterns of leader behaviour that leaders are engaged in when attempting to integrate evidence-based practice into a clinical setting.
Methodology	Classic grounded theory	Classic grounded theory	Classic grounded theory
Methods	Observations Focus group discussions	Observations Focus group discussions	Observations Focus group discussions Individual interviews
Participants	Registered nurses Specialist nurses Assistant nurses	Registered nurses Specialist nurses Assistant nurses	Registered nurses Specialist nurses Assistant nurses
Data collection	March 2014 – November 2015	March 2014 – November 2015	March 2014 – January 2018
Analysis	Constant comparative method	Constant comparative method	Constant comparative method

5.1 Settings

The studies took place in a hospital trust providing acute services to 400,000 people in eastern Norway. In 2006, the executive director in the hospital trust implemented a policy on the use of EBP through the developing and applying of a framework for EBP integration. This framework consisted of four domains: competence development, organizational adjustments, technological infrastructure, and information resources for knowledge support (Vandvik & Eiring, 2011). Nurses and other healthcare professionals were engaged in EBP activities, such as developing EB guidelines, care pathways, or standardized care plans. For example, educational offerings, such as workshops and the Norwegian online course www.kunnskapsbasertpraksis.no, were used. Approximately 10 years after EBP was initiated, these studies were performed to investigate what the nurses were concerned about regarding EBP integration.

In Norway, four regional enterprises are managing several hospital trusts, each consisting of several local hospitals. The hospital trusts are managed by an executive director with a leader team (Spehar, Frich, & Kjekshus, 2014). In the hospital trust where these studies were conducted, a four-level structure of leaders is standard. These levels are: the executive director, division managers, department managers, and ward leaders. In addition, it is common for teaching nurses to be assigned to the wards. Their function is to serve as clinical nurse leaders. The studies were conducted in two medical wards treating patients with different diagnoses in two distinct geographical locations. Both wards were striving for EBP and quality of care. The first ward (Ward A) was engaged in an EBP project to learn EBP and develop EB guidelines. The second ward (Ward B) was integrating EB knowledge/EB guidelines by using a huddle board. The wards are described in detail below.

Ward A

Ward A had 18 patient beds organized into two working groups. At the time of the study, the ward consisted of 33 nurses and three assistants. During a period of approximately two years, most clinical nurses in the ward participated in an on-going EBP project. The project had a bottom-up profile initiated and managed by a nurse with a master's degree, together with a teaching nurse. These nurses allocated funds from the hospital to enable the nurses to participate in groups in allocated time outside their daily work. The ward leader (i.e., head nurse), as well as the department manager, supported the project. The ward leader organized the staff to obtain dedicated time for the nurses to work in the groups. The nurses participated

in four different groups that worked one at a time, each with a self-determined theme. In the groups, they were taught about the steps in, or the process of, applying EBP in everyday activities; asking and formulating questions, searching for the literature, critically appraising the research evidence, the application of new knowledge, and evaluation in line with the steps of EBP (Melnyk & Fineout-Overholt, 2015b). Three groups identified new evidence, while the fourth group did not find new evidence relevant to their theme. One group wrote a new guideline while one group developed an implementation plan for integrating a registration scheme for patient symptoms into practice. They struggled to integrate this new knowledge into daily work, with the purpose of improving patient treatment and care.

Ward B

In this ward (consisting of 38 patient beds), 63 nurses and five assistants were organized into four working groups. For some years, the employees had focused on quality improvement and had participated in different EBP projects. At the time of data collection, the ward had newly integrated a huddle board into daily work, aimed at improving clinical practice and reducing patient harm. The hospital executive initiated the implementation of the huddle board in several wards; as such, it represented a top-down profile. The huddle board was anchored in the Norwegian Patient Safety Programme, in which a group of healthcare experts identified target areas with a potential for clinical improvement (Norwegian Ministry of Health and Care Services, 2019). Local target areas were chosen to address relevant clinical topics in each ward. Tied to the target areas were EB guidelines with recommendations and measures based on the currently available evidence (e.g., systematic reviews). Through interdisciplinary daily meetings in the ward (i.e., "huddles"), the healthcare professionals used a whiteboard (i.e., "huddle board") as a visual patient risk-assessment tool in reviewing each topic. The nurses used a template informed by the EB guideline for each target area in registering issues, discussing problems, planning measures, and evaluating the effects of measures carried out. The nurses were expected to report their registrations by checking off the items on the template.

5.2 Participants

The participants in the studies were clinical nurses and leaders working in the two selected wards. A total of 63 nurses were observed, of whom, 18 clinical nurses participated in focus groups and five leaders participated in individual interviews. The nurses comprised registered

nurses (39), specialist nurses (15), and assistant nurses (9). The registered nurses had a bachelor's degree awarded after three years of university-level education. Two of the specialist nurses had a master's degree, and 13 had completed a 12- to 18-month study after earning their bachelor's degree. The assistant nurses had completed a minimum of two years of upper secondary education. Of the 63 nurses, 58 were female and five were male. Their average age was 41.4 years. The nurses who participated in focus groups were working in care positions in the hospital wards, and consisted of 10 registered nurses, three specialist nurses, and five assistant nurses.

The five participating leaders represented two head nurses, one assistant head nurse, and two teaching nurses. The main fields of responsibility for the head nurses were managing the wards (e.g., taking care of staff, economy, working schedules, organizing daily work, improving quality, and integrating new practices). The main fields of responsibility for the teaching nurses were teaching, daily clinical assistance, and practical training in a position as clinical leaders. Clinical assistance included tasks such as explaining a procedure or assisting a clinical nurse in a conversation with relatives. In practical training, the teaching nurses demonstrated how to perform procedures and guided the clinical nurses in specific situations as needed. The assistant head nurse took over selected tasks and areas of responsibility from the head nurse and the teaching nurse. She also stimulated critical thinking and organized reflections. The leaders were all female. From no on, this thesis will term them as "leaders". They had been working in their present positions for an average of 12 years and their average age was 54.4 years. Four of the leaders had completed a specialization after their bachelor's degree, either in management or, for their wards, relevant professional education. To ensure the confidentiality of the participants, the specifications of the specializations are concealed. Some years before the time of the studies, all the leaders had completed EBP seminars.

5.3 Data collection

Data included in the studies were collected from March 2014 to January 2018. Combinations of data collected from participant observations, focus groups, and individual interviews were assumed to provide rich, relevant information about the clinical nurses' and their leaders' challenges and patterns of behaviour when they attempted to integrate EBP into daily work. Data collection that provides data with rich information and variation is recommended in grounded theory (Glaser, 1978). We also expected to gain information about the interactions

among the clinical nurses, among the leaders, and between the clinical nurses and the leaders. In addition, we hoped to reveal what the nurses did and how they expressed this in words. In grounded theory, all information sources may be data, which means that one can or probably should combine several data sources relevant to the topic (Gibson & Hartman, 2014; Glaser, 1998).

The wards, participants, methods, and situations were chosen using theoretical sampling. As explained in Chapter 4 (4.3.2), in theoretical sampling, the researcher collects and analyses data, and then determines the next data collection based on emerging codes and categories, to develop the theory as it emerges (Glaser & Strauss, 1967). The researcher collected, coded, and analysed the first data, while the gradually emerging codes and categories were used to guide the data collection to contribute information that could strengthen the emerging theory (Glaser, 1978; Glaser & Strauss, 1967). From the beginning, the focus of the studies was on the research area of EBP integration into daily work in hospital wards. The first choice in the sampling process was to include a ward working actively with an EBP project. Thus, we assumed that we would get rich information about EBP. Further, observations were considered to be a good starting point, offering the possibility of seeing what was preoccupying the nurses and what was going on in their daily work.

The first hours of observations indicated that the nurses were busy with practical challenges in their ward. When open coding continued, several different codes emerged. EBP appeared as one of the core challenges in the nurses' daily work. We continued data collection, looking for participants and situations that could inform the EBP problem area. These could be daily work duties in which knowledge and evidence might be used or focused on. As I got to know the nurses, I could try to observe participants assuming to have knowledge and experience in EBP, representing various ages, levels of experience, and employment statuses. Emerging categories indicated that clinical nurses and leaders were struggling with different challenges in EBP integration. In the research team, we decided to further explore both the clinical nurses and the leaders to better understand their daily challenges. We conducted interviews with leaders engaged in EBP, assuming that individual interviews would be the most appropriate data collection method. Individual interviews were assumed to provide in-depth information about each leader's experiences, challenges, and strategies in EBP integration (Malterud, 2017). Furthermore, individual interviews seemed optimal in terms of collecting data from a limited sample of leaders throughout the data collection procedure. Further, one

individual interview with another ward leader working closely with the nurses and two focus groups with clinical nurses were conducted from Ward A. Focus groups were selected so that the clinical nurses could discuss their perceived challenges and themes related to the emerging codes and categories, as well as to investigate interactions between the nurses. Participants were selected based on the assumption that they would contribute knowledge and experience that could inform the emerging codes and categories. When no additional categories emerged, we decided to choose another ward in the sample process.

Ward B was selected based on the emerging codes and categories because that ward had attempted to integrate EBP into its daily workflow using a very different approach (huddle boards). The theoretical sampling continued based on the same procedure as that carried out in Ward A. Emerging categories guided the data collection through observations, focus groups, and individual interviews. Relatively soon, I got to know the nurses and could try to observe participants with knowledge and experience in EBP representing various ages, levels of experience, and employment statuses, in the same way as I did in Ward A.

Data from the observations and focus groups were used in all three studies. In addition, individual interviews were conducted with ward leaders and were used in study III. We collected data over an extended period of almost four years. This was due to the need to fit data collection and analysis from observations, focus groups, and individual interviews within the same wards. Further, scheduling time for individual interviews with leaders was challenging because of their huge workloads. In the analysis process after the fourth individual interview, the research group agreed to conduct another individual interview, which, due to practical reasons, could not be done before January 2018. The same participants were involved in the study throughout the entire data collection period. In Ward B, one leader quit after we had conducted observations, focus groups and one individual interview in that ward. We had interviewed the leader who quit. The ward recruited a new leader among the staff. We did not conduct an individual interview with the new leader because she had a role as a clinical nurse in the observations and focus groups.

5.3.1 Observations

Data collection through observation is well-suited to grounded theory research (Fangen, 2010; Glaser, 1998; Glaser & Strauss, 1967), as research method observation is suitable for

exploring physical conditions, participants, activities, and social interactions (Fangen, 2010). The data collection started with participant observation. As a participant observer, the researcher can study which activities the participants initiate, which positions they take, and how they influence each other. The researcher participates in conversations and interacts with the participants, without doing the same as they do in situations that the researcher has not structured (Fangen, 2010). The observations were made throughout the course of 90 hours over 13 weeks. Some of the observed nurses were closely followed, and some were not intensely observed. Observations were first conducted in Ward A (36 hours) and then in Ward B (54 hours). The observations took place in clinical practice during the nurses' patient care and daily activities by following clinical nurses and their leaders in their interdisciplinary work with physicians, physiotherapists, occupational therapists, students, and other collaborators. Additionally, some observation hours focused on internal teaching events. Participant observation provided the opportunity to ask questions or get involved and obtain insider views. It offered a chance to explore the participants' experiences, positioning, and behaviours as they naturally occurred in the clinical settings under study (Fangen, 2010; Malterud, 2017). The premises in grounded theory were attended to by keeping an open mind about what happened in the field and how the nurses worked, interacted, and resolved their challenges.

The lead researcher performed the observations and wrote both descriptive and reflective field notes during the observations and immediately after (Fangen, 2010). In grounded theory, the researcher is looking for what the participants do—i.e., how they act to handle their challenges. As such, the field notes were descriptive, using words that described what the participants did, what they said, and how they communicated verbally and non-verbally (Glaser, 1978; Glaser & Strauss, 1967). Reflective field notes described the researcher's perception of the situation and atmosphere, which are important data sources in observations (Fangen, 2010).

5.3.2 Focus groups

After the observation period in each ward, we conducted focus group discussions. In grounded theory, focus groups are less commonly used than are individual interviews (Krueger & Casey, 2015). According to Artinian (2009), data are usually collected by interviews. In line with Glaser (2011), everything can be data if it is relevant to the purpose of

the study. Data with variety and information-richness are recommended in grounded theory (Glaser, 1978, 1998). Focus groups are used to explore healthcare professionals' experiences and points of view, and are well-suited to the study of relationships between people and their social interactions (Hernandez, 2011). Furthermore, group work that may be attained in focus groups provides the language, concepts, and frameworks that the participants use in their world. As such, what the participants consider to be important establishes a priority, which makes focus groups well-suited to grounded theory (Kitzinger, 1994).

Eighteen nurses participated in four focus groups, two held in each ward. The researcher recruited the nurses via email. The focus groups were held at the participants' workplaces and consisted of colleagues who were familiar to each other. The focus groups were planned for approximately eight participants, but because of practical issues in the wards and absence due to illness, four or five nurses participated in each group discussion. The optimal size of focus groups may be suggested to be from five to twelve people (Polit & Beck, 2016). Five to eight people have also been recommended, with the argument being that too-large groups may limit each person's contribution and be difficult to moderate (Creswell, 2013; Krueger & Casey, 2015). In the discussions, we used a thematic interview guide developed for each focus group (Table 2). This was based on the grounded theory principle of staying open-minded and letting the participants talk about their main concerns without preconceived concepts or questions (Glaser, 2013; Polit & Beck, 2016).

The focus groups were moderated by the lead researcher, while SH served as the co-moderator. Each focus group discussion lasted between 55 and 65 minutes, and was audiotaped and later transcribed by the main moderator. The moderators took some notes during the discussions. Afterwards, the moderators discussed the themes from the discussions and summarized their main reflections.

Table 2 Example of the dynamic use of a thematic interview guide

Situations	Questions
We began all focus group discussions with this open-ended question	What has the use of evidence-based practice been like in your ward?
If necessary, we asked these questions to the groups	Can you tell us about a situation in which you have succeeded in the integration of evidence-based practice? Can you tell us about a situation where you did not succeed in the integration of evidence-based practice?
We elucidated these questions in all groups in different ways, depending on the situation	What is evidence-based practice? What is your work environment like? What are the relationship and cooperation between newly graduated nurses and more experienced nurses like? What do you think about the role of the students in the ward?
Examples of questions that relied on information obtained during the observations and questions adjusted to the emerging codes and categories	During the observation period, I observed that you were asked questions by others and continually received new messages and other tasks while you were working. How do you experience such situations? During the observation period, I observed that it is routine practice to change peripheral vein catheters at set intervals. How did this process occur before huddle board implementation, and how does it currently work? During the observation period, I heard repeated discussions about performing the best procedure for the patients, but difficulties solving this problem were expressed. How do you solve similar challenging clinical problems?

(Renolen, Høye, Hjälmhult, Danbolt, & Kirkevold, 2018, p. 183)

In the focus group discussions, the nurses reacted to what their colleagues said in their common context; in this way, the discussions led to deeper expressions of their opinions, which are beneficial in focus groups (Kitzinger, 1994; Malterud, 2012; Malterud, Fredriksen, & Gjerde, 2009; Polit & Beck, 2016). The clinical nurses participated in the groups together with colleagues from the same ward. This represented the commonality of being nurses working in the studied wards, engaged in integrating EBP into clinical practice (Krueger & Casey, 2015). As such, the participants were able to understand and recognize each other's challenges and experiences (Polit & Beck, 2016). Further, the nurses represented different persons, ages, and levels of education and experience. This resulted in deliberated variation in the groups, which was appropriate for the purpose of the study (Kitzinger, 1994; Krueger & Casey, 2015; Malterud, 2012). To achieve diversity in experiences and information-richness, variations must be balanced with similarities that enable people to understand each other's perspectives (Krueger & Casey, 2015). It is an advantage, in focus groups, that the participants feel safe and that individuals can choose which questions to answer or when to recede (Malterud, 2012). Data from focus groups were compared with data from observations, which provided nuance to what the participants said and the actions that we could observe. This means that focus groups and observations supplemented each other by elaborating on and correcting the data from the different sources (Krueger & Casey, 2015)

5.3.3 Individual interviews

Individual interviews were conducted with the ward leaders in Study III. Individual interviews are well-suited to obtaining information about a person's experiences and to understanding what has happened in a situation (Malterud, 2017). The individual interviews were structured with the purpose of letting the participants talk about what they were concerned about within the frame of the topic (Glaser & Strauss, 1967; Hartman, 2001; Malterud, 2017). We developed a dynamic thematic interview guide consisting of common themes used in different ways based on the situation. During data collection and analysis, we adjusted themes to emerging codes and categories (Glaser, 1978; Glaser & Strauss, 1967). The lead researcher, together with a co-moderator (KK), performed the first two individual interviews. The co-moderator was a nurse who had a master's degree and who was experienced with interviews in qualitative research. After the interviews, the researchers performed thoughtful discussions of the themes and the experienced researcher gave feedback on the interview performance. Further, the lead researcher conducted the next three interviews

alone. The interviews ranged between 51 and 67 minutes, and were audiotaped. The lead researcher transcribed the interviews verbatim. To address safety in the interview setting, the leaders were interviewed in rooms of their own choosing at their respective hospitals. A limitation in individual interviews, also seen in focus groups, is that participants may withhold information, hindering the illumination of all perspectives (Malterud, 2012). As researcher, I tried to create an atmosphere characterized by safety and confidence (Malterud, 2017).

The focus group discussions and individual interviews were audiotaped and transcribed. In qualitative research, this is a common procedure (Malterud, 2017), though this is not in line with Glaser's thinking (1998). Glaser (1998) states that this is not recommended in grounded theory because it gives the researcher too much data and delays the research process. Note-taking during the interviews and immediately afterwards is sufficient. What the researcher may miss will be remembered as being relevant when associations arise in the comparison of events. I regard this as reasonable because this practice would stimulate my senses and creativity as the researcher, as well as allow me to conduct more interviews during the time that I otherwise would have spent transcribing. However, I chose to tape and transcribe the interviews and discussions, as agreed upon by the research team. The arguments were that I was an inexperienced researcher and that the data in the studies had to be shared within the research team for purposes of discussion. By doing this, we ensured transparency in what the participants expressed and minimized the risk of losing important information. Transcriptions were used across the research team to consider the data and quality of content, as well as the researcher's interviewing performance. Glaser (1998) has acknowledged that audiotaping may be accepted in research teams, if necessary. According to Hernandez (2011), the taping of focus groups in classic grounded theory is important to avoid the loss of data.

5.4 Data analysis

Data collection and analyses were performed concurrently during the research period, in line with grounded theory principles (Glaser, 1978). A schematic overview of the data collection and analysis is given in Table 3.

Table 3 Schematic overview of data collection and analysis

	Ward 1	Ward 2				
Time intervals	2014		2015	2016	2017	2018
Observations	▬▬	▬				
Analysis	→	→	→	→	→	
Individual interviews	X X			X X		X
Analysis	→			→	→	→
Focus groups	X X		X X			
Analysis	→	→	→	→	→	

▬▬ Observation period → Analysis period

X One individual interview or focus group

(Renolen, Hjälmhult, Høye, Danbolt, & Kirkevold, 2019a, p. 6)

After the first hours of observations, data analysis started with open coding. We coded line-by-line by naming events. Then, we compared events to events using the constant comparative method, to elicit categories and properties (Glaser, 1978, 1998; Glaser & Strauss, 1967). We then compared categories to other categories. Repeated comparison means that each new observation (codes and categories) is compared to existing data to identify similarities and differences (Malterud, 2017). The constant comparative method provides for extensive concepts and relationships between concepts and contributed to a best possible fit between the generated theory and the data (Glaser, 1998).

During the analysis in the first observation period, we started to understand aspects of the nurses' concerns. Some preliminary categories emerged, such as: striving to get the work done, getting frustrated, and juggling several tasks at the same time. We perceived that ward leaders were essential in EBP integration and we conducted one interview with a leader. After performing a preliminary analysis of this interview, we conducted another individual interview. This analysis indicated different, interesting issues for both the clinical nurses and the leaders. We decided to focus on the issues of the clinical nurses first, and proceeded to conduct focus groups with the clinical nurses. Thereby, we recognized the need for analysing data regarding the clinical nurses (Study I) and the leaders (Study III) in parallel "arms" to generate different grounded theories. Through the analysis, another issue emerged, indicating

that the clinical nurses were concerned about doing the best for each patient based on EBP. This was another issue we had to put on hold (Study II) and further explore after we finished Study I. The following sections describe the specific analyses for the three studies.

5.4.1 Study I

First, we chose to further collect and analyse data to develop a theory about clinical nurses' patterns of behaviour in EBP integration. This choice was based on emerging codes that indicated the clinical nurses experienced huge challenges in EBP integration, which we had to explore. Furthermore, we assumed the importance of first obtaining knowledge regarding the clinical nurses, who constituted the main group of participants. All data from observations in Ward A were analysed. Next, data from the two focus groups in ward A were analysed and connected to the analysis of observational data. Further data from observations and focus groups in Ward B were analysed the same way. This resulted in one overall analysis of all data from observations and focus groups relevant to the clinical nurses' challenges. When we understood that the core category might be something in the direction of striving to get the work done and juggling several tasks at the same time, we focused on data related to the core category through selective coding. After we had identified the clinical nurses' main concern, we identified patterns of behaviour and moved from description to conceptualization (Glaser, 2005). Parallel to the coding, the researcher wrote memos that were used during the theoretical coding process to develop the theory (Glaser, 1978).

5.4.2 Study II

When collecting and analysing data to develop a theory regarding clinical nurses' patterns of behaviour in EBP integration (Study I), we recognised that one of the clinical nurses' concerns involved striving to do the best for each patient based on EBP. This means that this concern was an important one in addition to the clinical nurses' main concern that had to be explored. After Study I was fulfilled, we thoroughly analysed the data related to this issue indicating the nurses' challenges in EBP integration. The researcher first systematically identified the relevant emerged codes from the observations and focus groups in Ward A. Next, the same procedure was used to separately analyse data from Ward B. The research group members discussed the codes and categories. To explore the clinical nurses' challenges in EBP integration, we analysed the specific data from Ward A in relation to the specific data

from Ward B. The researcher wrote memos that were tested in the data. As such, this included both inductive and deductive data analyses (Glaser, 1978).

5.4.3 Study III

In Study III, we analysed data to develop a theory about ward leaders' patterns of behaviour in EBP integration in their wards. Because the data analysis, as described in Section 5.4, indicated different challenges for leaders and clinical nurses, we decided to divide the data collection and analysis into two separate theories. We analysed codes from observations and focus groups together with data from individual interviews with the leaders. Based on the analysis of data from the first observation period, we conducted a thorough analysis of the first individual interview and then of the next individual interview. Further, we analysed codes from focus groups in Ward A and observations and focus groups from Ward B by placing them all together in one pool of codes and categories. Finally, we conducted three additional individual interviews and analysed data concurrently to generate the theory. When emerging trends appeared, we directed the analysis from open to selective coding, to code events relevant to the preliminary core category. Memos were written and tested in the data and used in the development of the theory. The entire research team scrutinized the transcriptions and discussed the codes and categories. Theoretical coding continued until strategies and categories were conceptualized to a more abstract level.

5.4.4 Theoretical saturation

Data collection and analysis continued until theoretical saturation in the studies was achieved. No new categories or properties emerged, while the same properties connected to the categories continued to emerge (Glaser, 1978; Glaser & Strauss, 1967).

5.5 Ethical approval and considerations

Approval from the Regional Committee for Medical and Health Research Ethics was requested, though it was not needed for this study (reference number 2014/35A). The Data Protection Officer for Research and Quality (reference number 2013/17344) and the hospital where the study was performed (reference number 201200448-27) reviewed and permitted the study. In both wards, the leaders also approved the study. The participants received information about the study from their leader before the study began; they also received oral

and written information about the study and its purpose from the researcher before and/or during the observation period. For example, informed consent was collected when nurses returned to work after some days off and required information before the initiation of data collection during their shift. In observations, the participants were recruited by the leader or the researcher, and informed consent/written informed consent was obtained. When the researcher followed a nurse into a patient's room, the nurse informed the patient and obtained oral consent for the researcher to observe the nurse working with the patient. If the nurse was too busy to ask the patient, the researcher waited in the hallway. When the researcher met new persons or situations, she told the present clinicians why she was there and asked if her participation was okay. The wards and participants responded positively to the researcher' participation.

The researcher recruited the focus group participants in cooperation with the ward leaders and obtained written informed consent. The researcher recruited the participants for individual interviews by asking personally, while simultaneously obtaining written informed consent. All procedures were conducted in accordance with the Declaration of Helsinki. Field notes and transcriptions from individual interviews were de-identified to ensure that coding and discussions in the research team were performed with de-identified data. The field notes and transcriptions are stored in the hospital's research data server. De-identified paper documents, including data used in the study, are stored in a locked cabinet in a locked office at the hospital. After the study is completed, the paper documents will be shredded.

6 Findings

This chapter provides a presentation of the main findings of the three included studies. We identified some central conditions that characterized the nurses' work environment; limited resources, a focus on task accomplishment, and standardized treatment and care practices using checklists. The clinical nurses continuously carried huge workloads.

6.1 Keeping on track – Clinical nurses' struggles with maintaining workflow while seeking to integrate evidence-based practice (Paper I)

In Study I, the aim was to generate a theory about general patterns of behaviour that are discovered when clinical nurses attempt to integrate EBP into their daily work. The grounded theory "keeping on track" emerged as the behavioural pattern through which the clinical nurses resolved their main concern: the risk of losing the workflow. The workflow is understood as a continuum of work tasks that nurses carry out to care for patients, support medical treatment, organize the wards, and maintain oversight and control. Being a good professional and cooperating with colleagues were crucial issues in the workflow. Keeping on track was a strategy that the nurses used to reduce the risk that they would lose the workflow when they attempted to integrate EBP. Keeping on track encompassed three strategies that guided the nurses in various conditions: task juggling, pausing for considering, and struggling along with quality improvement (Figure 2), which are described below.

Figure 2 The interrelationship between the three strategies of keeping on track: task juggling, pausing for considering and struggling along with quality improvement

(Renolen et al., 2018, p. 184)

6.1.1 Task juggling

Task juggling emerged as a concept describing the clinical nurses' handling of the tasks that they had to continuously carry out within the available time during their shifts. Task juggling allowed the nurses to maintain control and oversight of their work, thereby ensuring good patient treatment and care. The clinical nurses' use of knowledge in decision-making was mainly unconscious and intuitive, with scant reflections on the knowledge's source. Navigating daily routines, exchanging information, and dividing tasks were the nurses' main features in task juggling. The nurses navigated daily routines by constantly prioritizing what they should do and in which order, and also what they could not do. These routines filled much of the time in the nurses' workday. In addition, throughout the day, the nurses got new information and new tasks, which they handled by continuously reorganizing themselves.

6.1.2 Pausing for considering

Pausing for considering implied that the nurses did not immediately know the solution to a clinical problem and had to assume a more conscious attitude towards the use of knowledge in decision-making. Conditions such as professional focus in the wards and the clinical nurses' own motivation seemed to stimulate the nurses to reflect on knowledge use. The social work environment among the staff—characterized by cooperation, respect, and open communication—also promoted their reflections. The strategy of pausing for considering consisted of three sub-strategies: seeking solutions "on track", venturing "off track", and adjusting commitment to using knowledge. "On track", the nature of seeking solutions was to quickly find a solution to put into effect in as little time as possible. This implied the use of established knowledge based on the experiences of colleagues and on printed material easily accessible in the ward. The clinical nurses sometimes ventured "off track" by deciding to step away from the workflow to find new knowledge. This came in the form of searching for updated knowledge using the computer, either in a local guideline, in a database, or on a specific Internet website. Seeking solutions "off track" represented a higher risk of losing the workflow than did seeking solutions "on track". The clinical nurses adjusted their commitment to using knowledge by redefining their expectations, from those associated with an idealized position in each situation to simply doing what was feasible.

6.1.3 Struggling along with quality improvement

The clinical nurses struggled along with quality improvement to cope with requirements in addition to accomplishing ordinary tasks. Beyond task juggling and pausing for considering, struggling along with quality improvement competed for the nurses' attention, engagement, and time. The nurses' struggles were characterized by engaging with ambivalence, battling the counter current, and seeking the leader's recognition. The nurses engaged with ambivalence by participating conscientiously in quality improvement activities while simultaneously admitting that the engagement posed the threat of losing the workflow. Quality improvement activities "on track" engaged all the nurses in daily clinical work situations. This could stimulate the nurses to use EB knowledge unconsciously and indirectly in clinical decisions. "Off track" clinical nurses searched for evidence that they used in working with their projects. To a certain extent, they could find new knowledge that influenced their thinking, their attention to some issues, and their consciousness about where the knowledge originated. However, it was difficult for the nurses to integrate the new knowledge into daily work. The clinical nurses who engaged in quality improvement activities regarded the recognition from their leaders as inadequate. They longed for their leaders to give them attention and appreciation for their contribution, as this motivated them to put an effort into the activities.

6.1.4 Conclusion

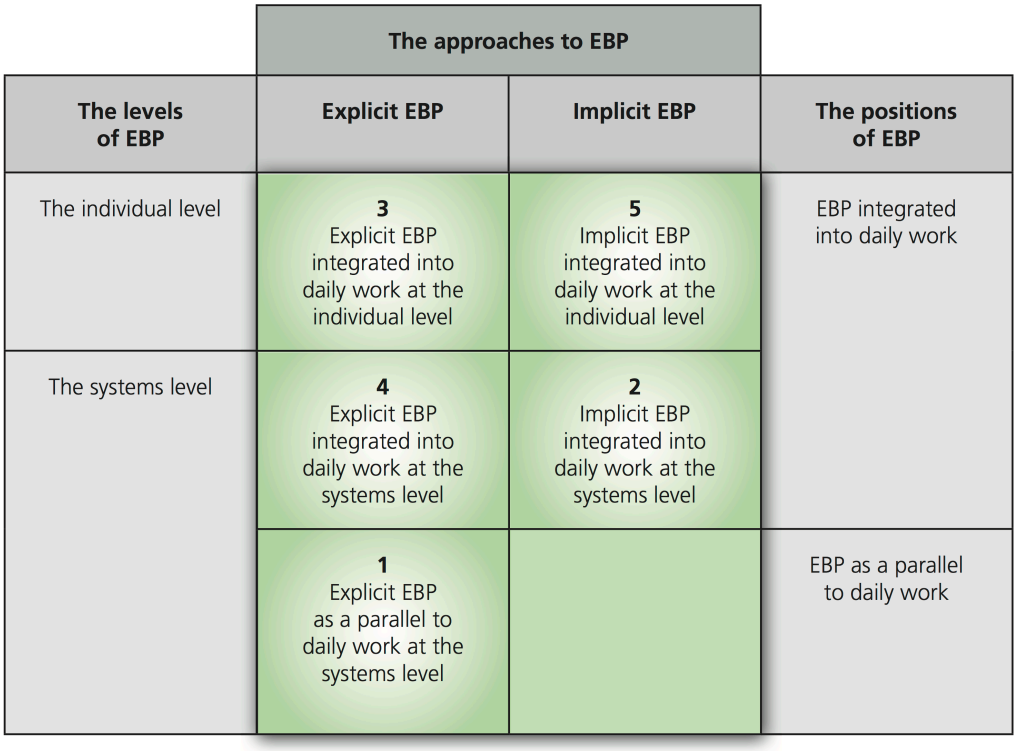
The study's conclusion was that the grounded theory of keeping on track helps us better understand clinical nurses' challenges in EBP integration, and particularly the integration of EB knowledge into daily work. Keeping on track minimizes the risk of losing the workflow so as not to threaten patient care. The clinical nurses regarded EBP as something that went beyond the scope of their ordinary work.

6.2 A multidimensional evidence-based practice integration framework (Paper II)

The aim of Study II was to explore the processes involved in two different strategies applied to integrate EBP, and to better understand the complexities and challenges of nurses' clinical work when they attempt to integrate EBP. The findings revealed a multidimensional EBP integration framework that may help better explain the complexities and challenges in clinical nurses' daily work when they attempt to integrate EBP. The framework consists of three

significant and interacting dimensions: approach to EBP, position of EBP in daily work, and organizational level of EBP. Here, approach refers to the method of enacting EBP in the wards. An explicit approach to EBP (i.e., visible and emphasized) and an implicit approach to EBP (i.e., invisible and hidden in the background) were identified. By position, we mean the way in which EBP was related to the daily work in the wards. We identified a position of EBP integrated into the daily workflow and a position of EBP performed as a parallel activity to daily work. Organizational level revealed how EBP was integrated into the established routines in the wards, at either the systems level (i.e., built into the general routines) or the individual level (i.e., considered the responsibility of the individual healthcare worker when caring for individual patients). Interactions between these significant dimensions reveal five meaningful combinations in the framework based on data in the study (Figure 3). These combinations will be elaborated upon in the following. The combinations 1, 2, and 3 are those about which we obtained the most information from data in this thesis. Therefore, they are presented in the three first sections.

Figure 3 Multidimensional EBP integration framework



Renolen, Hjälmhult, Høye, Danbolt, and Kirkevold (2019b, p. 819)

6.2.1 An explicit evidence-based practice as a parallel to daily work at the systems level

The dimensions of an explicit EBP performed as a parallel to daily work at the systems level were rooted in the EBP project in Ward A (i.e., alternative 1, Figure 3). The nurses learned and discussed EBP; thereby, EBP became visible and articulated. Their attitudes toward which knowledge to use in each situation were influenced, and they were more aware of actual knowledge sources. After finishing their project, the nurses experienced difficulties in putting new knowledge to use in daily work. They did not feel powerful enough to change practice with a new guideline or with new evidence. They were dependent on the leaders and the physicians who had to formally approve the new clinical guideline and accept the new evidence to be used.

6.2.2 An implicit evidence-based practice integrated into daily work at the systems level

The huddle board programme in Ward B represented the dimensions of an implicit EBP integrated into daily work at the systems level (i.e., alternative 2, Figure 3). As part of the nurses' daily routines, the EBP was implied in standardized recommendations and measures in huddle board target areas. The nurses used the EB recommendations and measures, and thereby their use of evidence was promoted. However, the research evidence tied to the target areas was not highlighted in daily work. Among other things, the nurses discussed EB knowledge in critical reflections, without linking this to the target areas. The nurses did not seem to be consciously aware of the evidence and did not recognize their use of knowledge derived from the huddle boards as EBP.

6.2.3 An explicit evidence-based practice integrated into daily work at the individual level

Based on the definition of EBP, the ideal is an explicit EBP integrated into daily work for each individual patient (i.e., alternative 3, Figure 3). The clinical nurses strove to realize this ideal. The findings, however, suggested a gap between the actual performance of EBP and this ideal. This gap was related to the nurses' challenges in getting new evidence to be used and the emphasis on standardized checklists with checking-off routines. The focus on the needs of individual patients seemed to have receded into the background. Striking the right balance between standardized checking-offs and individual patient needs was challenging to the nurses.

6.2.4 An explicit evidence-based practice integrated into daily work at the systems level

The combination of an explicit EBP integrated into daily work at the systems level was less visible in our data (i.e., alternative 4, Figure 3). In some situations at the systems level the nurses demonstrated their awareness of the knowledge they used but seldom could they refer to where they had gained the knowledge. For example, this occurred when a nurse was aware of specific evidence used in the ward but could not account for the source of the knowledge.

6.2.5 An implicit evidence-based practice integrated into daily work at the individual level

An implicit EBP integrated into daily work at the individual level indicated that the nurses could use some EB knowledge but that the clinical nurses had trouble expressing this in words (i.e., alternative 5, Figure 3). We observed nurses providing care in line with EB guidelines in the wards, which indicated some use of EB knowledge. An idea of the existing implicit EBP integrated into daily work at the individual level was also supported by the nurses' recognition that they provided care based on knowledge obtained from several sources, which could include new EB guidelines.

6.2.6 Conclusion

The conclusion was that Study II revealed a multidimensional EBP integration framework that visualizes complexities in clinical nurses' daily work when they attempt to integrate EBP. The main processes involved in EBP integration seem to relate to the challenges involved in integrating explicit EBP into daily work, moving EBP that is integrated into daily work from being implicit to being explicit, and promoting explicit EBP integrated into daily work so that it is used at the individual level. There is a need to initiate organizational initiatives to meet these challenges. Both organizational and individual initiatives to make the evidence in EB guidelines visible to the nurses in clinical situations are important steps toward the promotion of an explicit EBP integrated into daily work at the individual level.

6.3 Creating room for evidence-based practice – Leader behaviour in evidence-based practice integration (Paper III)

The aim of Study III was to generate a theory about patterns of leader behaviour that leaders are engaged in when attempting to integrate EBP into a clinical setting. We found that the

leaders' main concern was how to achieve EB patient treatment and nursing care with tight resources and without overextending the nurses. The leaders resolved this concern through the pattern of creating room for EBP in management and nursing. The grounded theory "creating room for EBP" encompassed three strategies: positioning for EBP, executing EBP, and interpreting EBP responses. The leaders used these strategies in conditions characterized by limited resources, the lack of a good system for instigating change, standardized treatment and care practices using checklists, and a focus on task accomplishment. Furthermore, conditions for the leaders were such that the clinical nurses carried huge workloads and lacked optimal working spaces.

6.3.1 Positioning for evidence-based practice

In positioning for EBP, the leaders started to create room for EBP "outside" the clinical nurses' workflow. This strategy allowed the leaders to manage EBP within existing conditions when they were trying to not overextend the nurses. In positioning for EBP, the leaders used the sub-strategies: ensuring their own capacity, working in leader teams, and being ready for the effort. First, the leaders ensured their own capacity by capitalizing on earlier completion of EBP seminars and several years of experience in their present positions. Next, the leaders worked in leader teams, in which they cooperated and interacted with each other. They made the best possible use of each other's resources and ensured that each team member knew how to contribute. The leaders became ready for effort by handling tasks that the division manager and department manager had assigned to them. They were seeking clinical benefits of the EBP integration process, looking for clinical nurses' use of EB guidelines or their interest in EBP. The leaders also assessed which tasks were most useful for the patients and adjusted their own work to promote the integration of EBP.

6.3.2 Executing evidence-based practice

The leaders executed EBP by stimulating the nurses professionally, struggling with daily EBP challenges, and buffering these challenges. The execution of EBP influenced the clinical nurses' workflow through the leaders' interactions with the nurses. When stimulating the nurses professionally, the leaders focused on EBP and recommended the EB guidelines as basis for evidence in clinical practice. They also encouraged the nurses to participate in critical reflections and to report patient safety incidents. The leaders struggled with daily EBP challenges such as implementing new projects or maintaining routines. There was almost no

time for clinical teaching activities or seminars in daily work. The leaders sometimes offered compensatory time-off to the nurses when they attended training in their spare time. However, this was difficult to carry out because of an already-tight work schedule. The leaders buffered the nurses' challenges, which means they established measures to moderate or prevent clinical nurses' exposure to adverse influences. For example, these influences were too many tasks, difficult tasks, unknown procedures, or inordinately high responsibility for unstable patients without adequate support from physicians. The leaders relieved the pressure on nurses by taking such measures as modifying routines, helping them with practical tasks, and supporting them in executing tasks unfamiliar to them. These activities required interactions closely related to the nurses' daily work. These interactions might positively influence the EBP integration process. Less interaction with the nurses could be seen when the leaders organized practices by giving the nurses allocated time for EBP outside their daily work or told them to ask for help when needed. These actions seemed to make the leaders less capable of understanding what was going on in the nurses' daily work and of identifying appropriate adjustments to continuously promote EBP integration.

6.3.3 Interpreting evidence-based practice responses

Interpreting EBP responses was an emerging concept reflecting three sub-strategies: handling feedback from the nurses, observing the nurses' clinical performance, and considering the actual consequences of the integrated EBP activities among the nurses. These consequences could be positive outcomes as well as no or negative outcomes. Handling feedback from the nurses could be answering EBP questions arising in daily work, helping the clinical nurses to search for specific knowledge, or acting based on patient safety incident reports and formal complaints from the nurses. Observation of the nurses' professional performance revealed variations in what the leaders could see and interpret. Much of what they affirmed from their observations was based on their beliefs about the nurses' behaviour. For instance, the leaders lacked a system for registering whether the nurses read EB guidelines that had been sent to them via e-mail. Even if they believed that the nurses had pursued knowledge, read the guidelines, and used those guidelines, the leaders could not be sure how the nurses performed EBP. In the third sub-strategy, the leaders considered the consequences of the instigated actions. They could see clinical benefits in the form of applied EB measures in nurses' clinical decisions or instances in which the nurses demonstrated increased awareness of the use of knowledge. In other situations, when expecting the use of EB knowledge, the leaders

could miss that evidence related to a patient safety issue had been discussed or that an EB guideline had been used in clinical problem-solving.

Clinical practice was characterized by a huge workload that required the clinical nurses to prioritize between standardized EBP routines and procedures and individualized patient treatment and care. The leaders presumed that the nurses prioritized routines and standardized check-offs ahead of other tasks. Even if the leaders saw the value of standardized check-offs, they worried that these took up too much of the nurses' time. The leaders thought that the nurses, particularly the least experienced ones, did not dare to not follow the standardizations. They handled this by guiding the nurses to choose only necessary standardized tasks for each patient while also addressing the patient's individual needs and documenting the arguments for their choices. The leaders' purpose was to enhance the nurses' ability to address the needs and complete the tasks most essential to the patient.

6.3.4 Conclusion

The grounded theory of creating room for EBP reveals patterns of leader behaviour through positioning for EBP, executing EBP, and interpreting EBP. These strategies, which the ward leaders used in interactions within their teams and with the nurses in EBP integration, were assumed to facilitate and expedite the process of integrating EBP without overextending the nurses.

7 Discussion

The main purpose of this thesis is to gain an increased understanding of clinical nurses' and their leaders' challenges and patterns of behaviour when attempting to integrate EBP into their daily work in hospital wards, and to understand their challenges in the use of EBP in clinical patient situations. The discussion chapter consists of two main sections. The first section discusses methodological considerations, while the second section discusses central findings in the thesis.

7.1 Methodological considerations

Our studies were conducted in accordance with classic grounded theory methodology. Thereby, in this section, I will first discuss the use of classic grounded theory. This choice entails some characteristic techniques that we have endeavoured to follow during the research process. Hereof, relevant to the thesis, I discuss openness and theoretical sensitivity, theoretical sampling, and methods. Further, I discuss the grounded theory quality criteria fit, work, relevance, and modifiability (Gibson & Hartman, 2014; Glaser, 1998; Hartman, 2001). Finally, in this section I discuss reflexivity in the studies. Beyond the characteristics and criteria of classic grounded theory, the Consolidated Criteria for Reporting Qualitative Research (COREQ) has guided the execution of the studies and the reporting of Studies I and II (Tong, Sainsbury, & Craig, 2007). Due to specific journal guidelines, the reporting of Study III was guided by the Critical Appraisal Skills Programme (CASP) (Critical Appraisal Skills Programme, 2018). These guiding programmes focus on reflexivity as one important issue in evaluating qualitative research. When considering the work done in this thesis to ensure the validity of the studies, I will discuss the reflexivity in the research project. Though this is not required in classic grounded theory, newer perspectives on assessing qualitative research also highlight reflexivity in grounded theories (Alvesson & Sköldberg, 2018; Engward & Davis, 2015).

7.1.1 Use of classic grounded theory

The studies in the thesis have investigated clinical nurses and leaders in common contexts with different challenges and perspectives on EBP integration. Looking at their interactions to elicit an overall perspective on EBP integration in hospital wards was assumed to be appropriate and possible through the use of classic grounded theory (Glaser, 1978; Glaser &

Strauss, 1967). In Studies I and III, we conducted substantive grounded theories in accordance with classic grounded theory. In Study II, we developed a framework, following classic grounded theory principles. We did not develop a complete theory. In this thesis, the objective was to theorize practice challenges and latent behaviours in clinical situations. These theoretical perspectives may be used to inform clinical practice and future research into means of adjusting EBP integration processes. The choice of using classic grounded theory has not been unproblematic during the research period. Here, I discuss the choice to focus on the nurses in the wards, how we handled several core concepts at the same time, the challenges involved in conceptualizing, and particular challenges, by using classic grounded theory in Study II.

In particular, grounded theories can be used to improve the quality of nursing care because they are derived from clinical practice (Nathaniel & Andrews, 2007). We have followed the classic grounded theory approach to the research field by exploring what was happening in hospital wards when the people attempted to integrate EBP (Glaser, 1998; Glaser & Strauss, 1967). However, we defined our perspective as the nurses in the wards. We justified this by the fact that the nurses constitute the group of staff members who are in the wards around the clock. Their tasks are patient treatment and care, which they carry out while simultaneously organizing the wards. Based on our pre-understanding of hospital ward functioning, we classified physicians, physiotherapists, occupational therapists, students, and other collaborators as having a role that involved coming to the wards, performing their services, and then leaving. Our focus was on exploring the nurses' challenges and behaviours in these settings. We consider this limitation as being within the boundaries of classic grounded theory. However, during the studies, we recognized the importance of understanding that EBP integration is an interprofessional issue. To better understand the EBP integration process in hospital wards, we could have had a broader focus that explored how all professions interacted. For example, we found that the clinical nurses experienced physicians' need for approval of new EB knowledge and guidelines, which was a factor that hindered the nurses in putting new evidence to use. This thesis does not explore the physicians' voices in this issue. These voices would have helped achieve a better understanding of EBP integration in the ward settings. Furthermore, the voices of collaborating professionals would expand the perspectives on EBP integration in the wards.

More than one core variable emerged in the process of data collection and analysis. To explore one concept, we had to postpone the other concepts as described in the methods chapter (5.4). Correctly managing this task while being in the situation was challenging. Retrospectively, I have considered whether we could have done this in other ways. Glaser says that a researcher can emphasize only one core variable at a time (Glaser, 1978). Another core variable may be filtered into the theory as another relevant category, or it may take a central focus in another writing. As long as the core variables are grounded in data, they will not disappear. How to manage this is not clearly described (Glaser, 1978). Simmons (2011) has pointed out that most essential in the analysis in classic grounded theory is to look for patterns in the data, conceptualize them, and seek relationships between the patterns. By working with the concepts, the researcher focuses on achieving the best possible fit between the pattern being named and the concepts chosen to represent that pattern. During the process, the researcher must be honest to the data throughout the analysis. These are principles that we have endeavoured to thoroughly follow during the emergence of the theories (Studies I and III) and the framework (Study II).

As mentioned, one central aspect of classic grounded theory is conceptualization. This means explaining what happens in a substantive area with concepts that take a theory to a more abstract level (Glaser, 2011). Theorizing practice through conceptualization was one of the assumed benefits of using classic grounded theory. Developing concepts in a language that was not our mother tongue has not been easy. The research team had several discussions of the concepts of the emerging theories and the framework. I have participated in national and international grounded theory seminars, at which concepts and theories were discussed. In addition, I have read grounded theories developed in other research areas, with the intention to gradually improving my understanding of the conceptualization (Glaser, 1978). In the research group, we have considered that the concept of "keeping on track" seems to be abstract and to the point of its content. The concept of "creating room for EBP" is tightly connected to the area of research. In this project, we did not manage to take the concept to a more abstract level. In Norwegian, the theory could have been called the concept of "skape handlingsrom", which we consider as having some power.

While the purpose of Studies I and III was to develop grounded theories, this was not the main purpose of Study II. The data used in Study II were initially collected and analysed through classic grounded theory methodology (Glaser, 1978, 1998; Glaser & Strauss, 1967).

The emerging information showed interesting findings, worth looking into, regarding the wards' two approaches towards EBP integration. In the research team, we discussed the possibility of going further with the analyses with grounded theory, and we decided to do that. When the analysis was complete, we asked the question of whether grounded theory was the best-suited methodology because we did not develop a new theory. To reinforce the findings, we decided to analyse the data with another method as well. We considered thematic analysis (Braun & Clarke, 2006) as being appropriate for analysing these data further for the purpose of Study II. We coded data for specific research questions, which represented a theoretical and deductive approach to the analysis, yielding an analysis of some aspect of the data (Braun & Clarke, 2006). Further, we swayed between thematic analysis and classic grounded theory a couple of times before we decided to take the classic grounded theory approach and completed the development of the multidimensional EBP integration framework. In performing the analysis, we used grounded theory principles and made the most of the deductive element. The deductive element is based on the researcher's thoughts and memos about possible relationships between categories in the inductive phase of the analysis, and not on preconceived perspectives. As such, we argue that Study II was conducted within the framework of classic grounded theory (Glaser, 1978, 2005, 2014). The relationship between the patterns in the framework emerged from the data and was conceptualized to the best of our ability.

7.1.2 Openness and theoretical sensitivity

To remain open in the data collection process, the researcher should use a variety of data sources (Gibson & Hartman, 2014). It was assumed that combinations of observations, individual interviews, and focus groups would provide rich information about the topic, illuminating what the nurses did, how they interacted, and how they expressed their actions in words. We consider it a strength that we collected data using these different methods, endeavouring to perform the data collection and analysis in a manner congruent with openness in classic grounded theory (Hernandez, 2011). Use of other information sources (e.g., documents such as strategy plans, working environment investigations, and local competence building programmes) could probably have further strengthened the studies. During the studies, such documents informed the researchers but we did not code and categorize them as data. This was because the data that came directly from the participants were more in line with the emerging codes and categories. The main argument, therefore, was

that the documents represented the ideal or planned picture of how EBP should be performed, while the emerging codes and categories represented how practice was actually performed. Furthermore, we had neither the capacity nor the time to analyse these sources within the boundaries of this thesis. If possible, the grounded theories could have been compared to data from such relevant sources to further ensure the theories' relevance and value to the research area.

The researcher focused on what the nurses were occupied with and endeavoured to stay open and sensitive to the way in which they perceived their main concern. This required being aware of, and setting aside, the researcher's own pre-understandings and not bring preconceived concepts into the data collection and analysis (Gibson & Hartman, 2014; Glaser, 2013; Glaser & Strauss, 1967). When conceptualizing the emerging categories, the team members used their experiences and knowledge to increase their awareness of the relationships between the categories (Gibson & Hartman, 2014; Glaser, 1978). Nevertheless, our pre-understanding implied a focus that was limited to the nurses' perspectives; during data collection and analysis, this may have hindered our awareness of the overall perspectives in the ward. Even if we endeavoured to be open, our pre-understanding influenced observations, interviews, field notes, and our ability to code the text in some way. As described in Section 4.2, it is not possible to avoid being influenced by one's knowledge and history. We tried to identify our pre-understanding and understand how and where it might affect the study (Skjervheim, 2002).

7.1.3 Theoretical sampling

Theoretical sampling is central to the collection and analysis of data in grounded theory studies. Theoretical sampling may be challenging to obtain in practical research situations. In the studies in this thesis, we endeavoured to follow the procedure as carefully as possible. Nevertheless, ultimately, the authors made the choices, and the emergent analysis can take on various forms depending on the researchers involved (Engward & Davis, 2015). One challenge was not knowing exactly how to collect data, what to collect, how much data we needed, and where to find it, concurrent with the existence of limited time and resources. Analysing Study I was a time-consuming process and contributed to data collection and analysis over a long period of time for the studies in this thesis.

In some way, the researchers influenced the selection of wards, participants, methods, and situations. Initially, in the data collection, the emerging codes and categories expressed different concerns that required investigation. According to Gibson and Hartman (2014), in sampling, the researcher should use her theoretical sensitivity to investigate a wide variety of concerns and select several perspectives from which to investigate those concerns. One way of doing this may be to vary the sample in a way that the researcher feels will be most relevant for the study. Nevertheless, it is not possible to ensure that the variety we have selected will be the most relevant (Gibson & Hartman, 2014). The selections that the authors made in the early phase are preconceived in some way. This does not have to be problematic so long as the researcher remains open and collects data according to the requirements in the theory development (Gibson & Hartman, 2014). Basic to theoretical sampling are the groups or subgroups to which one turns next in the data collection. These groups must be selected based on theoretical purpose and relevance, and must have relevant common features to be compared in the data analysis (Glaser & Strauss, 1967). For instance, in our studies, registered nurses, specialist nurses, and assistant nurses were considered to be relevant groups for comparison, as were Ward A and Ward B.

In observations, as I got to know the nurses, I chose the nurses considered appropriate to inform the general perspective and problem area, which was to understand the nurses' clinical practice and daily work duties. This appropriateness included the nurses' willingness to think aloud and their variety of ages, levels of experience, and employment statuses. I discussed this with the ward leaders, who asked the nurses to let me follow them. The leaders decided what was possible due to the actual work conditions. Sometimes, the leaders changed the roles and tasks for the nurses, with the consequence being that I would have to observe a different nurse that day. As such, the plan was not always possible to carry through. The result was the obtaining of information that could be irrelevant, or possibly also relevant to the emerging categories. The experience of the observer was limited, and these practical challenges provided precious experience without negatively influencing the research. In Ward B, we started the observations with several emerged categories without knowing the nurses or the ward. During the first hours, the leaders were guiding me to the nurses whom I could follow. Relatively rapidly, I became acquainted with the nurses and could better cope with the challenges in terms of knowing whom to follow to inform emerging codes and categories.

After the observations were finished, the categories indicated that interactions between the nurses were important findings. In line with the theoretical sampling process, we considered data collected from clinical nurses participating in focus groups to be appropriate. During the observations, we came to know most of the nurses very well, and could invite clinical nurses who represented EBP knowledge and experiences and who were interested in sharing their experiences. We supposed individual interviews to be the most suitable method of collecting data among the leaders. We wanted to collect data from leaders in the wards in which there were not enough ward leaders to be interviewed in a group. Another consideration was that the leaders represented individual roles, attitudes, and meanings, and we were interested in a variety of perspectives. However, the most decisive factor was the possibility of interviewing the leaders successively when appropriate according to emerging categories in the theoretical sampling procedure.

7.1.4 Methods

The lead researcher mapped out the actual wards to include in the studies based on the wards' interests and ongoing activities in EBP. From these wards, Ward A was chosen and rapidly agreed to participate. When choosing the next ward, I informed and invited to participate two medical wards that seemed to be appropriate based on emerging codes and categories. Only one ward answered the request and was thereby chosen. Participants were specialist nurses, registered nurses, and assistant nurses, which represented the staff combinations in such wards in this actual hospital trust. However, other wards could have produced other combinations among participating nurses. Likely, if a greater portion of specialist nurses had participated, the findings could have moved in the direction of more confidence regarding EBP and more awareness of EB knowledge (Kaplan et al., 2014). Only a few leaders participated in the studies, so the inclusion of more leaders could have influenced the findings as well.

Observation, in combination with focus groups and individual interviews, was assumed to provide information from different data collection methods. Even if grounded theory states that all is data, neither Strauss nor Glaser has written much about how to collect data (Hartman, 2001). Data from observation may directly provide information about interaction processes and conditions, while interviews provide information about the participants' experiences (Malterud, 2017). In the observations, I tried to not hinder or delay the nurses and

I could assist them or fetch and carry things when they wanted me to do so. This role appeared natural for me in the setting. Malterud (2017) expresses that the researcher disturbs less when taking on a role in the research field. The role of observer may be perceived as ambivalent. On the one hand, the researcher creates a foundation for the role of researcher, and interacts with the participants. On the other hand, the researcher collects data and critically analyses them to a more abstract level. The researcher should be aware of her possible loyalty to the participants, and focus on possible perspectives beyond what is directly observed (Malterud, 2017). Because the role of being close to the nurses' activities and interacting with them was the role that was most natural and familiar to me in the setting, I had to pay extra attention to my role as researcher. This means that although I endeavoured to stay open and suspend my pre-understanding, my experience may have influenced what I was able to observe. I may have lost important occurrences because of my knowledge in the field. On the other hand, my experiences, and also the discussions in the research team, may have enhanced my ability to understand what was going on. Observations combined with focus groups and individual interviews analysed through the constant comparative method may have nuanced this possible loss of information.

In the observation period, I talked to the clinical nurses about their possible interest in participating in interviews. The clinical nurses passed on positive attitudes towards participation in groups and were less interested in participating in individual interviews. In addition to the arguments for using focus groups described in the methods section (5.3.2), this contributed to beliefs about focus groups as a well-suited data collection method for the clinical nurses. As described in the methods section, focus groups might represent safety for individual participants (Malterud, 2012). As moderators in the focus groups, we attempted to listen carefully to the discussions and not interrupt as long as the topic, associations to the topic, and themes close to the topic were the focus in the discussions. We perceived all four focus group discussions as dynamic and as having a positive atmosphere. Some nurses talked more than others, but this did not differ from what we had observed in their practice. It may be a problem that dominant individuals can influence others' opinions of what is acceptable in the group and rule over other participants (Krueger & Casey, 2015). A risk in the focus group discussions could be that individual persons withhold information. We cannot know for certain whether this was the case in our studies. The use of focus groups may also present the risk of participants finding it difficult to admit to a lack of knowledge and, thereby, constructing an answer assumed to fit the situation (Krueger & Casey, 2015). We argue that

this may not have been a significant problem in our studies because we let the participants talk about their concerns without forcing answers. If anyone has constructed such answers, the relevance of these answers may be balanced/neutralized by the constant comparison of data from different sources (Fangen, 2010; Glaser, 1978, 1998; Krueger & Casey, 2015).

Individual interviews in Study III provided in-depth information about each leader's challenges and strategies in EBP integration. The two first interviews were conducted together with a researcher experienced in qualitative methods. Immediately after one interview, we discussed the information acquired in the interview and also the role of my interview performance. In transcribing and analysing the interviews, I experienced some situations in which I thought that I should have waited some more seconds before commenting or asking a new question. I endeavoured to learn from this experience and, thereby, to be a better listener for each new individual interview. The research team read all transcriptions and could consider my interview performance. The lead researcher conducted the last three interviews alone. The individual interviews were conducted after the observation period in the wards. As such, the lead researcher and the interviewee knew each other well. The interviews were characterized more by conversations than by one-way enquiries.

Concurrent collection and analysis of data from clinical nurses and their leaders was challenging. We prioritized interviewing the leaders in Ward A when the data were collected from the clinical nurses in the same ward. After a preliminary analysis of the first interview with a leader, we could conduct the next interview. However, we then had to postpone further analysis and new data collection from leaders until the grounded theory of clinical nurses' patterns of behaviour was developed. Idealistically, according to grounded theory, both "arms" should have been analysed concurrently throughout data collection. This might have been possible with two research teams working parallel, each on one "arm". However, based on the availability of time and resources, this was not possible in our work. The data collection with leaders in individual interviews was conducted over a long period of time. This could be a limitation of the thesis. Particularly, the time between the fourth and fifth individual interviews was almost one and a half years. Within this time, we continuously analysed data focusing on theoretical coding and conceptualizing and simultaneously wrote the findings in Studies I and II. We also considered how to go further with Study III before we decided that another individual interview had to be conducted. After this decision, it took

some time before we could carry out the interview. This situation emerged in our studies as a consequence of the concurrent data collection and analyses using theoretical sampling.

Glaser (1998) cautions against taping interviews. However, he recognizes the necessity of taping data in research teams. During the research process, we acknowledged that the analysis was time-consuming but we appreciated the data that gave rich information to the categories and properties. Transcriptions were used across the research team to consider data and the quality of content as well as the researcher's interviewing performance. Hernandez (2011) specifies that in focus groups, audiotaping is necessary to avoid the loss of data. She argues that focus groups are quicker paced than individual interviews and that the researcher has the additional role of moderating the interactions between the participants. In relation to article publication, we also perceived that academic journals would be seeking quotes in the presentation of findings; these quotes would be difficult to provide without transcriptions of audiotaped material. Hartman (2001) has expressed that not audiotaping interviews may be considered unscientific and weak, as the data material should support the theory.

The analysis continued until the theories and framework were fully developed and theoretical saturation was achieved. Knowing everything in the field is not necessary for theoretical saturation (Glaser & Strauss, 1967). Nevertheless, in creating room for EBP (Study III), the saturation of the purpose of the study was considered to be achieved. There were no more leaders in the two wards working closely with the clinical nurses to ask. We considered that stopping with them was the right thing to do, to illuminate the relationship between the clinical nurses and their ward leaders. Other solutions could have been to include leaders from other wards of similar type, or leaders in positions more distanced from the clinical nurses in Ward A or Ward B. However, we considered the timeline of the project and decided to stop; in addition, we had enough data to explain the leaders' patterns of behaviour in our contexts.

7.1.5 The quality criteria fit, work, relevance, and modifiability

As described in Chapter 4, the quality criteria in classic grounded theory are that theories fit, work, have relevance, and are modifiable (Glaser, 1978, 1998). In the research perspective of this thesis, a grounded theory is valid when the theory corresponds to the topic in the studied area. The grounded theory criterion fit expresses this correspondence to social reality and, thereby, enables the external validation of the theory (Lomborg & Kirkevold, 2003).

According to Glaser, the criterion fit is met when the categories in the theory are generated directly from the data. Thereby, the concepts in the theory are closely connected to the events they represent. By using the constant comparative method, the researcher verifies the concepts and patterns by constantly comparing events to events (Glaser, 1978). Throughout the analysis in the studies, the entire research team read field notes and transcriptions, as well as discussed codes and categories and the relationship between them. This process led to questions that required iterative analyses to ensure the validity of the data, categories, and relationships. Constant comparison optimized the probability that the findings fit with empirical data proceeding from the experiences of the participants. In addition, because I was in the research field, observing and interviewing the participants over time, and having informal communication with the nurses, my ability to understand the nurses' concerns and strategies was strengthened. The criterion of work indicates how well the strategies and concepts explain what is happening in the field, and relevance explains how well the strategies resolve the participants' concerns (Glaser, 1978, 1998). We endeavoured to achieve this by being open and using the constant comparative method, ensuring that the concepts were grounded in the data. A theory must also be modifiable, which means that the existing theory may be modified through comparison with new relevant data. In this way, a theory can change according to new knowledge in the actual research field (Glaser, 1998). This cannot be evaluated in this thesis. Rather, if someone uses the theories or the framework in this thesis for future research, they should be able to compare them to new data and obtain changes in line with that new data.

7.1.6 Reflexivity

Reflexivity in a research project concerns the researchers' clarifications of their assumptions and interests in the research topic to maintain transparency on how these factors may have influenced the studies (Tong et al., 2007). Reflexivity concerns the way in which the studies were contextualized theoretically, the ways in which the data were collected and analysed, and the way in which the findings present the content of new knowledge (Engward & Davis, 2015). The research team in this project consisted of five persons with different experiences, as described in Section 4.2. The entire team planned the project and attended discussions regarding EBP and grounded theory during the research period. As such, the research team influenced the choices made.

This was the first time the lead researcher collected data through observations. Practically, we could not conduct the observations with one extra researcher, though we could see that this would have strengthened the study. However, in classic grounded theory, the researcher collects and analyses the data concurrently (Glaser, 1978; Glaser & Strauss, 1967), which in observations may be difficult to complete with more than one researcher. In retrospect, we realize that we could have included two researchers during the first few hours of observations so that we could have compared and discussed the first emerging codes. This would have required more resources. It could probably have enriched the data because the researcher's pre-understanding influences what the researcher is able to see. Two observers could have nuanced the content of the observations and the field notes. However, the discussions in the research team increased my awareness of the diversity of clinical practice and of EBP, and may have enhanced my sensitivity in observations. It is not possible that our history and research lens do not influence the research to some extent (Hellesø, Melby, & Hauge, 2015; Skjervheim, 2002). The researchers' skills in guiding the focus groups (e.g., the ability to get participants to share their ideas and experiences) are essential to accomplishing its purposes (Krueger & Casey, 2015). Prior to these studies, the lead researcher had conducted some focus group discussions, both with a co-moderator and alone. In this thesis, the lead researcher moderated the focus group discussion together with SH, who was a more experienced qualitative researcher. After each focus group, we discussed the themes and interactions that we apprehended in the group discussion and made notes that we shared afterwards. During the first two individual interviews, one female researcher (KK) attended as a co-moderator. The lead researcher conducted the next three interviews. The entire research team read the transcriptions from the focus groups and individual interviews and could examine how the moderators had influenced the participants during the discussions. The research team also participated in coding based on the transcriptions and discussed codes and categories. These activities helped strengthen the validity of the data collection and analysis.

In data analysis, ÅR coded the data. In addition SH, EH, and MK coded the first data in Study I to enable comparison of the codes. Emerging codes and categories were discussed in the research team throughout the data collection and analysis period. The analysis in Study I was the most time-consuming, probably related to the existence of limited training in grounded theory for the lead researcher and some of the researchers on the team. The more experienced grounded theory researchers shared their experiences in constructive debates. The lead researcher participated in a grounded theory seminar during which the preliminary analysis of

Study I was discussed. Further, analysis and conceptualizations were discussed with fellow Ph.D. students at the university and in interprofessional research groups located in the hospital environment. These discussions have provided new perspectives, questions, and reflections; they have also inspired and motivated the lead researcher. Furthermore, developing transparency in terms of decision-making in the research process is important in grounded theory (Engward & Davis, 2015). Transparency in terms of how the findings present the content of data is illustrated by examples of data processing (Appendixes). During the analysis process, the lead researcher coded the data in schemes that were shared with the research team and further discussed in the team before decisions were made. I have been striving to thoroughly describe the decisions made in this thesis.

7.2 Discussion of the main findings

We have investigated clinical nurses' and their leaders' challenges and patterns of behaviour when attempting to integrate EBP into their daily work in hospital wards. This has contributed to a better understanding of their challenges and behaviours in EBP integration. Our findings suggest that the clinical nurses were focusing on doing the best for each individual patient in addition to maintaining the workflow (Paper I). Their top priority was to manage their core tasks in patient treatment and care by using the strategies of task juggling, pausing for considering, and struggling along with quality improvement. The clinical nurses perceived EBP as something that came in addition to their ordinary workflow. Thus, the theory of keeping on track helps us better understand their challenges in terms of EBP integration and their need to minimize the risk of losing the workflow.

The multidimensional EBP integration framework visualizes the complexities in clinical practice when clinical nurses attempt to integrate EBP into daily work (Paper II). The framework consists of three interacting dimensions: approach to EBP, position of EBP in daily work, and organizational level of EBP. Interactions among these dimensions produced five meaningful combinations, whereof data gave most information regarding three of the combinations. These three combinations were: explicit EBP as a parallel to daily work at the systems level, implicit EBP integrated into daily work at the systems level, and explicit EBP integrated into daily work at the individual level. The challenges in clinical practice were related to the movement of EBP as a parallel to daily work to be integrated into daily work, implicit EBP to be explicit EBP, and explicit EBP to be used at the individual level. To

promote EBP integration, there is a need to initiate both individual and organizational initiatives to meet these challenges.

The leaders were endeavouring to prepare for the nurses to integrate EBP while simultaneously avoiding overextending them. The leader behaviour in the theory creating room for EBP consisted of strategies that made the leaders capable of adjusting their tasks and responsibilities to facilitate EBP integration (Paper III). These strategies were positioning for EBP, executing EBP, and interpreting EBP responses. Active interaction in use of the strategies was more likely to expedite the EBP integration process without overextending the nurses. Based on the findings, the following discussion is organized according to: 1) EBP at the systems level: EBP as a valued contextual framework in the organization, and EBP as a tool in quality improvement; 2) EBP at the individual level: challenges related to understanding and integrating EBP into daily clinical work, and 3) Balancing individual patient care and standardized routines and registrations. Finally, in this chapter, the strengths and limitations of the thesis will be discussed.

7.2.1 Evidence-based practice at the systems level – a valued contextual framework in the organization

EBP was a valued framework in the organization where data used in this thesis were collected, among other things visualized in strategy documents and plans of action (Innlandet Hospital Trust, 2012, 2014). Despite this perspective, our findings suggest challenges regarding EBP integration. The findings show that the clinical nurses participating in an EBP project as a parallel to daily work learned and discussed EBP. They experienced increased awareness of EBP and their attitudes towards which knowledge was to be used in each situation were influenced (Paper II). Through their project, the clinical nurses found new knowledge, which they wished to integrate into their daily work. However, even if the nurses experienced increased awareness of available EB knowledge, they recognized difficulties in integrating evidence from the EBP project performed as a parallel to daily work (Papers I and II). The guideline and the implementation plan that the nurses developed were well-known to them, containing both utility and compatibility for use in their daily work. Nevertheless, the integration was challenging to the nurses, even if these properties are among the criteria that promote the use of a guideline (Cochrane et al., 2007; Gurses et al., 2010). It is of importance for the integration that the clinicians have personal experience with the guideline (Traynor et

al., 2010). For leaders to integrate EB guidelines, they must be involved and "own" the guideline (White & Spruce, 2015).

The nurses in our studies reported that they had neither the authority nor the resources necessary to change practice, which is found to be a problem in other research (Sadeghi-Bazargani et al., 2014; Solomons & Spross, 2011; Williams, Perillo, & Brown, 2015). Thus far, research has suggested that activities related to EBP (for instance, searching for the literature and participating in EBP groups or in journal clubs), organized alongside daily work, may be challenging to incorporate into daily work (Aitken et al., 2011; Pitkänen et al., 2015). The project manager and the clinical nurses were dependent on responsible physicians for formal approval of new guidelines, as well as for the acceptance of the new evidence. This might be a hindering or delaying factor that, at worst, may result in a relevant EB guideline not being used. These findings are in accordance with other research that demonstrates barriers in cooperation: lack of teamwork and the physicians' unwillingness to cooperate with nurses in the integration of EBP (C. E. Brown, Wickline, Ecoff, & Glaser, 2009; Sadeghi-Bazargani et al., 2014; Williams et al., 2015). In organizations in which EB guideline integration is an area of focus in teamwork and collaborating environments, nurses probably influence guideline use to a greater extent (Jun et al., 2016). In a culture in which physicians support new evidence and/or EBP these conditions may support EB guideline integration (Kitson et al., 1998).

Our findings suggest that neither clinical nurses nor their leaders had the power to create an organizational structure for adopting guidelines. The findings also reveal that an organizational structure promoting EB guideline integration may enhance the use of guidelines (Papers I and II). Other research also highlights established organizational structures for adopting guidelines as a premise for EB guideline integration (Flodgren et al., 2012; Sadeghi-Bazargani et al., 2014; Solomons & Spross, 2011; Williams et al., 2015). Therefore, for an organization with an EBP policy, there is a need to create structures at the systems level that simplify routines for acceptance, approval, and the use of new evidence or EB guidelines.

Leaders are responsible for realizing actual strategies and plans for activities, which should be deeply rooted in the management at all levels in the organization (Innlandet Hospital Trust, 2014). As such, the leaders might be the spokespersons for the strategies. The findings in this

thesis suggest that the leader teams in the wards influenced the EBP integration process in clinical practice (Papers I, II, and III). The leaders used strategies with continuous consideration of how to handle the challenges that arose during daily work. For example, they aimed to stimulate and inspire the clinical nurses, and they adjusted their own workload to facilitate EBP integration. Furthermore, the leaders used the following strategies: handling feedback from the nurses, observing the nurses' EBP performance, and considering the consequences of EBP integration to facilitate integration of EBP (Paper III). The findings also suggest that the clinical nurses expected the leaders to set aside time for them to work on EBP projects, and they were seeking their leaders' recognition in the form of attention and an expressed appreciation of their contributions (Paper I). In particular, the teaching nurses and the assistant head nurse conducted daily clinical assistance and practical training, and habitually organized reflection groups (Paper III). Their roles and positions in interactions with the clinical nurses in the workflow seemed to be central to promoting EBP integration. Other research suggests that coordination, support, and recognition from leaders in the EBP integration process are important for the clinical nurses' performance in the integration process (Dogherty et al., 2010; Voldbjerg, Gronkjaer, Sorensen, & Hall, 2016; Yoder et al., 2014). Research has found that determinants for the success of EBP integration include enthusiastic key personnel engaged in the process. Key personnel may be teaching nurses, champions, opinion leaders, or implementation leaders (Abbott et al., 2014; Dang et al., 2015; Flodgren et al., 2011; Mair et al., 2012). It also seems that personal properties among leaders in leader teams play a crucial role in the implementation and integration processes. The relationship between managers (ward leaders included) and facilitators, such as teaching nurses, can promote or hinder the integration process (Van der Zijpp et al., 2016). Critical or negative key personnel may act as barriers to EBP integration (Varsi, 2016). However, although assumed important, there have been reported difficulties in causally linking the practice of key personnel to reported outcomes. Among other things, this may be related to variations in how clinical nurse leaders work and challenges in observing and understanding how the clinical nurse leaders work (Bender, 2016).

7.2.2 Evidence-based practice at the systems level – a tool in quality improvement

According to this thesis, establishing a structure with useful tools to support EBP integration at the organizational level may prepare for the integration of EB guidelines. When using a tool such as a huddle board at the systems level, organizational initiatives are taken. This

creates a foundation upon which the wards, on their own initiative, may elaborate the culture for EBP. However, it is important to take into account the fact that introducing a tool or new technology into an existing practice will transform that practice and initiate a process of continuous negotiations (Berg, 1997). According to Berg (1997), a tool integrated into nursing practice may determine what nurses should or should not do in terms of determining which patients' signs are relevant and which are not. Therefore, the preparing of quality improvement activities, as well as their performance and evaluation, is of high importance (DiCenso et al., 2005). A quality improvement activity in a setting should be systematic and data-guided, as well as designed to bring about improvement (Lynn et al., 2007). In our studies, the hospital's initiative to integrate EB knowledge tied to huddle boards through EB guidelines in several wards acted as a quality improvement tool that set the premises for what the nurses are to observe and do and, thus, for what is to be documented. Campbell and Rankin (2017) have demonstrated how a hospital's electronic health record was ruling the nurses' practices and choices in daily work. They argue that the ruling practices displace the processes by which nurses interact with patients in judgment and action regarding individualized patient care. Thus, nurses' work with technological advances aimed at improving their work is the ruling principle for their priorities in observations and activities and may draw the focus away from the patients' individual needs and resources in the situation (Campbell & Rankin, 2017; Rankin, 2015).

Based on our findings regarding the use of huddle boards, I will argue that it is a useful tool for supporting EBP integration by preparing for EBP. However, to succeed in supporting the integration of EBP, conscious awareness of the content put up on the huddle board and possible consequences of using such a tool is necessary. This involves an awareness of pros and cons of using tools such as huddle boards, which knowledge the recommendations on the huddle board are based on, and how the integration process is performed and evaluated. Furthermore, it is important to recognize that applying routines such as huddle board registrations may be at odds with clinical nurses' individual considerations of what is important to do in order to address individual patients' care needs. In addition, uncritical use of routines like huddle board registrations may reduce the nurses' attention to individual patients' experiences (Waters & Rankin, 2019).

When using a tool, such as a huddle board, as a means of integrating EB guidelines in daily work at the systems level, we found some use of EB knowledge. However, the nurses seemed

to use knowledge mostly unconsciously and intuitively, with scant reflections on where the knowledge came from (Papers I and II). The evidence tied to actual recommendations was not highlighted in daily work and the nurses did not seem to consider their use of knowledge as EBP (Paper II). The evidence was, in a way, "hidden behind" the guidelines' recommendations. Based on these findings, we argue that making the implicit EBP explicit at the systems level by highlighting the evidence might be useful. This could increase the clinical nurses' awareness of which evidence they used and from where they got it. When investigating other research regarding this question, we found that EB clinical practice may benefit from critical reflection on practice (Mantzoukas, 2008; Sving, Fredriksson, Gunningberg, & Mamhidir, 2017; Voldbjerg et al., 2016). The pattern of leader behaviour in the thesis implied that the leaders were focusing on EBP and were inspiring and motivating the nurses to integrate EBP by, for instance, encouraging them to participate in critical reflections (Paper III). However, these reflections on EB knowledge were not linked to the recommendations tied to the huddle board (Paper II). Organizational and individual initiatives to make the evidence in the guidelines visible to the nurses in clinical situations could be carried out by instigating reflections tied to the huddle board. Furthermore, these EB guideline recommendations could be highlighted in clinical nurses' decisions in daily workflow interactions. This may promote the use of an explicit EBP integrated into daily work at the individual level.

7.2.3 Evidence-based practice at the individual level – challenges related to understanding evidence-based practice

Findings from this thesis suggest that the nurses have found it challenging to integrate research evidence with the other elements of EBP, i.e., clinical expertise and patient preferences (Papers I, II, and III). These challenges may be part of the issue that EBP integration in nursing has often been expressed or investigated in terms of the use of research evidence. To a certain degree, evidence has been understood and used as synonymous to research evidence (Bang & Martinsen, 2013; Kitson, 2002; Martinsen & Eriksson, 2009). Mostly, evidence has been used in the literature without clarification of its content (Bang & Martinsen, 2013). As a response, the conceptual understanding of evidence has been discussed in nursing (Bang & Martinsen, 2013; Kitson, 2002; Martinsen & Eriksson, 2009). EBP was introduced to encourage clinicians to use research literature more effectively in making medical decisions (Evidence-Based Medicine Working Group, 1992); thereby,

working in line with EBP implies the use of research evidence. As addressed in the background of this thesis, clinical experience seems to be the knowledge source that nurses primarily identify their work with (Bischoff & Hinojosa, 2013; Bonis, 2009; Yoder et al., 2014). The literature has argued for the need for clinical expertise and personal knowledge of the individual patient's beliefs, needs, and values in order to idetify and judge which reseaerch evidence is relevant to the specific situation at hand. "Therefore, expert practice also requires the application of the contextual and idiosyncratic evidence gained through individual healthcare encounters" (Avis & Freshwater, 2006, p. 223).

In Section 2.1, Melnyk and Fineout-Overholt's (2015b) description of seven critical steps in the process of applying EBP in daily work is formulated. Integrating the research evidence into EBP in clinical decisions is the fifth of the seven steps that are part of a linear process. The steps preceding this step are: cultivating a spirit of inquiry, formulating a research question, searching for research evidence, and critically appraising the evidence. In this thesis, these four steps were visualized in the EBP project conducted as a parallel to the nurses' daily workflow, while the integration of the research evidence into EBP was difficult to achieve. The integration of EBP, though implicit, was easier to perform by use of the huddle board in the daily workflow. As such, these steps are attended to in different positions of EBP—EBP as a parallel to daily work and EBP integrated into daily work (Paper II). The different positions of the steps require the initiation of different activities to achieve EBP. I argue that these are differences that have been inadequately focused on in understanding, teaching, and conducting research on EBP. By learning EBP according to the first four steps in EBP, other research, as well as this thesis, suggests that nurses strengthen their attitudes towards EBP and their understanding, motivation, and valuing of EBP in clinical decisions (Grønvik, Ulvund, & Bjørkly, 2018). Previous research has found that nurses who had high scores with regard to their own EBP capability beliefs also had a higher probability of using research and, thereby, better EBP performance (Wallin et al., 2012). Despite such competences among clinical nurses, it is still unclear how EBP should best be integrated (Baker et al., 2015; Bosch et al., 2007; Wensing et al., 2014).

In this thesis, EBP integration at the fifth step is understood as a collective work strategy to achieve the best treatment and care for each individual patient (Papers I, II, and III). As such, EBP integration is a process of collective action in a ward. Likely, normalization process theory (NPT) could be used to understand how to integrate EBP in this collective action. NPT

suggests that collective action is the starting point for empirical investigations, looking at how people work and what they do (May et al., 2009). This means that new practices become normalized in the social context when people continuously work to enact them, either individually or collectively (May et al., 2009). To enhance the use of EBP through normalization, there is a need to stimulate the nurses' use of EB knowledge in clinical settings. EB guideline integration may also be understood to be related to the collective action of EBP integration. This means that practitioners associate the guideline with their activities in clinical practice and may be able to integrate the guideline into their collective workflow (May et al., 2014).

7.2.4 Evidence-based practice at the individual level – in patient situations in daily work

The grounded theory of keeping on track suggests that the clinical nurses were concerned about the risk of losing the workflow, with the consequence being the loss of oversight and control of their work (Paper I). Thus, good patient treatment and nursing care could be threatened. The clinical nurses used EBP in individual patient situations to a certain degree. Their approach to using knowledge was mostly intuitive and implicit (Papers I and II). In actual situations, the nurses were selective when they considered resolving a problem by stepping away from the workflow to search for knowledge. The theory of keeping on track helps us understand this premise for the clinical nurses' daily work in the workflow, which is essential to understanding the need for adjusting EBP integration to the premise of clinical nurses' daily work. In Paper II, we found that clinical nurses used EB knowledge in the course of daily work in their attempt to integrate EBP. However, in this study, the nurses' approach to EBP was implicit and hidden in the background (Paper II). In the EBP project conducted as a parallel to daily workflow, the nurses increased their awareness of which knowledge they used and where the knowledge came from, representing an explicit approach to EBP (Paper II). Unfortunately, the clinical nurses had trouble putting this knowledge to use in their daily work. Thereby, the challenges were to integrate explicit EBP into the daily workflow and to make the implicit EBP, which was integrated into the daily workflow, explicit.

This implies that to integrate EBP into clinical nursing practice, an emphasis on the integration process should be within the nurses' workflow. The specific actions needed and how to adjust them to the workflow must be explored in each ward. This finding is consistent

with other research suggesting that healthcare professionals (nurses included) are most able to consistently use new methods (e.g., checklists or EB guidelines) that are tailored to fit into an existing workflow and clinical routines (Gillespie et al., 2018; May et al., 2014). Another perspective is that the integration of new methods requires healthcare professionals to change their workflow and their behaviour towards the actual topic (Baker et al., 2015; Cochrane et al., 2007; Sadeghi-Bazargani et al., 2014; Solomons & Spross, 2011). Findings from a systematic review of the qualitative literature have indicated that the integration of surgical safety checklists requires changes in the workflow and the healthcare workers' perceptions of patient safety and checklists (Bergs et al., 2015). My argument is that new EB practices that require changes in the workflow in order to be integrated, might have a lower chance of success than new practices adjusted to the workflow in the integration process. To promote EBP integration, one must recognize the complexity of clinical practice and adjust the integration process to the participants' daily work. This requires adjustment and facilitation to promote understanding and motivation among the healthcare professionals as well as practical feasibility (Bergs et al., 2015). This is in line with NPT, which was developed to explore social processes that may influence the integration of an intervention (May et al., 2009). The theory highlights the actors involved, the intervention itself, and the organization. Four core elements to be reflected upon in NPT are: how the actors establish a common understanding of the intervention and of what must be done, workability related to the degree of changes, the need for knowledge and stakeholders in the performance, and contextual organizational possibilities (May et al., 2007). As such, NPT could be a useful tool in EBP integration to create an understanding of how to adjust an intervention to clinical nurses' workflow.

A strategy used by the leaders identified in this thesis was to support the clinical nurses in EBP integration in daily work by buffering their challenges (Paper III). Activities such as supporting the nurses with practical tasks and in unfamiliar situations required interactions within the clinical nurses' daily work. Interactive actions seemed to positively influence the EBP integration process. By understanding these actions, leaders and managers may be able to see what is going on in the clinical nurses' daily work. Thereby, they may better identify how to make adjustments to promote EBP integration (Paper III). Strategies or actions used by leaders, in particular clinical leaders, in understanding clinical nurses' workflow seem to be essential. One assumption for the function of clinical nurse leaders is a clear understanding of complex care processes and how each person involved plays a role in providing quality patient care (Bender, 2016). Research found workflow and a lack of clinical leaders, as well

as a lack of knowledge regarding the content and timing of the "checking off" according to clinical checklists, to be significant barriers to sustained use of checklists in the area of surgical safety (Gillespie, Marshall, Gardiner, Lavin, & Withers, 2016; Gillespie, Withers, Lavin, Gardiner, & Marshall, 2016). The researchers state that to sustain the use of the checklists, the integration must fit with existing routines in the workflow (Gillespie, Marshall, et al., 2016). Among strategies that may facilitate research use in nursing are relationship-building and communication, as well as ongoing evaluating and monitoring (Dogherty et al., 2010).

7.2.5 Balancing individual patient care and standardized routines and registrations

Striking the right balance between considering individual patient needs and following up on standardized checking-offs was challenging to the nurses (Papers I, II, and III). The clinical nurses experienced difficulties in integrating EBP in individual patient treatment and care. Among other things, this was related to the focus on standardized routines using checklists and registration schemes. It was also related to the huge workload, the need to prioritize tasks in daily work, and the challenges involved in using EB knowledge. According to the nurses, standardizing and checklists might counteract individualized patient care. They had to either prioritize so that they could perform individualized treatment and patient care, or follow all checklists with expected checking-off reports. The nurses were expected to report their observations and measures in risk assessments by checking off on a report card or the huddle board. Both clinical nurses and leaders appreciated the possible patient safety improvement that the checklists were intended to create. The clinical nurses also appreciated that the checklists visualized what to do regarding each patient. Simultaneously, the clinical nurses and the leaders worried that these took away too much time from daily patient care.

Risk assessment standardizations and safety checklist have been imported to health care from other risk environments, suggesting the same benefits as in the initial environment (Allen, Braithwaite, Sandall, & Waring, 2016). Nevertheless, in research regarding surgical safety checklists, there is no clear evidence that the use of checklists promotes safer patient care (Bergs et al., 2014; Bosk, Dixon-Woods, Goeschel, & Pronovost, 2009; Urbach, Govindarajan, Saskin, Wilton, & Baxter, 2014). Equal findings are reported from a systematic review concluding that the use of structured, systematic risk assessment tools to reduce the incidence of pressure ulcers is no better than clinical judgment alone (Moore & Cowman,

2014). Checklists used without other measures may be an oversimplification of how safe patient care may be achieved. Rather, improvements in patient care might be achieved by a combination of several measures. Additional to the checklists, these measures may include measuring outcomes and providing feedback, as well as improving the patient safety culture by stimulating clinical performance in daily work processes (Bosk et al., 2009; Southworth, Henman, Kinder, & Sell, 2012). The benefits of standardizing may then be achieved by using checklists combined with these activities.

However, in accordance with the concerns among the clinical nurses and the leaders in this thesis, a risk of overusing checklists may threaten good quality individualized patient care (Bosk et al., 2009). The overuse of checklists has been recognized in some areas, and overuse of checklists without included system changes also appear in health care settings (Raman et al., 2016; Stock & Sundt, 2015). According to Rankin (2015), such standardized EB strategies cannot accommodate the particular needs of individual patients and/or their next-of-kin. Rather, standardized EB strategies may determine which observations and tasks the nurses should prioritize and thus, may displace individual patient care (Campbell & Rankin, 2017; Rankin, 2015; Waters & Rankin, 2019). Campbell and Rankin (2017) asked if nurses understand how these ruling practices influence their nursing care.

Here, I argue that an implicit approach to EBP represents a bigger risk than an explicit approach to EBP, which supports the need for leaders to visualize EBP in daily work and continue to stimulate critical reflection. In this thesis, the leaders were buffering the nurses' challenges by guiding them to perform only the necessary check offs for each patient to be able to complete the tasks that are most essential to the patient (Paper III). This handling required the clinical nurses to argue and document why they did not choose all the checkpoints for each patient. The leaders feared that the clinical nurses could loose their capacity to make independent decisions for each patient, but they did not regard this as absence of individual EBP. The clinical nurses feared that the individual patient care would suffer due to the use of checklists, but the leaders did not mention this point. There is a need to clarify how quality and safety are understood, experienced, accessed and studied to support practice and research (Allen et al., 2016). Striking a balance between EB standards and individualized care is essential in today's clinical practice in order to ensure quality care. A newer perspective on how to promote patient safety may represent a counterpart to standardized practices and use of checklists. This perspective is called resilient health care or

safety-II, and aims to improve and increase the things that go right. This implies that one should focus on, register, and do more of the things that are successful in practice, and learn from these activities (Braithwaite, Wears, & Hollnagel, 2015). Looking at how things go right during normal variations in everyday work may stimulate nurses' use of clinical expertise and reflections on their knowledge for use during individual patient situations. Thereby, this new perspective may be a suitable approach to facilitate EBP integration and improve patient safety in the future.

7.3 Strengths and limitations

One strength in this thesis is that we have studied clinical nurses and their leaders in the same study. This contributes knowledge regarding their interactions and collaborations in a common context. In Study III, the sample size of the leaders was relatively small. However, the strength of these findings is that the data from the clinical nurses' perceptions of the leaders in the wards and observations of these groups working together contributed to information about the leaders' behaviour. We consider it a strength that the studies were conducted in two wards that treat patients with different diagnoses from distinct geographical locations. These wards are considered to be typical for general wards of this kind, and we believe that the findings have relevance for similar kinds of wards or hospitals. Nevertheless, it might be reasonable to assume that wards with more specialist nurses or nurses with a master's degree may provide different results.

The thesis represents only the voices of the nurses, which is a limitation regarding the understanding of the behaviour in EBP integration in the wards for which the patient treatment and care is interprofessional. This limitation was justified by the fact that the nurses constitute the group of staff that are in the wards at all times. Their tasks included patient treatment and care, while simultaneously organizing the ward. Our interest was to explore the challenges and behaviours of the nurses in these settings. By studying the people working with EBP integration in hospital wards more generally, one could illuminate perspectives beyond what is captured in these studies. In retrospect, having the knowledge and experience acquired during these studies, I believe that it would be interesting to explore the perspectives of all the people involved in the wards. It would have been interesting to see if one common main concern would emerge. Furthermore, this would imply openness regarding what

happens in the wards, and would not be delimited to the nurses' perspectives. These additional perspectives would make it possible to further emerge these theories.

We cannot say that the leader behaviour represents the behaviour of leaders across additional hospital wards. However, the patterns described here may inform clinicians and researchers about what happens (from a leader's perspective) when seeking to integrate EBP in hospital settings. In the research team, we discussed the need to interview more leaders in order to ensure saturation (Glaser, 1978, 1998). This would have required us to go outside the wards or to include leaders without direct daily contact with the clinical nurses. However, these changes to the study design would have conflicted with the principles of theoretical sampling and emerging concepts.

An explicit theoretical code has not been consciously chosen for any of the studies, even if theoretical codes and code families have been considered (during the theory development) in line with classic grounded theory (Glaser, 2005). According to Glaser (2005), a theoretical code is not necessary, but it helps to integrate categories and their properties into the theory. The theories "keeping on track" and "creating room for EBP" are most likely to be characterized as processes with "process-like" strategies. The multidimensional EBP integration framework is a framework that captures different dimensions with a pattern of approaches to EBP, positions of EBP and levels of EBP. This framework highlights the challenges involved in attempting to integrate EBP into the daily work of nurses by illuminating how the dimensions interact. The obtained data provided few indications that a sixth combination, an explicit EBP as a parallel to daily work at the individual level occurred in this study, although this is a possibility. Due to time constraints, it was not possible to investigate this issue further, although we recognize that it could have strengthened the richness of the findings.

8 Conclusions and implications for practice

The studies in this thesis enhance our understanding of clinical nurses' and their leaders' challenges and patterns of behaviour in EBP integration into daily work in hospital wards. By using grounded theory methodology, we have developed a theoretical perspective that may help us to better understand and explain how to adjust EBP integration into clinical practice. The clinical nurses and their ward leaders may influence the EBP integration process. However, the capacity to influence depends on organizational initiatives. The findings revealed that there is a need to extend efforts to promote EBP integration at the individual as well as at the systems level, to enhance the use of EBP in clinical settings. Our studies revealed challenges in integrating EBP into daily work. At the systems level, the organizational initiatives to use integration tools, such as the huddle board, may facilitate the use of EB guidelines. When EBP is integrated into daily work, there is a need to move the implicit EBP to explicit EBP by visualizing EBP. At the systems level, leaders could do this by linking critical reflections to the EB knowledge that is tied to the huddle board. At the individual level, leaders could actively highlight EBP that occur in daily clinical situations. Such efforts require leaders with an understanding of and competence in EBP.

The hospital trust had EBP as a valued contextual framework. They also encouraged EBP projects and initiated patient safety checklists based on EB knowledge. However, the use of checklists and standardized routines represent an integration of practices that tend to determine which patients' signs are relevant and which are not. These EB practices may displace individual patients' needs if nurses are "ruled by" or forced to prioritize standardized clinical routines before individualizing patient care. The potential success seems to depend on the process of integrating systems to support the work in the wards. This implies access to relevant EB guidelines that are recognized, striving for a culture that values EBP and that highlights EB knowledge and establishing a structure to facilitate the use of clinical expertise, research evidence, and patient preferences in each situation.

9 Recommendations for further research

The grounded theory "keeping on track" contributes to the understanding of clinical nurses' experiences and patterns of behaviour working in the workflow to integrate EBP. A recommendation for further research could be to explore how to adjust EBP integration to clinical nurses' workflow in different situations. Also, exploring wards with more specialist nurses or wards with no EBP projects or special interests or competences could contribute to knowledge regarding challenges in EBP integration. Furthermore, we suggest conducting a (grounded theory) study to explore challenges and behaviours in EBP integration in hospital wards that is not limited to nurses' perspectives, but includes the perspectives of all healthcare professionals involved. This might broaden the understanding of the complexity of healthcare professionals' strategies in the wards.

As shown in the multidimensional EBP integration framework, research use through EB guidelines in the implicit approach to EBP integrated into daily work might contribute to an improved sustainability of guidelines. This could be appropriate for further research that explores how an implicit approach to EBP can be made explicit by using a tool such as a huddle board. An explicit approach to EBP's integration into daily work at the systems level may be a step in the direction of integrating EBP in clinical practice.

The theory "creating room for EBP" revealed strategies used by ward leaders to promote EBP integration without overextending the nurses. In further research, leaders' actions within their teams and with the clinical nurses in EBP integration into daily work in more hospital wards should be studied. This will serve to further enhance the leaders' knowledge regarding the way in which clinical nurses respond to EBP integration activities and to better adjust EBP integration to clinical practice. More studies exploring clinical nurses and leaders, and optimally all healthcare professionals involved in the same contexts in hospital wards could contribute to the knowledge regarding the appropriate interactions in EBP integration.

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Appendixes

Data processing Study I

Data processing Study III

Paper I **Renolen, Å., Høye, S., Hjälmhult, E., Danbolt, L. J., Kirkevold, M.** (2018). "Keeping on track" – Hospital nurses' struggles with maintaining workflow while seeking to integrate evidence-based practice into their daily work: A grounded theory study. *International Journal of Nursing Studies,* 77: 179-188. doi:10.1016/j.ijnurstu.2017.09.006

Paper II **Renolen, Å., Hjälmhult, E., Høye, S., Danbolt, L. J., Kirkevold, M.** (2019). Evidence-based practice integration in hospital wards – the complexities and challenges in achieving evidence-based practice in clinical nursing. *Nursing Open,* 6: 815-823. doi:10.1002/nop2.259

Paper III **Renolen, Å., Hjälmhult, E., Høye, S., Danbolt, L. J., Kirkevold, M.** (2019). Creating room for evidence-based practice: Leader behavior in hospital wards. *Research in Nursing and Health*, 1-13. doi:10.1002/nur.21981

Data processing Study I

Field notes from the observation	Open coding line-by-line	Selective coding	Category
SN 3 is telling the researcher that SN 3 and a colleague have assumed responsibility to revise an evidence-based standardized care plan. They are going to do it this afternoon. Because they both are working the day shift, the researcher asks if they are going to do it in their spare time. Yes, they have several times tried to do the revisions, but they fail each time because of excessive patient care work, which is impossible to put aside. The researcher asks if they have asked their leader about getting protected time to do it. They have not, because it is so difficult to hire a substitute. The leader has more than enough to do with this already. No, the nurses are tired of not getting it finished, so this afternoon things will be finished.	Are responsible for revising Are revising this afternoon Using their spare time Failing to revise during work shifts Too much work with the patients Cannot leave the patient care work Do not ask the leader about protected time Are getting tired of not getting it done	Using their spare time Failing with revising at work Patient care work takes all of the time on duty Tiring of not getting it done	Assuming responsibility

(Renolen et al., 2018, p. 183)

Data processing Study III

<table>
<tr><th>Transcriptions and field notes</th><th>Open coding</th><th>Selective coding</th><th>Category</th></tr>
<tr><td rowspan="3"><u>Individual interview:</u>
Moderator: “In the observation period, I observed that you played an important role in organizing regular critical reflection groups. What makes such reflection successful in your view?”
Leader: “One has to control the reflection to adhere to the issue. For example a patient situation experienced difficult by a nurse who wants to share this experience and get some feedback from her colleagues. I think it is important to keep the focus and not just talk.”</td><td>Organizing reflections</td><td rowspan="2">Inspiring to participate in regular critical reflection</td><td rowspan="6">Stimulating professionalism</td></tr>
<tr><td>Guiding the reflections</td></tr>
<tr><td>Keeping a professional focus</td><td rowspan="3">Stimulating professional engagement</td></tr>
<tr><td rowspan="3"><u>Observations:</u>
Leader at the morning meeting: “Keep in mind to use the non-slip socks, but remember it is not instead of shoes.”
Leader at the morning meeting:
“At the staff meeting yesterday we had a question regarding use of facemasks. Nurse A, could you say something about it?” A: “To protect the patient in a procedure taking two or three minutes, use the green facemask. Use the pink facemask if the procedure takes longer or in the case of airborne infections. That is the main rule.”</td><td>Reminding the nurses of a clinical issue</td></tr>
<tr><td>Addressing the evidence precisely</td><td rowspan="2">Providing for regular professional updates</td></tr>
<tr><td>Holding expert nurses responsible</td></tr>
</table>

(Renolen et al., 2019a, p. 7)

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"Keeping on track"—Hospital nurses' struggles with maintaining workflow while seeking to integrate evidence-based practice into their daily work: A grounded theory study

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ABSTRACT

Background: Evidence-based practice is considered a foundation for the provision of quality care and one way to integrate scientific knowledge into clinical problem-solving. Despite the extensive amount of research that has been conducted to evaluate evidence-based practice implementation and research utilization, these practices have not been sufficiently incorporated into nursing practice. Thus, additional research regarding the challenges clinical nurses face when integrating evidence-based practice into their daily work and the manner in which these challenges are approached is needed.
Objectives: The aim of this study was to generate a theory about the general patterns of behaviour that are discovered when clinical nurses attempt to integrate evidence-based practice into their daily work.
Design: We used Glaser's classical grounded theory methodology to generate a substantive theory.
Settings: The study was conducted in two different medical wards in a large Norwegian hospital. In one ward, nurses and nursing assistants were developing and implementing new evidence-based procedures, and in the other ward, evidence-based huddle boards for risk assessment were being implemented.
Participants: A total of 54 registered nurses and 9 assistant nurses were observed during their patient care and daily activities. Of these individuals, thirteen registered nurses and five assistant nurses participated in focus groups. These participants were selected through theoretical sampling.
Methods: Data were collected during 90 h of observation and 4 focus groups conducted from 2014 to 2015. Each focus group session included four to five participants and lasted between 55 and 65 min. Data collection and analysis were performed concurrently, and the data were analysed using the constant comparative method.
Results: "Keeping on track" emerged as an explanatory theory for the processes through which the nurses handled their main concern: the risk of losing the workflow. The following three strategies were used by nurses when attempting to integrate evidence-based practices into their daily work: "task juggling", "pausing for considering" and "struggling along with quality improvement".
Conclusions: The "keeping on track" theory contributes to the body of knowledge regarding clinical nurses' experiences with evidence-based practice integration. The nurses endeavoured to minimize workflow interruptions to avoid decreasing the quality of patient care provided, and evidence-based practices were seen as a consideration that was outside of their ordinary work duties.

What is already known about the topic?

- Nurses are not uniformly ready to implement evidence-based practice.
- Clinical nurses infrequently incorporate new scientific evidence into daily work.
- Nurses experience lack of authority to change practice and recognize that change requires hard work.

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What this paper adds

- The clinical nurses' major concern is to minimize losing the workflow to maintain the quality of patient care provided.
- Clinical nurses regard integrating evidence-based practice as a task that comes in addition to their ordinary duties.
- The grounded theory "keeping on track" contributes to better understanding of clinical nurses' experiences and behavioural patterns when attempting to integrate evidence-based practice into daily work.

1. Introduction

Nurses are expected to deliver health care in accordance with evidence-based practice (Department of Community Health Care Services, 2005; Melnyk and Fineout-Overholt, 2015; Registered Nurses' Association of Ontario, 2007; World Health Organization, 2016), which is considered a foundation for the provision of quality care and, therefore, is important for the promotion of patient treatment and care by clinical nurses (Melnyk et al., 2012; Pravikoff et al., 2005a). Evidence-based practice may be regarded as a problem-solving strategy whereby scientific evidence that is applicable to each patient's situation is integrated with clinical expertise, local circumstances, available resources, and patient preferences when making clinical decisions (Melnyk and Fineout-Overholt, 2015; Polit and Beck, 2016). Thus, evidence-based practice is a manner in which to translate (Melnyk and Fineout-Overholt, 2015) or to apply (Titler, 2014) evidence in clinical practice. Evidence-based practice also involves organizational level activities, such as gathering and integrating evidence into a manageable form through the development of evidence-based clinical guidelines (Polit and Beck, 2016). Research indicates that nurses are not sufficiently ready for evidence-based practice and use new scientific knowledge infrequently. This study will investigate nurses' challenges and how they solve these when seeking to integrate evidence-based practice into clinical decisions.

2. Background

Barriers and facilitators to implementing evidence-based practice in hospital settings have been the focus of research for many years and have not changed during the last two decades (Melnyk et al., 2012). Traditionally, barriers such as lack of time, knowledge, and skills have been reported as the most common individual barriers among nurses (Chiu et al., 2010; Mallion and Brooke, 2016; Melnyk et al., 2012; Yoder et al., 2014). The capacity for organizational change and social, political and legal factors have also been identified as important in the promotion of evidence-based practice (Atkinson et al., 2008; Flodgren et al., 2012; Pravikoff et al., 2005b), and it appears the application of tailored principles may influence the implementation process (Aasekjær et al., 2016). Several implementation theories and models have been developed to promote effective implementation. An overview of theories in the literature revealed the use of different terminologies and definitions and the presence of overlapping components and missing key constructs included in other theories (Damschroder et al., 2009). Therefore, Damschroder et al. (2009) established the Consolidated Framework for Implementation Research by embracing common constructs from a synthesis of existing implementation theories, to be used to help guide evaluation of interventions in context. From year 2000 May and colleagues (May and Finch, 2009; May et al., 2009) developed the Normalization Process Theory from empirical studies, rather than from existing theories, to better understand how new practices are integrated into their social contexts. By addressing the difficulties to implementing and integrating new treatments and ways of organizing health care, the Normalization Process Theory focuses on the manner in which the social actions of workers contribute to implementation, embedding and integration (May and Finch, 2009; May et al., 2009). The current study sought to apply another perspective on social interactions, grounded theory, to investigate nurses' challenges in integrating evidence-based practice into their daily work and the manner in which these challenges are approached.

Although nurses may be better prepared for the implementation of evidence-based practice than they were some years ago (Mallion and Brooke, 2016; Melnyk et al., 2012; Pravikoff et al., 2005b), recent research still indicates that clinical nurses may not be uniformly prepared for evidence-based practice (Saunders et al., 2016; Saunders and Vehvilainen-Julkunen, 2016). Despite knowledge about and positive attitudes towards evidence-based practice, clinical nurses have been found to use scientific knowledge infrequently (Forsman et al., 2010; Kajermo et al., 2010; Mallion and Brooke, 2016; Squires et al., 2011). When evidence-based guidelines are used, the use of new evidence in clinical situations is promoted (Grol and Grimshaw, 2003). Guideline-associated factors, such as the utility, strength of evidence, compatibility, complexity, and ability to be tested by clinicians, may affect clinicians' compliance with guidelines (Cochrane et al., 2007; Gurses et al., 2010). In practice, clinical nurses' willingness to enact the guidelines and normalize them in practice is decisive contributors to their implementation (May et al., 2014). Support from leaders and administrators seems to be important for promoting the use of research among clinical nurses (Gurses et al., 2010; Kaplan et al., 2014; Melnyk et al., 2012; Sredl et al., 2011; Yoder et al., 2014), and lack of organization and teamwork structure as well as work overload have been identified as barriers to research use (Adib-Hajbaghery, 2007; Cochrane et al., 2007; Solomons and Spross, 2011).

Different determinants may contribute to variations in health care, and their effects depend upon the context in which they are embedded (Baker et al., 2015; Flottorp et al., 2013; Gurses et al., 2010; Jun et al., 2016). Tailored strategies that address the identified determinants can improve health care (Baker et al., 2015). Despite the extensive amount of research that has been conducted, we still have insufficient knowledge about challenges in research utilization among clinical nurses (Kajermo et al., 2010; Melnyk et al., 2012; Yoder et al., 2014). Nurses have reported a lack of authority to change clinical practice (Adib-Hajbaghery, 2007; Solomons and Spross, 2011) and recognize that change requires hard work (Asadoorian et al., 2010). Thus far, research has also suggested that it may be challenging to incorporate activities associated with evidence-based practice, such as searching for the literature and participating in journal clubs and evidence-based practice groups, into daily work (Aitken et al., 2011; Pitkänen et al., 2015). To understand these difficulties in more detail, we conducted this grounded theory study. The goal was to gain a better understanding of the challenges perceived and behaviours exhibited by hospital nurses when attempting to integrate evidence-based practice into daily work.

The context of this study was that the leadership of a large Norwegian hospital trust implemented a policy on the use of evidence-based practice in 2006. A framework was developed and applied for incorporating evidence-based practice. It included four domains: competence development, organizational adjustments, technological infrastructure and information resources for knowledge support (Vandvik and Eiring, 2011). The nurses' evidence-based care activities included participating in developing evidence-based procedures, care pathways or standardized care plans in groups that included a supervisor. In this study, we focused on what they were concerned about approximately eight years after the new policy was initiated. Data were collected from nurses in two wards that used different approaches to integrate evidence-based practice, and we focused on the manner in which the clinical nurses handled the integration and use of new evidence. Patient preferences, local circumstances and available recourses should be taken into consideration during the implementation of evidence-based practice. However, these are not the focus of this paper.

3. Methods

3.1. Aim

The aim of the study was to generate a theory about the general patterns of behaviour that are discovered when clinical nurses attempt to integrate evidence-based practice into their daily work.

3.2. Design

We used Glaser's classical grounded theory methodology (Glaser, 2013, 1998, 1978; Glaser and Strauss, 1967) to generate a substantive theory about clinical nurses' main concern and their strategies for handling their concern in hospital wards. Main concern can be understood as a problem, that with which participants are occupied or that which is relevant to participants (Glaser, 1998). Grounded theory is a general methodology often used as a systematic qualitative approach; this methodology is well-suited for the exploration of complex and latent patterns and social interactions (Glaser and Strauss, 1967). When using grounded theory, researchers are required to suspend preconceived concepts and remain open-minded; trusting that the ways in which the participants resolve their main concern will emerge from the data (Glaser, 2013, 1998). The use of the grounded theory approach allowed for the emergence and development of a theory that reflected the experiences of clinical nurses in their daily work.

3.3. Setting and participants

Data collection was conducted in two different medical wards with two distinct geographical locations eight to nine years after the hospital leadership implemented evidence-based practice. The first ward was selected through theoretical sampling; it was assumed that it would contribute comprehensive data for development of a theory because of the nurses' engagement in an on-going evidence-based practice project. The ward had 18 beds, 33 nurses and 3 assistants. The second ward was selected guided by theoretical sampling, as it was likely to provide rich data for the assessment of emerging categories because they were in an early phase of implementing huddle boards in their daily work. This ward had 38 beds, 63 nurses and 5 assistants.

The participants were recruited by theoretical sampling and comprised registered nurses, specialist nurses and assistant nurses working in care positions in the two units. The theoretical sampling method will be elaborated upon in the data collection section. In Norway, registered nurses are required to have a bachelor's degree that was awarded after three years' university level education. Thirteen of the specialist nurses completed a twelve- to eighteen-month specialization after their Bachelor's degree, and two had a master's degree. The assistant nurses were required to have completed two years of upper secondary education. Of the 96 nurses who worked in the two wards, 63 were observed, some of whom were not intensively observed and some of whom were followed closely. Of these 63 nurses, 18 participated in the focus groups.

3.4. Data collection

Data were collected between March 2014 and November 2015. In the first ward, data collection began with an observation stage (details given below), giving the researcher the opportunity to observe the clinical nurses' daily work duties. As mentioned above, the data collection process was guided by theoretical sampling, in which the collected data are used to develop a theory as it emerges. The researcher collected, coded and analysed the data and, based on these findings, decided what data to collect next and where to collect them (Glaser and Strauss, 1967). An overview of the guiding elements used for selecting study settings, methods, situations and participants are shown in Fig. 1.

In theoretical sampling, data collection is initially guided by a general perspective and problem area (Glaser and Strauss, 1967). Thus, the researcher included situations and participants presumed to contribute to the generation of information of relevance for the research topic. Then, the theoretical sampling was guided by gradually emerging codes and categories through the application of strategic successive selection of participants assumed to have the capacity to contribute knowledge that could strengthen the emerging theory (Glaser, 1978; Glaser and Strauss, 1967). After the analysis of the last observations, the preliminary core category, "striving for work accomplishment", emerged and the main concern indicated a confrontation between evidence-based practice and clinical practice. We then carried out two focus groups to allow the nurses to discuss their daily work and experiences with evidence-based practice and simultaneously investigate their interactions (Kitzinger, 1994; Polit and Beck, 2016).

Observational data were collected in the second ward to gain a better understanding of the nurses' daily work duties and how the nurses approached challenges in clinical practice. When the researcher had mapped out these real-life situations based on information relevant to the emerging concepts and became familiar with the nurses, sampling was guided by codes and categories. After the data from the last observation period were analysed, two focus groups were carried out to allow the nurses to discuss the challenges they encountered during everyday work, and to investigate their interactions and discussions about their challenges and opportunities. The sampling process was carried out in cooperation with the nursing leadership and/or a teaching nurse while taking into consideration practical issues in the wards.

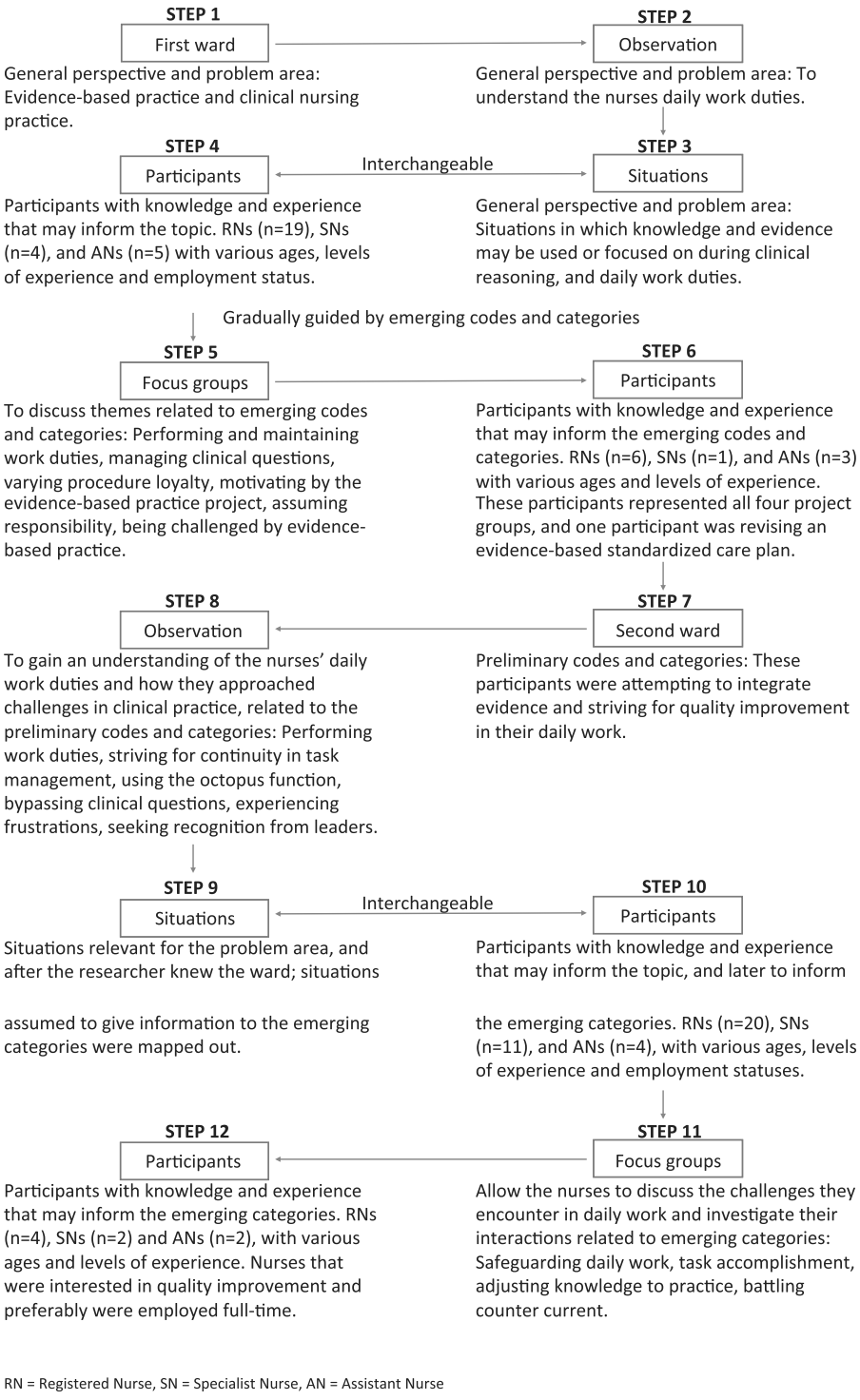
The primary researcher (ÅR) was an experienced nurse who developed an interest in the topic after working in hospital clinical care and management at the hospital where the present study was performed for several years. Thus, she was familiar with the hospital as an organization and its strategic plans, system of procedures and other routines. However, at the time of the study, she was a researcher at the hospital with a PhD-scholarship. She did not know the wards or the health care workers included in this study well, but a few of the participants were familiar with her work history at the hospital.

3.4.1. Observations

Ninety hours of observation were performed in the two wards. The researcher followed clinical nurses during their patient care and daily activities, and in interdisciplinary work with physicians, physiotherapists, occupational therapists and students, and in internal teaching events. During participant observation, the researcher participated as an observer and simultaneously interacted with the health care workers by observing, asking questions and obtaining insider views of the structures relevant to the nurses (Creswell, 2013; Polit and Beck, 2016). The researcher, thus, undertook unstructured observations, which provided the opportunity to understand the participants' experiences and behaviours as they occurred in the clinical settings under study (Polit and Beck, 2016). Both descriptive and reflective field notes were written during the observations or immediately after (Creswell, 2013), and the researcher subsequently initiated coding.

3.4.2. Focus groups

Four focus group discussions involving eighteen participants in total were conducted at the participants' workplaces three to twelve months after the observation periods. Each focus group session consisted of four or five participants and lasted between 55 and 65 min. The researcher contacted the participants via email. The optimal focus group size has been suggested to range from five to ten or twelve people (Polit and Beck, 2016; Speziale and Carpenter, 2007). Nevertheless, larger groups may be difficult to control and may limit each person's contribution; thus, five to eight participants have also been recommended (Krueger and Casey, 2015). We planned for the inclusion of approximately eight participants, but practical issues associated with daily work tasks and absence due to illness resulted in the enrolment of fewer participants.



RN = Registered Nurse, SN = Specialist Nurse, AN = Assistant Nurse

Fig. 1. Flow of the theoretical sampling process with guiding elements used for selecting study settings, methods, situations and participants.

The participants in each group were very familiar with each other as colleagues, and the group dynamic seemed to be positive. The participants reacted to what was said by their colleagues, and the following discussions may have led to deeper expressions of their opinions, which can be of benefit in focus groups (Polit and Beck, 2016). ÅR moderated the focus groups, and SH served as a co-moderator, which provided the opportunity to subsequently discuss what was being said and not said in the groups. The focus group sessions were audiotaped and transcribed. A thematic interview guide was developed for each focus group discussion based on the principle of staying open-minded and allowing the participants to discuss their main concern without preconceived questions (Glaser, 2011). The interview guide was adjusted to incorporate emerging concepts and events from observational data and emerging codes and categories (Glaser, 1978). The discussions were initiated with an open-ended question and were supplemented with questions based on the participants' contributions (Table 1).

3.5. Ethical considerations

The health care workers in the wards had been informed of the study beforehand by their leader. Before the observations, the researcher gave the participants written information about the study and its purpose (i.e., investigating their challenges in using new research

Table 1
Example of the dynamic use of a thematic interview guide.

Situations	Questions
We started all focus group discussions with this open-ended question	What has the use of evidence-based practice been like in your ward?
If necessary, we asked these questions to the groups	Can you tell us about a situation in which you have succeeded in the integration of evidence-based practice?
	Can you tell us about a situation where you did not succeed in the integration of evidence-based practice?
We elucidated these questions in all groups in different ways depending on the situation	What is evidence-based practice?
	What is your work environment like?
	What are the relationship and cooperation between newly graduated nurses and more experienced nurses like?
	What do you think about the role of the students in the ward?
Examples of questions that relied upon information obtained during the observations and questions adjusted to the emerging codes and categories	During the observation period, I observed that you were asked questions by others and continually received new messages and other tasks while you were working. How do you experience such situations?
	During the observation period, I observed that it is routine practice to change peripheral vein catheters at set intervals. How did this process occur before huddle board implementation, and how does it currently work?
	During the observation period, I heard repeated discussions about performing the best procedure for the patients, but difficulties solving this problem were expressed. How do you solve similar challenging clinical problems?

knowledge related to implementation of evidence-based practice), and informed consent was obtained. When the researcher followed a nurse into a patient's room, the nurse informed the patient and obtained oral consent for the researcher to observe the nurse working with the patient. Written consent was obtained from all participants in the focus groups.

3.6. Data analysis

Data collection and analysis were performed concurrently as prescribed in grounded theory, with open and selective coding (Table 2).

At first, in open coding, field notes and transcriptions were coded line-by-line by naming events. Then, events were compared with events through the constant comparative method to elicit categories and properties (Glaser, 1978; Glaser and Strauss, 1967), and the categories then were compared with categories. Data from observations and focus groups were connected in the same analysis. When the researchers gained a sense of what the core category might be, the code process focused on the data related to the core category through selective coding (Glaser, 1978). ÅR coded all data, and in addition SH, EH and MK coded the first set of data to be able to compare the coding. The co-authors scrutinized field notes and transcribed material with its associated codes and categories, and the group of authors discussed codes and categories repeatedly during data collection and analysis. After identifying the nurses' main concern, we identified patterns and moved from description to conceptualizing (Glaser, 2005). Simultaneous to the coding, the researcher wrote memos about the coded data, which were used during the theoretical coding to develop the theory. The theoretical codes conceptualized how the emergent categories and properties and the memos related to each other, thereby establishing hypotheses that could be integrated into a theory (Glaser, 1978). Theoretical coding allows the researcher to talk substantively while thinking theoretically of the relationship between the codes (Glaser, 1978). The data collection and analysis continued until theoretical saturation was achieved and no new categories emerged. Prior to and during data analysis, the transcriptions and field notes were de-identified and stored in the hospital's research data server. All coding and discussions in the research team were performed using de-identified data.

3.7. Rigour

Stemming from our previous experiences with the research setting, we were thoughtful about suspending our preconceived notions and tried to remain open and sensitive to understand what was going on in the field (Glaser, 2013; Glaser and Strauss, 1967). All authors discussed codes and categories throughout the analysis, so the findings proceed from the experiences of the participants and fit with the empirical data, which is one quality criterion for a grounded theory (Glaser, 1978). Moreover, the criteria of work, relevance and modifiability are the central quality criteria in a grounded theory (Glaser, 1998, 1978). To be workable, the theory must explain what is going on in the substantive area, and the theory must be relevant for the participants, which is ensured by the pattern of behaviour's emergence from the data through the constant comparative method. This also implies that if someone

Table 2
Processing the data.

Field notes from the observation	Open coding line-by-line	Selective coding	Category
SN 3 is telling the researcher that SN 3 and a colleague have assumed responsibility to revise an evidence-based standardized care plan. They are going to do it this afternoon. Because they both are working the day shift, the researcher asks if they are going to do it in their spare time. Yes, they have several times tried to do the revisions, but they fail each time because of excessive patient care work, which is impossible to put aside. The researcher asks if they have asked their leader about getting protected time to do it. They have not, because it is so difficult to hire a substitute. The leader has more than enough to do with this already. No, the nurses are tired of not getting it finished, so this afternoon things will be finished.	Are responsible for revising Are revising this afternoon		Assuming responsibility
	Using their spare time	Using their spare time	
	Failing to revise during work shifts	Failing with revising at work	
	Too much work with the patients	Patient care work takes all of the time on duty	
	Cannot leave the patient care work		
	Do not ask the leader about protected time		
	Are getting tired of not getting it done	Tiring of not getting it done	

Fig. 2. The interrelationship between the three strategies of "keeping on track": task juggling, pausing for considering and struggling along with quality improvement.

uses the theory for further analyses, the theory could be modified based on new data.

To ensure rigour in the focus groups, two of the authors participated, and the discussions were audiotaped and transcribed. The focus groups were held in a meeting room in the participants' own area, which was established as a protective and supportive atmosphere. The observer was acquainted with some of the participants and knew the system and routines at the hospital. This may have influenced the researcher-participant interactions. Therefore, in order to minimize effects on the participants, the researcher tried to maintain a low profile and establish trust to fit into the group (Polit and Beck, 2016). Furthermore, knowledge of the field may affect theoretical sensitivity, which is important in developing a grounded theory (Glaser, 1978).

4. Findings

Through generating a substantive theory about clinical nurses' pattern of behaviour in seeking to integrate evidence-based practice, the nurses' main concern was identified: the risk of losing the workflow. This was all-important in their daily work. We came to understand the concept of workflow as a continuum of work tasks that the nurses carried out to support medical treatment, care for the patients, organize the ward, cooperate with colleagues, and maintain oversight and control, while simultaneously being a good professional and colleague. Losing the workflow implied the loss of oversight and control of work tasks, which could have serious impact on patients and the work of colleagues.

"Keeping on track" emerged as the behavioural pattern through which the clinical nurses resolved their main concern. This behavioural pattern is an analytic abstraction comprising all that the clinical nurses did to maintain and ensure the workflow, including keeping control and finishing tasks. As the workflow was a continuous, on-going process around the clock, the caregivers were getting "on track" when they started their shift, stayed "on track" during their working days and got "off track" when the next shift was taking over. "Keeping on track" seemed to be an appropriate strategy by which the nurses reduced the risk of losing the workflow, thereby endangering the patients' care and treatment on the ward. They based their work on available knowledge, including evidence-based knowledge, whenever possible. Their use of knowledge was omnipresent and, in a way, hidden and indirect.

In contrast to "keeping on track", the nurses sometimes "got off track" during their workdays. This implied sidestepping away from the workflow. This could be necessary in order to reflect on a clinical question arising from practice, which required an answer beyond one's own competence. Such "off track" situations could lead to searches of the literature and the use of scientific knowledge to promote patient outcomes.

"Keeping on track" encompassed a pattern of three strategies used by the nurses under varying conditions: "task juggling", "pausing for considering" and "struggling along with quality improvement" (Fig. 2). These processes were interwoven, sometimes conflicting and sometimes mutually supportive. When conflicts occurred, keeping on track guided nurses in finding solutions.

4.1. Task juggling

The concept of task juggling emerged as a generic term for handling all of the tasks that nurses had to keep running simultaneously and continuously within the time available on their shifts. Juggling the tasks was crucial for their work satisfaction and for keeping control and maintaining oversight over their work, which was important for good patient care and treatment. The main feature in task juggling consisted of navigating daily routines, exchanging information and dividing tasks. The nurses' use of knowledge in task juggling was integrated into all of their decision-making, but it was mainly unconscious and intuitive, and the nurses did not really reflect on where the knowledge came from. High efficiency requirements, heavy workload, lack of resources and facilitation were conditions out of the clinical nurses' hand, contributing to the nurses' task juggling "on track".

4.1.1. Navigating daily routines

Much of the nurses' activities were characterized by navigating daily routines, such as managing medications, planning and documenting patient care, participating in different scheduled meetings and pre-rounding and regular rounding, besides solving upcoming tasks. All of these routines filled much of the clinical nurses' work time, which they handled by constantly juggling the prioritization of "what to do" and "in which order", as well as what they could not do. The nurses attended to what one of them termed an "octopus function" much of their workday and had to stay on track to manage this. The "octopus function" referred to handling a composite of unpredictable or uncontrolled upcoming tasks simultaneously—tasks that had to be solved ad hoc.

4.1.2. Exchanging information

To ensure a functioning ward and oversight maintenance, the nurses were continuously exchanging information as a part of their task juggling. This implied receiving information from others about both administrative and clinical issues and returning information based on what was occurring in the ward. The nurses' conveyance of information among themselves in their working groups, within the interdisciplinary teams and with patients and relatives about patient-related issues also demanded much of their time. Altogether, this demanded the exchange of huge amounts of information ("information overload"). To handle the information overload, the nurses were juggling information to select the most important information for the actual situation. However, this

was difficult, because the important information could easily be overwhelmed by less important information thereby making it challenging to keep sight of what was relevant.

4.1.3. Dividing tasks

The entire structure of the clinical nursing work was characterized as belonging to a to-do culture. The need to solve all necessary tasks during the work shift determined how the nurses divided the tasks among themselves. Habitually, the nurse who was group leader divided the tasks in a democratic process based on agreement. Throughout the day, they also got new tasks from their leader, the ward secretary and the physicians, which resulted in a need for reorganizing themselves during the workday through continuously changing tasks and dividing new tasks.

4.2. Pausing for considering

The clinical nurses were pausing for considering in situations requiring something more than task juggling. We understood these to be difficult situations where the nurses did not immediately know the solution to a clinical problem. Good social work environment among the staff together with a professional focus and the clinical nurses' own motivations seemed to stimulate the nurses' demand for knowledge. "Good environment" was characterized by open communication, respect and cooperation, despite differences in age, education, competence and skills. Pausing for considering was executed by three strategies: seeking solutions "on track", venturing "off track" or adjusting their commitment to using knowledge.

4.2.1. Seeking solutions "on track"

The main pattern behind the nurses' "on track" considerations was that they made inquiries to each other and the physicians and searched for answers by making phone calls to other colleagues. They also used printed procedures, paper checklists and descriptions together with the physicians' desktop reference. The nature of seeking solutions "on track" was to use as little time as possible and quickly find an easy solution to put into effect, which implied that the nurses used established knowledge based on colleagues' experience and printed material easily accessible in the ward. Each nurse determined the appropriate time to spend on seeking solutions for any given situation in order not to lose the workflow. In any case, seeking solutions "on track" represented a lower risk of losing the workflow than seeking solutions "off track".

4.2.2. Venturing "off track"

Sometimes, when the nurses did not find the solution to a problem "on track", they had to consider if they were willing to increase the risk of losing the workflow by venturing "off track" to find new knowledge that could be positive for the patient. This meant that they intentionally decided to step away from the workflow for a while to search for updated knowledge either in a local procedure from the computer, in a database or on a specific Internet website. The nurses rarely did this, and when they actually tried, they shared experiences of seldom finding anything they could use.

4.2.3. Adjusting commitment to using knowledge

The clinical nurses were adjusting their commitment to using knowledge depending on existing conditions, endeavouring not to lose the workflow. In a sense, they redefined their expectations from those associated with an idealized position to simply doing what was feasible, in each situation. Even when the nurses were familiar with the most recent scientific knowledge or the best solution to a problem, in stressful and busy situations, they could reduce the expectations of their own performance and refrain from choosing the best solution.

Likewise, the nurses considered unknown clinical questions with the result of varying procedure loyalty. In a clinical situation marked by promoting conditions, a nurse could prioritize following an evidence-based procedure, whereas in a similar situation but with inhibiting conditions, she could refrain from following the same procedure. The nurses were confident in their use of experience-based knowledge and acknowledged the lack of using scientific knowledge. They did not seem to trust or apply new scientific knowledge if it differed a lot from established practice. Neither did they expend energy on new scientific knowledge that implied small differences with no importance for practice or which just confirmed established practice.

4.3. Struggling along with quality improvement

In the third strategy, the nurses struggled along with quality improvement, which was initiated by hospital leaders to achieve quality enhancement and improve treatment and care. Thus, we understood struggling along with quality improvement to be a strategy for coping with requirements in addition to ordinary tasks. Both "on track" and "off track", this struggling along was competing for the nurses' attention, engagement and time, above and beyond task juggling and pausing for considering. The nurses' struggling along with quality improvement was characterized by engaging with ambivalence, battling counter current and seeking the leaders' recognition.

4.3.1. Engaging with ambivalence

We understood engaging with ambivalence to be an expression of the nurses' conscientious participation in quality improvement work, while also acknowledging the engagement as a threat to losing the workflow or the need to put in extra effort not to lose the workflow. Quality improvement could be put into effect either "on track" or "off track" or both. While "on track", all nurses had to be engaged in it, because it reflected their daily work with meetings and registrations and carrying out measures. Scientific knowledge as the basis for an evidence-based practice project "on track" could stimulate the nurses to use scientific knowledge indirectly in clinical situations, even if it did not automatically do so.

In contrast, an "off track" project could be carried out on internal teaching events and other kinds of meetings as well as (sometimes) in the nurses' spare-time. When working with evidence-based practice projects "off track", the clinical nurses searched for scientific knowledge in relevant sources and used this knowledge in the work with the projects. Consequently, to a certain extent, they acquired new scientific knowledge, which influenced their thinking, their attention to some issues and their consciousness about where the knowledge comes from. The nurses were proud of their work, and simultaneously, they were frustrated by having to wait for it to get it implemented into practice. For instance, preparing, approving and implementing new evidence-based procedures were time-consuming, and seemingly contributed to few changes in clinical practice.

4.3.2. Battling counter current

The nurses were sometimes battling counter current when being involved in quality improvement. This meant that although they wished to contribute to the quality improvement of their clinical practice, this became a battle against existing conditions to go through with the project due to insufficient support. This appeared to be projects that received support from the hospital leadership in the initiation phase, but later became the nurses' responsibility to take the project further. The clinical nurses missed support, such as specific project plans and a shared commitment among the staff group to succeed. "On track", they were on the look-out for time that they never seemed to find. They did not get enough specific time set aside from their leaders to work on a project, nor did the nurses ask for it themselves. They also protected their spare time for seminars and projects because it was difficult for them to get compensation time since they always had to work "on track", every day on duty. Thus, they were trying to work with projects using time they did not have.

4.3.3. Seeking the leaders' recognition

Nurses doing their utmost in quality improvement did not necessarily get recognition for it. But, this was something they largely wanted from their leaders. Here, the leaders' recognition meant attention and expressed appreciation to the nurses for their contributions to quality improvement. The nurses experienced this recognition as inadequate and longed for their leaders to see their contributions. Without this recognition, it was harder to keep the motivation up and care about doing a good job. Especially when working on projects "off track", this recognition seemed to be important and less common. The nurses received wider recognition and more regular attention for getting the tasks done during their daily work.

5. Discussion

In this study, "keeping on track" emerged as the behavioural pattern through which the clinical nurses resolved their main concern: the risk of losing the workflow. "Keeping on track" encompassed three strategies used by the nurses: task juggling, pausing for considering and struggling along with quality improvement. Seen in the light of this grounded theory, we can begin understanding the clinical nurses' challenges and why it may be difficult to integrate scientific knowledge in practice. The nurses were "keeping on track" to get the work done and doing their best to achieve favourable patient outcomes; they mainly used experience-based knowledge and other established knowledge easily accessible in the ward. The work "on track" was all-consuming for the nurses who all along had to be on the alert, which gave them limited time for other activities. Lack of time is reported among nurses as one of the most common barriers to using scientific knowledge (Chiu et al., 2010; Melnyk et al., 2012; Solomons and Spross, 2011; Yoder et al., 2014), and sufficient time is acknowledged as a promoting factor for integrating evidence in clinical practice (Tan et al., 2012; Yoder et al., 2014). A lack of time included not having time to find or read research and insufficient time to implement evidence-based changes in their current practice (Brown et al., 2010; Chien et al., 2013; Funk et al., 1991; Oranta et al., 2002; Strickland and O'Leary-Kelley, 2009; Tan et al., 2012). As a complement to this conceptualization, in the grounded theory "keeping on track", the clinical nurses' lack of time may be understood as a situation tightly connected to a limited capacity to give attention to activities "off track". The concept of time, connected to capacity, may also be related to Mallion and Brooke's (2016) summary of how nurses described "sufficient time" as time away from clinical practice, and then emphasized that sufficient time set aside appears to be a simplification and an unlikely solution in current health climate. Based on these perspectives on time, we argue that time set aside, if possible at all, is inadequate to enhance the use of scientific knowledge among clinical nurses.

The attitude by clinical nurses was that they regarded working "off track" as something additional to their ordinary work, and each nurse, based on his/her own competence, determined the appropriate time to spend on "off track" activities, while not losing the workflow in any given situation. Other research has also highlighted that healthcare practitioners and managers as well experience evidence-based practice as tasks beyond their normal workload (Gray et al., 2013) and believe that a heavy workload reduces the ability to engage in evidence-based practice activities (Majid et al., 2011). It may appear that the assignments to the clinical nurses by the ward leaders were conflicting, with the main task to get the job done within an intended tight framework. Simultaneously, the leadership requested quality improvement and use of scientific knowledge within the same framework. Getting new evidence into practice may depend on contextual integration, an organizational condition described in the Normalization Process Theory (May and Finch, 2009). This means that a new practice has to be incorporated within a social context to be sustained as a new resource for the workers. Otherwise a new practice will add complexity and workload without being integrated with existing practice (May and Finch, 2009). The mechanisms we see in this grounded theory imply that the scientific knowledge to be used by clinical nurses had to be present "on track" and made available in a form that the nurses could utilize in a busy working day. For example, this could be to integrate scientific knowledge through an evidence-based huddle board programme as used in this study or in evidence-based standardized care plans, which new research has shown that nurses may utilize in their everyday practice (Jansson and Forsberg, 2016).

Support from leaders and administration seems to be important for clinical nurses' use of research (Gurses et al., 2010; Voldbjerg et al., 2016; Yoder et al., 2014), and lack of system organization and a teamwork structure, as well as work overload, have an inhibiting impact on research use (Cochrane et al., 2007). In line with these results, this study shows that the clinical nurses experienced a lack of support and recognition from their leadership. Thus, we argue that important actions from the leaders would be to continuously and persistently sustain engagement in evidence-based practice by seeing and supporting the nurses in their efforts. Similar actions to promote use of scientific knowledge are suggested in newer research: leaders adapting, supporting and requesting nurses' use of scientific knowledge in clinical situations (Jansson and Forsberg, 2016) and leaders sustaining commitment and engagement to ensure the long-term survival of an organizational programme (Fleiszer et al., 2015; Aasekjær et al., 2016). Our theory "keeping on track" demonstrates a complexity of nurses' clinical practice that may help leaders understand which tasks to initiate "on track" and which to carry out "off track", how to do it and what the consequences may be. While "on track", the nurses did their best for the patients using experience-based knowledge consisting of knowledge built up from both integrated evidence and practice. They did not build their work on continuously in-flowing new scientific knowledge. Because of the nurses' concerns of keeping control and getting the patient-related tasks done "on track", we argue that one cannot expect from each individual nurse to look for, find, assess, and adjust new scientific knowledge. There is a need for a clearly defined work allocation, where leaders and teaching nurses identify the new scientific knowledge and structure it to be useful for the clinical nurses. This could be done through initiating, carrying through and following up on the development of, for example, evidence-based procedures or guidelines "off track" or finding evidence-based guidelines developed by others. Leaders and teaching nurses should facilitate the integration of the new scientific knowledge into the nurses' work "on track", ensure that the knowledge is easy accessible for clinical use, and simultaneously teach and support the nurses.

6. Limitations of the study

The recruiting of participants through theoretical sampling was thoroughly handled, based on the researchers' knowledge and insight in the field and the cooperation with the leaders in the wards. However, choices were made by the authors, and an emergent analysis can take various forms depending on the researchers involved (Engward and Davis, 2015). The focus groups were planned for up to eight participants, but because of absence due to illness and demanding tasks in the wards, nurses could not leave their duties in the ward. Consequently we missed some registered nurses and specialist nurses in the focus groups.

An explicit theoretical code has not been consciously chosen. Nevertheless, theoretical codes and code families have been considered during the theory development. According to Glaser a theoretical code is not necessary, but it helps integrate categories and their properties into the theory (Glaser, 2005).

Although the sample size in the study is adequate in a grounded theory, it is a relatively small sample and limited to the voice of nurses. However, we consider it a strength that observations and focus group interviews were conducted in two different wards located in two different geographical areas. It may be difficult to assess the relevance for other kinds of wards or hospitals. However, we do not consider the

wards to be untypical for general wards of this kind. It might be reasonable to assume that wards with more specialist nurses or nurses with a master's degree may give other results.

7. Conclusions

The substantive grounded theory "keeping on track" helps us better understand clinical nurses' experiences with evidence-based practice and particularly their challenges trying to integrate new scientific knowledge into their daily work. The clinical nurses' major concern was "keeping on track" to minimize losing the workflow in order not to threaten patient care. Thus evidence-based practice was seen as something coming in addition to their ordinary work.

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RESEARCH ARTICLE

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Evidence-based practice integration in hospital wards—The complexities and challenges in achieving evidence-based practice in clinical nursing

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Abstract

Aim: Exploring the processes involved in two different strategies to integrate evidence-based practice into nursing practice.

Design: Classical grounded theory methodology was used.

Methods: Data were collected through 90 hr of observation and 4 focus groups among clinical nurses in two different hospital wards.

Results: We identified a multidimensional evidence-based practice integration framework that illuminates the complexities involved in the integration process. The dimensions were approaches to evidence-based practice, positions of evidence-based practice and levels of evidence-based practice. The interactions between the dimensions gave five combinations; an explicit evidence-based practice performed as a parallel to daily work at the systems level, an implicit evidence-based practice integrated into daily work at the systems level, an explicit evidence-based practice integrated into daily work at the individual level, an explicit evidence-based practice integrated into daily work at the systems level and an implicit evidence-based practice integrated into daily work at the individual level.

KEYWORDS

clinical practice guidelines, evidence-based practice, hospital, huddle board, implementation, nurses, research utilization, whiteboard

1 | INTRODUCTION

Huge amounts of relevant research evidence exist in health and nursing sciences, which is not integrated into clinical practice due to translation and implementation challenges (Greenhalgh, 2018; Grimshaw, Eccles, Lavis, Hill, & Squires, 2012; Song et al., 2010). A large number of the studies have aimed to identify factors that facilitate or hinder the integration of new research evidence into the nursing practice (Cochrane et al., 2007; Estabrooks, Floyd, Scott-Findlay, O'Leary, & Gushta, 2003; Funk, Champagne, Wiese, & Tornquist, 1991; Sadeghi-Bazargani, Tabrizi, & Azami-Aghdash, 2014; Solomons & Spross, 2011). However, few studies have investigated the actual processes of attempting to integrate evidence-based practice (EBP) into daily practice, which was the purpose of this study. In the research literature, there has been an inconsistent use of terminologies regarding implementation of new practices (Damschroder et al., 2009; May & Finch, 2009). In this paper, we use the concept of implementation to mean organizing the adoption of

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EBP in organizational units, while integration refers to the routinizing and sustaining of new practices.

1.1 | Background

EBP implies the integration of clinical expertise with systematically obtained research evidence, considering resources available and patient preferences in each patient situation (DiCenso, Guyatt, & Ciliska, 2005; Polit & Beck, 2016; Sackett, Rosenberg, Gray, Haynes, & Richardson, 1996). It may be regarded as a strategy or a general way of thinking aimed at achieving the best treatment and care in each individual patient situation. Furthermore, EBP also involves organizational activities such as integrating research evidence through the development of evidence-based (EB) guidelines (Polit & Beck, 2016).

The implementation of research evidence has been challenging in nursing practice, and we need more knowledge regarding how to translate research into daily health and nursing care (Kajermo et al., 2010; Mallion & Brooke, 2016; Squires et al., 2011). Clinical nurses seem to value personal experience together with information learned in nursing school and information from colleagues as their most important source of knowledge, rather than basing practice on current research evidence (Adib-Hajbaghery, 2007; Bischoff & Hinojosa, 2013; Renolen & Hjälmhult, 2015; Yoder et al., 2014). An association between higher reported levels of emotional exhaustion and lower reported levels of research use has been affirmed (Estabrooks, Midodzi, Cummings, & Wallin, 2007). As well, a more favourable context related to culture, good leadership and recognition for a job well done has resulted in higher research use (Estabrooks et al., 2007). In each culture, particular ideas or activities may be more valued than others (Scott-Findlay & Golden-Biddle, 2005). In a ward culture characterized by engagement in EBP and quality improvement, leadership and clinicians may to a greater extent succeed in changing practice (Saunders & Vehviläinen-Julkunen, 2017). A ward culture characterized by rigid completion of practical tasks rather than engagement in EBP may not easily facilitate opportunities for research use or for changing practice (Henderson, Cooke, Creedy, & Walker, 2012; Ryan, 2016). Furthermore, promoting research use in an environment characterized by work overload among nurses and lack of teamwork structure that facilitate research use, may be demanding (Solomons & Spross, 2011). Studies have indicated that healthcare workers describe a change in practice as hard work and that continuing with the existing practice in daily work with an already huge workload is less demanding (Asadoorian, Hearson, Satyanarayana, & Ursel, 2010; Fink, Thompson, & Bonnes, 2005).

The potential for achieving practice changes through adopting EBP depends on the interaction between the characteristics of the evidence, the clinicians and the context of practice in the healthcare setting (Greenhalgh, Robert, Macfarlane, Bate, & Kyriakidou, 2004). It occurs as a complex process where people—often through dialogue with others—are active participants in innovations and which research must address (Greenhalgh, 2018; Greenhalgh et al., 2004).

In this study, we investigated the integration of EBP in clinical practice in hospital wards by studying in depth two different methods applied by clinicians. One method involved nurses working with an EBP project to develop local clinical guidelines. The other method included integrating EBP/EB guidelines through an interdisciplinary use of huddle board sessions.

1.2 | Aim

The aim of this study was to explore the processes involved in two different strategies applied to integrate EBP to understand the complexities and challenges in clinical nurses' daily work better when they attempt to integrate EBP.

TABLE 1 The participating wards and nurses

	Ward A	Ward B	Total
Number of beds	18 patient beds	38 patient beds	
Working groups	2 working groups	4 working groups, of whom 2 groups were participating	
Staff	33 nurses	63 nurses	96 nurses
	3 assistants	5 assistants	8 assistants
Hours of observations	36 hr	54 hr	90 hr
Number of observed nurses[a]	28 nurses	35 nurses	63 nurses
Focus groups	2	2	4
Nurses participating in focus groups (from the population of observed nurses)	10 nurses	8 nurses	18 nurses

[a]The nurses (N = 63): 39 registered nurses with a bachelor's degree awarded after 3 years of university-level education, 9 assistant nurses with two years of upper secondary education. Of the remaining 15 nurses, two had a master's degree and 13 had twelve- to eighteen-month specializations after their bachelor's degree. The types of specialization were relevant for the wards (here without a further specification to ensure anonymity).

2 | THE STUDY

2.1 | Design

The data used in this study were collected and analysed through classical grounded theory methodology (Glaser, 1978, 1998; Glaser & Strauss, 1967). In grounded theory, the researcher initially has an open, inductive approach to data by systematically collecting the data from practice. As codes and categories emerge, one introduces a more focused approach to explore relationships between different properties in codes and categories, based on hypotheses formulated from the data analysis in the initial phase (Glaser, 1978, 1998).

2.2 | Methods

2.2.1 | Setting and participants

The study was conducted in a Norwegian hospital trust consisting of six somatic hospitals scattered over a wide geographical area. Data were collected in two medical wards treating patients with different diagnoses in two different geographical locations eight to nine years after the hospital trust introduced EBP with the purpose of enhancing competence among health professionals (Vandvik & Eiring, 2011). According to grounded theory, wards, research methods, participants and situations were selected through theoretical sampling (Glaser & Strauss, 1967). Ward A was chosen based on the ward's engagement in an EBP project, initially guided by a general perspective and problem area. Ward B was included as it was assumed to be able to contribute information to fortify the emerging codes and categories in the theory development (Glaser, 1978; Glaser & Strauss, 1967). The participating wards and nurses are presented in Table 1.

Ward B was using a huddle board to improve clinical practice and reduce patient harm in clinical practice. Huddles are short structural meetings among interdisciplinary healthcare workers (Glymph et al., 2015). Huddle board is a whiteboard used in a huddle as a visual patient risk assessment tool (Figure 1) introducing EB guidelines in daily work. Further information about Ward A and Ward B is outlined in Boxes.

2.2.2 | Data collection

Data were collected between March 2014 and November 2015. The lead researcher was a nurse employed at one of the hospitals

	Urinary tract infection	Falls in healthcare institution	Medication reconciliation	Periphery and central line infection	Nutrition and swallow problems
Patient A	Y	Y	G	Y	Y
Patient B	G	G	G	G	G
Patient C	Y	Y	G	Y	G
Patient D	Y	R	R	Y	Y
Patient E	Y	R	G	Y	R
Patient F	G	Y	G	R	G
Patient G	R	Y	G	R	R
Patient H	Y	G	R	Y	G
Patient I	G	G	G	G	G
Patient J	G	R	G	Y	R
Patient K	G	R	R	G	R
Patient L	G	Y	G	R	G

R
RED BUTTON
Issues not yet assessed or not addressed

Y
YELLOW BUTTON
Issues assessed and in process, considered some risk

G
GREEN BUTTON
Issues completed or considered no risk

FIGURE 1 Example of a risk assessment huddle board

where the study was conducted. The researcher therefore knew the organization, general routines, quality improvement measures and the system of clinical guidelines. However, at the time of the study, she was acting in a researcher role. The researcher mapped out the EBP activities in the relevant hospital wards, excluding wards well known to her. The data collection began with participant observation in Ward A, providing the opportunity to study the nurses' behaviour in relation to their attempts to integrate EBP while continuing to conduct their daily work in the ward (Creswell, 2013; Polit & Beck, 2016). The researcher wrote descriptive and reflective field notes during the observations and directly afterwards (Creswell, 2013). On finishing the observations and its analyses in Ward A, two focus groups were held to give the observed nurses an opportunity to discuss their concerns and to bring up questions that had emerged from the collected data (Polit & Beck, 2016). A thematic interview guide was used, starting with an open question about the nurses' experiences with EBP. In line with grounded theory methodology, we stayed open and let the participants talk about their concerns (Glaser, 2013). Afterwards, data were collected in the same way in Ward B. Based on emerging codes and categories, ward B was chosen because they attempted to integrate EBP into their daily work. The participating nurses in observations and focus groups were chosen to give rich information regarding emerging codes and categories, for instance task accomplishment and adjusting knowledge to practice. All focus groups were conducted at the nurses' workplaces and consisted of four to five participants. The focus groups were moderated by ÅR and co-moderated by SH. They lasted between 55–65 min and were audiotaped and transcribed. The data collection and analysis continued until no new categories emerged, and we determined that theoretical saturation was achieved (Glaser, 1978).

2.3 | Data analysis

We performed an open analysis of the data from the observations and focus groups in the same analysis, concurrently with the data collection, according to the principles of classical grounded theory using the constant comparative method (Glaser, 1978; Glaser & Strauss, 1967). During the analysis, we could see that one of the clinical nurses' concerns was related to their striving to do the best for the patients based on EBP. We then analysed in depth the data related to the nurses' challenges in EBP integration. The lead researcher wrote memos, which were assumptions about relations between the data, articulated as hypotheses that could be tested in the data (Glaser, 1978). As such this was both an inductive and a deductive approach to the data. In the first step of the analysis, the lead researcher systematically identified the relevant emerged codes from the observations and focus groups using the data from Ward A. Next, the researcher identified the emerged codes from Ward B in the same way. The rest of the research team read transcriptions and field notes as well and the whole group of authors discussed the codes. After finishing the separate coding for the two wards, we analysed the codes and categories for the two wards in relation to each other to explore the challenges in integrating EBP in clinical practice.

Box 1 Ward A—Participating in an EBP project

In Ward A, most nurses participated in an EBP project that had been ongoing for approximately two years. They were working in groups to find new evidence and to develop and implement clinical EB guidelines with the purpose of improving patient treatment and care. The project manager together with a teaching nurse allocated funds from the hospital to enable the nurses to participate in groups by obtaining dedicated time for this work. The nurses participated voluntarily in four different groups that worked one at a time, each with a self-determined theme. To a various degree, the nurses were knowledgeable regarding asking and formulating questions, literature search, critical appraisal, applying new knowledge and evaluation. The groups worked to summarize the literature/work and planned to write up the process and results on internal teaching days and when they could find time for it.

2.4 | Rigour

The use of focus group interviews in grounded theory is less common than the use of individual interviews (Hernandez, 2011). However, data with variety and rich information are recommended in grounded theory (Glaser, 1978, 1998). We consider it a strength that we collected

Box 2 Ward B—Integrating a patient safety huddle board programme

The employees in Ward B had a daily focus on quality improvement and had participated in different small EBP projects. When data collection started, the ward was in an early phase of integrating a huddle board programme initiated by the hospital leadership aiming to improve clinical practice and reduce patient harm. The initiative was anchored in the Norwegian Patient Safety Programme, where a group of healthcare experts identified several target areas with recommendations and measures based on the current available evidence, such as systematic reviews and national clinical practice guidelines (Norwegian Ministry of Health & Care Services, 2015). Locally, each ward was assigned target areas determined by the hospital leadership, with some also chosen by the physicians and nurses in the ward. A project manager in the hospital leadership decided which guidelines to locally tailor and implement in each working team through interdisciplinary daily meetings (i.e. "huddles"). The clinicians were supposed to use the EB guidelines together with their expertise, available resources and patient preferences in EBP performance. A template for checking off and scoring the patients informed by the actual guideline for each target area was used.

data through both observations and focus groups, endeavouring to perform the data collection and analysis in a manner congruent with grounded theory (Hernandez, 2011). To understand what was happening in the investigated fields, we have endeavoured to stay open in the data analysis and refrain from using preconceived ideas or concepts (Glaser, 2013; Glaser & Strauss, 1967). Throughout the study, we have focused on conceptualizing emerging categories and to be aware of the relationships between the categories. The awareness of these relationships is essential in theoretical sensitivity, which is important in grounded theory (Gibson & Hartmann, 2014; Glaser, 1978).

2.5 | Ethics

Approval for the study was requested from a Regional Committee for Medical and Health Research Ethics, but the study did not require approval (Reference number 2014/35A). The Data Protection Officer for Research and Quality approved the study (Reference number 2013/17344). The hospital where the study was performed also permitted the study (reference number 201200448-27). The participants were recruited on a voluntary basis, based on information about the study from their leader and oral and written information from the researcher during the observation period. When the researcher observed the nurse working with the patient, the nurse first informed the patient and obtained oral consent. The researcher recruited the participants to the focus groups in cooperation with the ward leaders, and written consent was obtained.

3 | FINDINGS

This study revealed three significant and interacting dimensions of EBP integration that may help explain the complexities involved when nurses attempt to integrate EBP in their daily practice. The dimensions are as follows: approach to EBP, position of EBP in daily work and organisational level of EBP. By approach, we mean the way of enacting EBP. Two approaches to EBP were identified; explicit EBP (visible and emphasized in the ward) and implicit EBP (invisible and hidden in the background in the daily work in the ward). We also identified two positions of EBP in daily work. With position, we mean how EBP was related to the daily work in the wards. EBP could either be integrated into the daily workflow or it could be performed as a parallel activity to daily work. Finally, we identified two organisational levels of EBP; the systems level and the individual practitioner level. With organisational level, we mean how EBP was integrated into the work at the wards. It could be built into the general routines of the ward, or it could be considered the responsibility of the individual healthcare worker to use EB knowledge when caring for individual patients. The core concept "multidimensional EBP integration" embraces the interactions between these dimensions (Figure 2).

The multidimensional EBP integration framework visualizes five combinations that give meaning based on data in this study. In the next sections, we explore the five observed patterns of EBP integration in further detail.

3.1 | An explicit EBP as a parallel to daily work at the systems level

The EBP project in Ward A represented the dimensions of an explicit EBP performed as a parallel to daily work at the systems level (i.e. alternative 1, Figure 2). Here, the EBP was visible and articulated. All nurses were involved in discussions regarding EBP and the appropriate knowledge to be used in actual situations, indicating that their attitudes had been influenced and that they were more aware of the knowledge source:

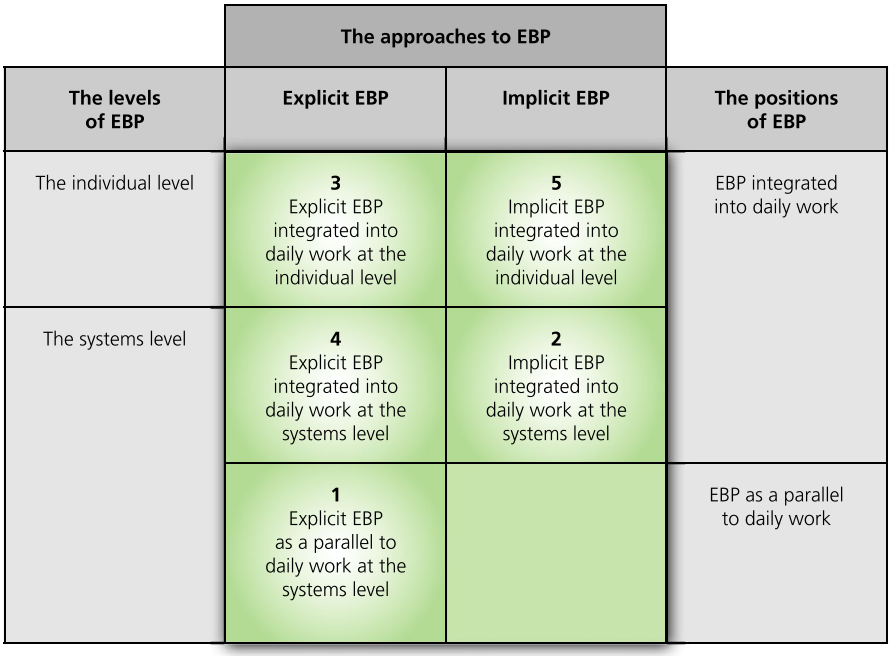

FIGURE 2 Multidimensional EBP integration framework

> I think that our focus on EBP contributes to a greater awareness of what may be the right thing to do. Not just to find an answer, but to find the right answer for the treatment and for the follow-up. (Focus group I, SN 4)

This activity running parallel to the nurses' daily work in the ward could be conflicting for the nurses. On the one hand, the nurses appreciated the opportunity to work with EBP and quality improvement on a relevant theme, free from daily duties and together with their colleagues. On the other hand, the nurses encountered difficulty in relating this work to their daily patient work. When the groups finished their project periods, they struggled to put the new evidence to use in the daily work. Even if the project motivated the nurses, they felt that they did not have the power to change practice with a new guideline or just with new evidence. The nurses experienced a strong dependence on the managers and physicians who had to formally approve the new clinical guideline and to accept the new knowledge to be used. The nurses were looking for systems and structures to get new evidence more easily and rapidly incorporated into daily routines.

3.2 | An implicit EBP integrated into daily work at the systems level

The huddle board programme in Ward B represented the dimensions of an implicit EBP integrated into daily work at the systems level (i.e. alternative 2, Figure 2). The EBP was implied in standardized recommendations and measures integrated directly into daily routines as a part of the nurses' daily tasks. This integration made the nurses comply with the request to use the EB recommendations and measures. However, the research evidence tied to the huddle board target areas was not highlighted in daily work:

> I feel that the huddle board in a way has become a visual systematization of things we did already. Everything gets very visible, everyone sees it and it is more organized. We did exactly the same things earlier too, but now it is made visible. (Focus group IV, SN 8)

The individual nurses did what the organization expected them to do to promote patient safety and quality improvement, but they did not consciously relate to the evidence or seem to understand their use of knowledge as EBP. The leaders and teaching nurses in the ward did organize reflection groups for the nurses once a week, discussing professional challenges and clinical problems. As such, they stimulated the nurses' critical thinking and inquiry. Nevertheless, this was not visibly linked to the huddle board target areas.

3.3 | An explicit EBP integrated into daily work at the individual level

Based on the definition of EBP, the ideal is an explicit EBP integrated into daily work for each individual patient (i.e. alternative 3, Figure 2). In this study, the clinical nurses recognized this ideal and were striving to realize it. Nevertheless, the findings indicated a gap between the ideal and the actual performance of individualized patient care. This gap was related to the challenges of getting new research evidence to be used and the strong emphasis on standardized routines. Due to the latter, the nurses' pattern of behaviour was dominated by filling out checklists, whereas their focus on the needs of each individual patient receded into the background. For instance, the nurses in Ward B referred to the whiteboard as a visual checklist, which they appreciated because of better safeguarding of the risk areas. Simultaneously, they expressed scepticism of the use of checklists because it was challenging to strike the right balance between the risk assessment "check-offs" and other patient needs for nursing care:

> Preventing falls, which is a theme in the huddle board, is part of basic nursing care. Holistic nursing care disappears when filling out the forms. When you have been working for a while, you know what you need to do to prevent falls. I think this [fragmented and task oriented practice] is scary. (Focus group III. AN 6)

3.4 | An explicit EBP integrated into daily work at the systems level

We could not see an extensive use of an explicit approach to EBP integrated into daily work at the systems level in this study (i.e. alternative 4, Figure 2). Even if some nurses demonstrated their awareness of the knowledge they used, they seldom could refer to where they had gained it:

> I am very focused on clinical issues and feel that I update myself reading every new procedure coming in the ward. But there is a lot of information. We mix it with information about the patient and all the things you should remember during the day. You do not think that "this knowledge" I derived from "there". You use knowledge without knowing exactly where you got it. (Focus group III, RN 2)

3.5 | An implicit EBP integrated into daily work at the individual level

The combination of the dimensions of an implicit EBP integrated into daily work at the individual level was difficult for the researcher to observe in practice and would be difficult for the nurses to put into words because of its implicitness (i.e. alternative 5, Figure 2). What we could observe was the nurses providing care according to prevailing clinical guidelines at the wards, which indicates integration of EB knowledge. Furthermore, their explicit recognition of the fact that they provided care based on many different sources of knowledge, including new guidelines

being introduced, support the idea of an implicit EBP integrated into daily work at the individual level.

4 | DISCUSSION

This study revealed three interacting dimensions of EBP integration that may explain the complexities and challenges when nurses attempt to integrate EBP in hospital wards. We identified two approaches (explicit EBP and implicit EBP), two positions (EBP integrated into daily work and as a parallel to daily work) and two levels of EBP (the systems level and the individual level). The interactions between the dimensions gave five meaningful combinations in this study. In the following subsections, we have organized the discussion according to the most central findings; challenges regarding EBP as a parallel to daily work, use of standardization and routinization to promote EBP at the systems level and the movement from the systems level to the individual level.

4.1 | EBP as a parallel to daily work

The findings showed that clinical nurses who applied the explicit approach to EBP as a parallel to daily work increased their awareness of evidence and what might be the right things to do. They wanted to apply new evidence, but at the systems level they did not have the authority to integrate the new knowledge on their own and they lacked an efficient mechanism for ensuring timely integration into their daily work in the ward. This perspective demonstrates challenges well known from the literature; clinical nurses striving to learn EBP and develop EB guidelines but failing to integrate the new evidence (Adib-Hajbaghery, 2007; Aitken et al., 2011; Pitkänen, Alanen, Rantanen, Kaunonen, & Aalto, 2015; Solomons & Spross, 2011). The lack of organizational structures for adopting new guidelines may be related to an organization's limited capacity for change, which is still a highlighted barrier to EBP integration (Flodgren, Rojas-Reyes, Cole, & Foxcroft, 2012; Sadeghi-Bazargani et al., 2014; Solomons & Spross, 2011; Williams, Perillo, & Brown, 2015). We argue that lack of organizational support must be solved by organizational initiatives to create a structure for integration of new EB guidelines. Otherwise, these organizational barriers will impede healthcare professionals' ability to increase and maintain their use of EBP, even if they are motivated and have knowledge about the application of EBP (Williams et al., 2015).

4.2 | Standardization and routinization may promote EBP at the systems level

Our findings suggest that the implicit approach to EBP integrated into daily work at the systems level could stimulate the nurses' research use, even if the evidence was not highlighted in their daily work. We argue that research use through EB guidelines integrated through a tool such as the huddle board might contribute to improved sustainability of guidelines through persistent routinization of action. This is consistent with other studies suggesting that routinization or normalization increases clinicians' use of guidelines and stimulate guideline sustainability (Fleiszer, Semenic, Ritchie, Richer, & Denis, 2015; May, Sibley, & Hunt, 2014).

However, the implicit approach to EBP represented a challenge because the nurses lacked awareness about the underlying evidence and focused rather on the tool and the standardized observations, registrations and measures. Thus, the nurses used evidence without being conscious of it. This could constitute a possible risk, as excessive routinization may impede a person's ability to detect, interpret and handle contextual changes, thereby sustaining existing patterns of behaviour when change is needed (Ellström, 2006). Furthermore, standardization and routinization could lead to individual patient needs being disregarded. Our findings visualize that a way to succeed in integrating EBP into daily work could be to establish measures at the systems level before one can expect EBP to be established at the individual level. A tool, such as the huddle board sessions combined with measures to make and keep the underlying evidence explicit, may make this possible. We turn to this issue next.

4.3 | Movement from the systems level to the individual level

A movement from the systems level to the individual level entails moving from a structured approach, where EBP is integrated and EB guidelines are applied in daily work at the ward level, to individualized patient-tailored care informed by relevant evidence. We argue that this movement could be supported by making EBP explicit and visible at the systems level. This could be achieved by stimulating the clinical nurses' awareness through systematic reflection and discussion about the relevance of risk assessment for the individual patients and by making explicit the research evidence underpinning the EB guidelines. Leaders might gradually integrate research activities into the nurses' everyday routines to change the focus towards valuing research evidence as a way of providing high-quality treatment and care for individual patients (Scott-Findlay & Golden-Biddle, 2005). This implies discussing the relevance of general guidelines for the individual patient. Unless consciously addressed, individualized care could be ousted by EB standardized programmes (Norlyk, Haahr, Dreyer, & Martinsen, 2017). Patient centeredness and individualized care are necessary to achieve EBP in specific clinical situations (Brown, 2014; Melnyk & Fineout-Overholt, 2015). A tool such as the huddle board sessions could be a stepping stone to focusing on individual patient situations through combining the standardized risk assessments for individual patients with the integration of patient preferences in clinical problem solving. Leadership may contribute to increased patient-centred care by being close to care delivery, by teaching and supervising clinicians and by addressing how quality improvement and EBP relate to the care of individual patients (Lalleman, Smid, Dikken, Lagerwey, & Schuurmans, 2017). Giving the clinical nurses and their ward leaders the opportunity to discuss and integrate research evidence into the nurses' everyday routines and into the care of individual patients may stimulate the nurses to value and probably use the research findings (Scott-Findlay & Golden-Biddle, 2005).

4.4 | Strengths and limitations

By using grounded theory methodology, we have been able to develop a theoretical perspective and framework that captures the dimensions of integrating EBP into daily work. This framework highlights the challenges involved in attempting to integrate EBP into the daily work of nurses by illuminating how the dimensions interact. Data gave few indications that a sixth combination; an explicit EBP as a parallel to daily work at the individual level occurred in this study, although this would easily be envisioned as a possibility. Due to time constraints, we did not have the possibility to investigate this issue further, although we recognize that it could have strengthened the richness of the findings.

5 | CONCLUSIONS AND IMPLICATIONS

This study revealed a multidimensional EBP integration framework. The framework visualizes the complexity in clinical nurses' daily work and the efforts that need to be put in to achieve EBP integration.

This new perspective on the dimensions of EBP integration may have implications for clinical practice and probably could also be a guide for further research. The first objective could be to establish a structure to support EBP with an appropriate tool at the systems level. In such structures, EB guidelines developed by nurses as a parallel to daily work may be easier to apply. Furthermore, organizational and individual initiatives are important steps towards making the evidence in the EB guidelines visible to the nurses in clinical patient situations.

For further research and development of the multidimensional EBP integration framework, we recommend studying more hospital wards in the clinical nurses' daily work. As shown in this study, research use through EB guidelines in the implicit approach to EBP integrated into daily work might contribute to improved sustainability of guidelines. This could be appropriate for further research using a tool such as a huddle board and conducting a study of participants primarily using an explicit approach to EBP integrated into daily work at the systems level to integrate EB guidelines in clinical practice.

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CONFLICT OF INTEREST

The authors have declared no conflict of interest.

AUTHOR CONTRIBUTIONS

All authors have agreed on the final version and meet at least one of the following criteria [recommended by the ICMJE (https://www.icmje.org/recommendations/)]: (a) substantial contributions to conception and design, acquisition of data or analysis and interpretation of data; (b) drafting the article or revising it critically for important intellectual content.

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RESEARCH ARTICLE

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Creating room for evidence-based practice: Leader behavior in hospital wards

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Abstract

The integration (routinizing and sustaining) of evidence-based practice (EBP) into hospital management is a key element for improving patient safety and ensuring better patient outcomes. Hospital managers and clinical leaders play crucial roles in this integration. Interactions between leaders and integration context influence the improvement's quality, but leader-based actions that are effective for improving nursing practice remain unclear. The relationship between leaders could also either hinder or enable this implementation process. The aim of this study was to generate a theory about patterns of leader behavior that leaders are engaged in when attempting to integrate EBP in a clinical setting. We used a classic grounded theory methodology to generate a substantive EBP theory. In this study, through participant observation, we observed 63 nurses (15 specialist, 39 registered, and 9 assistant nurses). From these, five ward leaders (two head nurses, one assistant head nurse, and two teaching nurses) participated in individual interviews, and 18 clinical nurses participated in four focus groups. "Creating room for EBP" emerged as a theory for explaining the way in which the leaders attempted to resolve their main concern: How to achieve EBP treatment and care with tight resources and without overextending the nurses. Creating room for EBP encompasses a process of interactions, including positioning for, executing, and interpreting responses to EBP.

KEYWORDS
evidence-based practice, grounded theory, leaders, nurses, research utilization

1 | INTRODUCTION

The integration of evidence-based practice (EBP) is a key element for improving patient safety, quality of care, and disease outcomes (Melnyk & Fineout-Overholt, 2015; World Health Organization, 2016). Several theories and models have been developed with the aim of understanding which leader behaviors are most likely to contribute to practice improvement (Greenhalgh, 2018). However, Ovretveit (2010) could not find any systematic empirical studies that examined which evidence-based (EB) actions are most effective in nursing for inspiring and enabling others to improve their performance. An important consideration in EB actions seems to be the ability of the leaders to be flexible in a given situation or being able to interact with the situation's context. The interaction between the leaders and context may influence the success/outcomes of quality improvement initiatives (Greenhalgh, 2018; Ovretveit, 2010).

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EBP is defined as integrating clinical expertize with the most current and best research evidence into clinical decision making while also considering the specific available resources and the individual patient's preferences in a given situation (DiCenso, Guyatt, & Ciliska, 2005; Polit & Beck, 2016; Sackett, Rosenberg, Gray, Haynes, & Richardson, 1996). At the organizational level, EBP may assist in developing and integrating EB guidelines. At the individual decision making level, EBP may improve patient treatment and care (Polit & Beck, 2016). It has been suggested that leaders and managers play a key role by modeling EB decisions and that it is essential to recognize clinicians' EBP accomplishments to promote a favorable EBP culture (Aasekjær, Waehle, Ciliska, Nordtvedt, & Hjälmhult, 2016; Dogherty, Harrison, & Graham, 2010; Melnyk, 2014). Organizational factors, including the capacity for change at the organizational level, were also emphasized upon (Atkinson, Turkel, & Cashy, 2008; Flodgren, Rojas-Reyes, Cole, & Foxcroft, 2012). In line with May and Finch (2009), we understand the implementation of EBP as facilitation of the adoption or uptake of EBP within the organization. Integration means the routinizing and sustaining of new practices. In this paper, we focus on routinizing and sustaining EBP and use the term integration to refer to this process. Integrating EBP into daily work in a sustainable manner involves the routinization of new practices within a social context (May & Finch, 2009). This process is determined by the interactions between the characteristics of the evidence, the intended users, and the particular context of the practice (Titler, 2014). A more favorable context, including culture, supportive leaders, and recognition for a job well done, is related to an increase in research utilization (Estabrooks, Midodzi, Cummings, & Wallin, 2007). Organizational culture is defined by the assumptions, beliefs, ideas, and activities that are valued by the organization and expressed in the practitioners' patterns of behavior contributing to the organization's unique social and psychological environment (Scott-Findlay & Golden-Biddle, 2005).

The prerequisites for success in EBP integration include the translation of current research findings in the healthcare setting and their use by healthcare professionals to provide information about and improve their clinical performance (Melnyk, 2012). Research findings have suggested that clinical nurses' experience of support from their leaders determines their research utilization (Gurses et al., 2010; Kaplan, Zeller, Damitio, Culbert, & Bayley, 2014; Melnyk, Fineout-Overholt, Gallagher-Ford, & Kaplan, 2012; Sredl et al., 2011; Yoder et al., 2014). Nevertheless, the way in which leaders promote changes in nursing practice remains unclear (Dogherty et al., 2010).

In a recent study, Bender (2016) found that strong managerial leader support and continuous quality work by clinical leaders are essential for improving healthcare quality and safety. Manager is a general term for the executive directors or frontline nurse managers responsible for the daily running of the wards and for leading the staff members who provide direct patient care. Clinical leaders may refer to clinical nurse specialists, advanced practice nurses, nurse educators, or practice developers working in patient care situations (Van der Zijpp et al., 2016). Van der Zijpp et al. (2016) have highlighted the importance of the interactions among different levels of leaders. They found that the relationship between managers and clinical leaders could hinder or enable the integration process. Nevertheless, few detailed research descriptions of nurse leaders' influence or actions for improvement have been published (Adams & Natarajan, 2016; Dogherty et al., 2010; Ovretveit, 2010). More research on the role of leaders in EBP integration should address both leaders' actions and contextual factors in actual healthcare situations (Best et al., 2012; Bolden, 2011; Greenhalgh, 2018; Van der Zijpp et al., 2016).

Several studies have disclosed barriers in clinical nurses' work environment and among leaders that may hamper the EBP integration process. Among clinical nurses, lack of time, knowledge and skills in EBP are important individual barriers (Chiu et al., 2010; Mallion & Brooke, 2016; Melnyk et al., 2012; Yoder et al., 2014). These barriers influence the leaders' possibilities to succeed when they attempt to integrate EBP in their wards. The organizational culture may also act as a barrier (Bergs et al., 2015; Flottorp et al., 2013). For example, Bergs et al. (2015) found that issues regarding communication and teamwork could hamper the use of surgical safety checklist. Leaders themselves may also be a barrier to EBP integration by not having the necessary capacity, not being engaged or not having a suitable leader behavior style (Flottorp et al., 2013). The relationship between leaders in leader teams may also hinder the integration process (Van der Zijpp et al., 2016). Negative opinion leaders or other leaders may act as barriers in the integration process (Varsi, 2016). Another important barrier is that necessary resources may not be identified or available for the team members. According to Flottorp et al. (2013) this could, for example, be limitations of the information system, lack of patient safety systems or continuing education systems, which may hinder adherence to EBP recommendations.

The context of this study involved a Norwegian hospital trust's executive director decision to implement EBP as a hospital-wide policy in 2006. EBP was implemented by applying different strategies to help clinicians develop competence in EBP and make organizational adjustments (Vandvik & Eiring, 2011). Norwegian hospitals are organized into local health trusts, which may consist of several hospitals (Spehar, Frich, & Kjekshus, 2014). The executive hospital director heads the whole hospital trust. The hospital trust in which this study was conducted had a four-level structure with division, department, and ward managers in addition to the top hospital executive. The ward managers were nurses, while the other managers represented different professions. Many Norwegian hospitals have teaching nurses serving as clinical nurse leaders assigned to their wards. In the present study, we investigated hospital ward leaders' challenges and strategies in managing and facilitating clinical nurses' efforts to integrate EBP into daily practice. The aim of this study was to generate a theory about patterns of leader behavior that leaders are engaged in when attempting to integrate EBP in a clinical setting.

2 | METHODS

2.1 | Design

This study employed classic grounded theory to collect and analyze data to generate a substantive theory. Grounded theory

methodology is particularly well-suited for performing systematic qualitative research and investigating the complex and latent patterns involved in social interactions (Glaser & Strauss, 1967). In theory development, the participants' main concern and their patterns of behavior surrounding this concern are identified. "Main concern" refers to something with which the participants are occupied and usually involves a challenge or problem (Glaser, 1998). Grounded theory requires researchers to be open-minded, to be aware of and suspend preconceptions, and to trust that the way the participants resolve their main concerns will emerge (Glaser, 1998, 2013).

2.2 | Sample and setting

This study took place in two medical wards that treat patients with different diagnoses in two locations in Eastern Norway. This hospital trust provides acute services to 400,000 people at six different geographical sites. The two wards included in the study used two different strategies to integrate EBP into daily work. In one ward, the nurses worked with an EBP project, developing local clinical guidelines, and in the other ward the nurses integrated EB guidelines through the use of huddle board sessions (Table 1). Huddle board sessions are short structural meetings among interdisciplinary health professionals (huddles) (Glymph et al., 2015) around a whiteboard used as a patient risk assessment tool (huddle board). Forms and checklists were used in risk assessments, and after making observations and measures the nurses were expected to report it by checking off the corresponding item on a report card.

The wards, participants, and methods were chosen via theoretical sampling. In theoretical sampling, a researcher collects and analyzes data, from which patterns emerge that then inform the decisions about which data to collect next, where, and the way in which it should be collected (Glaser & Strauss, 1967). Details about the theoretical sampling process are outlined in the data collection chapter. To ensure the participants' confidentiality, the cities in which the wards were localized, and specifications of their specializations remain undisclosed.

In the study, we observed 63 nurses in participant observations. From these, 18 clinical nurses participated in focus groups, and five leaders participated in individual interviews, including two head nurses, one assistant head nurse, and two teaching nurses, which were all termed "leaders" in this paper. The main areas of responsibility for the leaders are outlined in Table 2.

The leaders' average age was 54.4 years. On average, they had been working 12 years in their present positions. All leaders were female, and four of them had completed additional specialization after their bachelor's degree (awarded after 3 years of university-level

TABLE 1 EBP integration: An EBP project and huddle board sessions

	An EBP project	Huddle board sessions
Features	EBP project ongoing for approximately 2 years, almost finished at the time of data collection	Huddle board sessions newly integrated into daily work with daily interdisciplinary meetings
Aims	To develop and integrate local clinical guidelines into daily work	To integrate EBP/EB guidelines through huddle board sessions
	To improve clinical practice with new evidence	To improve clinical practice and reduce patient harm
Initiated by	A nurse with a master's degree and a teaching nurse in the ward initiated and managed the EBP project.	The senior hospital executives (implemented in several wards in the hospital trust)
Position	A bottom-up profile	A top-down profile
Participants	Almost all nurses participated voluntarily in four different groups	Clinical nurses at work on dayshifts, in interdisciplinary teams
Performance	The groups worked one at a time, each with a self-determined theme	Huddle board target areas chosen by a hospital project manager and nurses and physicians in the ward
	The groups wrote one guideline and an implementation plan for integrating a patient registration scheme into practice	Use of EB guidelines based on the current best evidence tied to the target areas (Norwegian Ministry of Health and Care Services, 2015)
	Struggling to integrate new evidence into daily work	
Learning EBP	In varying degrees, the nurses were knowledgeable regarding asking and formulating questions, literature search, critical appraisal, application of new knowledge, and evaluation in line with the steps of EBP	The clinicians were requested to use the recommendations tied to the chosen target areas and integrate it with their clinical expertize, available resources, and patient preferences for each situation in EBP performance
Success	Learning EBP and becoming more aware of knowledge sources and that they must use the right knowledge	Using evidence tied to the target areas in daily work but not being conscious about this use
Leader roles	Supporting the project	Organizing the daily work
	Organizing the staff to obtain dedicated time for the nurses to work in the groups	Encouraging clinical nurses to participate in huddles and preparing for the execution of huddles

Abbreviation: EBP, evidence-based practice.

TABLE 2 Leaders' main areas of responsibility with examples of specific tasks

Head nurse	Assistant head nurse	Teaching nurse
Management	Management and teaching	Teaching
Economical responsibilities	Taking over selected tasks and areas of responsibility from head nurse when needed	Daily clinical assistance
Organizing daily work	Taking over parts of teaching nurses' areas of responsibility when needed	Explaining a procedure
Maintaining working schedules	Organizing reflections	Assisting a clinical nurse in a conversation with relatives
Taking care of staff	Stimulating critical thinking	Practical training:
Improving quality		Demonstrating and guiding nurses how to perform procedures
Integrating new practices		Guiding the nurses in specific situations as needed

education). The specializations equalled 60 or more European Credit Transfer and Accumulation System (ECTS) credits and were either in management or for their wards, were in relevant advanced clinical or professional education. All the leaders had completed EBP seminars some years before the participation in this study but could not recount the content of these seminars in detail.

Specialist, registered, and assistant nurses (15, 39, and 9, respectively) were observed in this study. The specialist nurses' education beyond basic nursing education equalled 60 ECTS credits, except two who had 120 ECTS credits. Their formal roles in the wards did not differ from the roles of registered nurses, even if they had acquired an expert base and clinical competency for advanced practice.

2.3 | Data collection

Data in this study were generated by conducting observations, individual interviews, and focus groups in the wards between March 2014 and January 2018. The combination of data collected from observations, individual interviews, and focus groups yielded information about the interactions among the leaders and between the leaders and the clinical nurses. Furthermore, it provided rich, relevant information for the theory's development regarding the clinical nurses' perspectives on their leaders' accomplishments and what they needed from and valued in a leader. The lead researcher in the study was a nurse who had been working in different roles (including a head nurse) at the hospital trust several years before study performance. Her knowledge and interest in the field contributed to the design and study conduct in addition to influencing the choices in theoretical sampling. Before the study, she did not know the participants very well.

Data collection started with participant observations. First, clinical nurses and ward leaders in the first ward were observed. In the last part of the observation period, the first individual interview was conducted with a leader from the ward. In line with theoretical sampling, we then conducted observations, individual interviews, and focus groups successively based on the emerging codes and categories (Figure 1).

Data collection and analysis were performed concurrently based on the principles of grounded theory (Glaser, 1978). In participant observations (such as combinations of direct observation and interactions with the healthcare professionals), the researcher followed clinical nurses during their daily ward-related activities (Creswell, 2013; Polit & Beck, 2016). The researcher wrote both descriptive and reflective field notes during and immediately after the observations (Creswell, 2013). Observations were conducted in 90 hr over 13 weeks. We collected and analyzed data to fit the data collected from the individual interviews with the data collected from the observations and focus groups within the same ward (see the details in Table 4). Furthermore, scheduling time with the leaders was challenging due to their demanding workloads. The same clinical nurses and leaders were involved in the study across the entire data collection period. All clinical nurses and leaders who participated in individual interviews and focus groups were recruited from the group of observed nurses.

This study's first author together with a comoderator performed the first two individual interviews. The comoderator was a nurse with a master's degree and was experienced with interviews in qualitative research. Thoughtful discussions between the two moderators facilitated the development and direction of the following interviews specifically and the study in general. The next three individual interviews were conducted only by the first author. To ensure the participants' comfort, they were interviewed at their respective hospitals in rooms of their choice. The interviews lasted between 51 and 67 min and were audiotaped and transcribed by the researcher afterward. A dynamic thematic interview guide that consisted of mutual themes framed in different ways, themes adjusted to emerging codes and categories and situations observed in the wards was used (Table 3).

We conducted four focus groups in comfortable rooms in each of the clinical nurses' wards. Each focus group consisted of four to five participants and lasted between 55 and 65 min. The first author moderated the focus groups, and SH served as a comoderator. The sessions were audiotaped and transcribed by the first author. The focus group sessions were initiated with an open-ended question about the way in which they had used EBP in their wards and if they

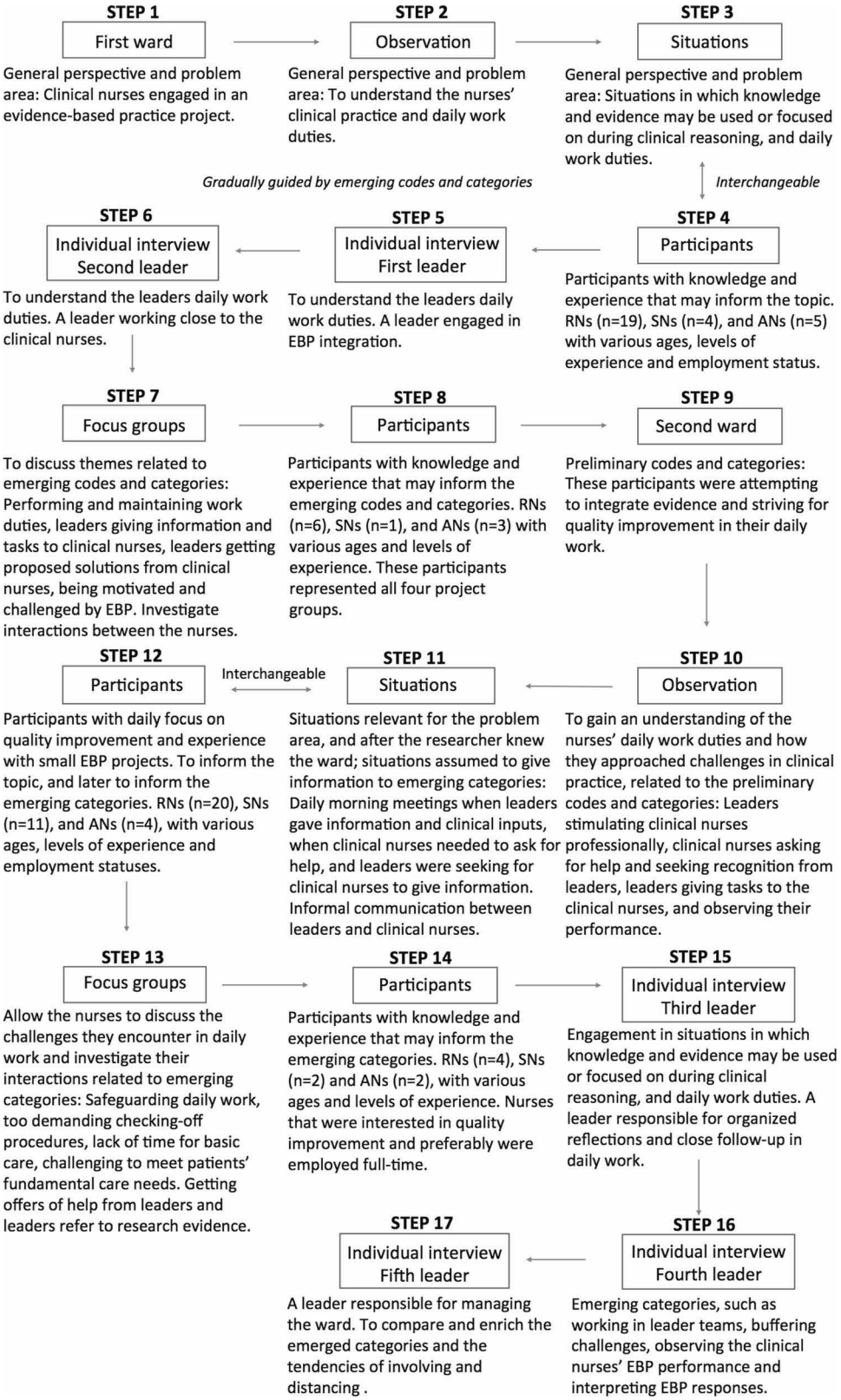


FIGURE 1 Flowchart of the theoretical sampling process. Modified from: Figure 1 (Renolen et al., 2018, p. 182) [Color figure can be viewed at wileyonlinelibrary.com]

TABLE 3 A dynamic thematic guide for individual interviews: Examples of questions

Situations	Questions
The opening question to all participants, formulated in different ways	How do you experience the integration of EBP in your ward? Can you tell what you have experienced with which to be successful and what has not been a success?
One leader says: "Sometimes the nurses may have the time and could read a guideline or update them in other ways, if it was a culture for that"	How may you influence the culture so as to facilitate that?
The emerging strategy "observing nurses' level of professionalism" and under-strategy "experiences variations in use of guidelines"	How do the clinical nurses use guidelines in their daily work?
Following up situations from the observation period	In the observation period, I observed that you played an important role in organizing critical reflection groups. What makes such reflection successful in your view?

Abbreviation: EBP, evidence-based practice.

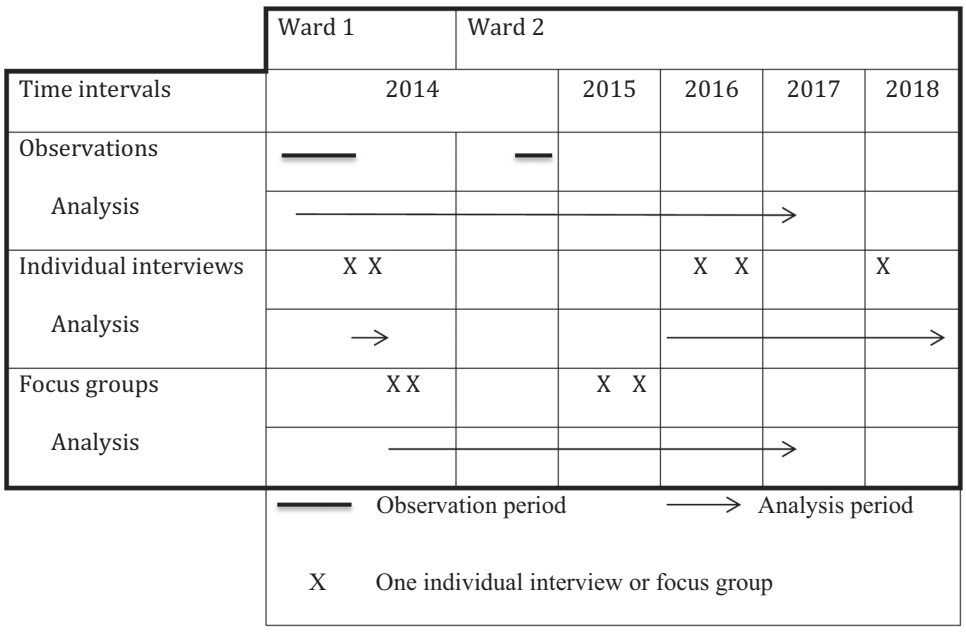
could describe a situation in which they had succeeded in facilitating EBP integration and a situation in which they had not succeeded. We used a dynamic thematic interview guide in the focus groups in the same way as in the individual interviews.

2.4 | Data analysis

Data were analyzed with open and selective coding as prescribed by grounded theory (Glaser, 1978). In open coding, we coded events from the field notes and transcriptions line-by-line and compared events using the constant comparative method (Glaser, 1978; Glaser & Strauss, 1967). We analyzed the data from this data collection in two parallel arms to generate two grounded theories. First, we developed a theory about clinical nurses' patterns of behavior in EBP integration by analyzing the data from the observations and focus groups. This theory has been published elsewhere (Renolen, Høye, Hjälmhult, Danbolt, & Kirkevold, 2018). In the second arm, we did a preliminary analysis of the first individual interview with the aim of guiding the second individual interview in the first ward. We then thoroughly analyzed the first two individual interviews together with data from observations and focus groups in both wards after which we conducted individual interviews and analyzed data concurrently to generate a theory about the leaders' patterns of behavior (Table 4).

When we began to sense emerging trends, we directed the coding to events relevant for the preliminary core category, thus performing selective coding. During the analyses, the lead researcher wrote memos, which were reflective notes of the relationships between the data to be used in the theoretical coding for theory generation

TABLE 4 Schematic overview of data collection and analysis



(Glaser, 1978). Initially, ÅR coded the data and ÅR and EH discussed the preliminary codes and categories. Afterwards, all authors scrutinized and discussed the transcribed interviews, codes, and categories. In the analysis, after the fourth individual interview was completed, we came to an agreement to conduct another interview with a leader from the second ward. Due to practical reasons, this could not be done before January 2018. Data collection stopped when no new categories emerged, and theoretical saturation was achieved. The theoretical coding was continued to conceptualize the categories and strategies on a more abstract level. An example of the coding process is outlined in Table 5.

2.5 | Ethical considerations

Approval from the Regional Committee for Medical and Health Research Ethics was requested, but the study was exempted from the need of their approval (reference number 2014/35A). The Data Protection Officer for Research and Quality (reference number 2013/17344) and the hospital in which the study was performed (reference number 201200448-27) reviewed and approved the study. The leaders from Wards A and B also approved the study. The participants were informed about the study and its purpose by their leaders and the lead researcher. The lead researcher recruited the participants into the focus groups and individual interviews by asking the participants personally while concurrently obtaining written informed consent. All procedures were conducted in accordance with the Declaration of Helsinki.

3 | RESULTS

On the wards, the leaders' and the clinical nurses' overarching goal was to provide patient treatment and care in the best possible way. Through generation of a substantive grounded theory, we found that the leaders' main concern regarding integration of EBP was how to achieve EB patient treatment and nursing care with tight resources and without overextending the nurses. The main strategy used to resolve this main concern could be expressed by the following general pattern of leader behavior: Creating room for EBP in management and nursing care. "Creating room for EBP" was the concept of leader behavior that involved actively making EBP capacities in their wards. The emerging grounded theory of creating room for EBP included three strategies positioning for EBP, executing EBP, and interpreting EBP responses.

3.1 | Conditions for creating room for EBP

We identified three main conditions that influenced the leaders when creating room for EBP. One condition described organizational premises, such as institutional rules, routines, and standards, as determinants for management and nursing care. The leaders operated within the boundaries set by limited resources and lacked a good system for instigating change. Second, the organizational culture was characterized by standardizing treatment and care practices and by focusing on task accomplishment. This led to a prevailing attitude of practical tasks being viewed as "real" work. Furthermore, nurse staffing was planned according to daily practical

TABLE 5 Data processing

Transcriptions and field notes	Open coding	Selective coding	Category
Individual interview: Moderator: "In the observation period, I observed that you played an important role in organizing regular critical reflection groups. What makes such reflection successful in your view?" Leader: "One has to control the reflection to adhere to the issue. For example a patient situation experienced difficult by a nurse who wants to share this experience and get some feedback from her colleagues. I think it is important to keep the focus and not just talk."	Organizing reflections Guiding the reflections Keeping a professional focus	Inspiring to participate in regular critical reflection Stimulating professional engagement	Stimulating professionalism
Observations: Leader at the morning meeting: "Keep in mind to use the non-slip socks, but remember it is not instead of shoes." Leader at the morning meeting: "At the staff meeting yesterday we had a question regarding use of facemasks. Nurse A, could you say something about it?" A: "To protect the patient in a procedure taking two or three minutes, use the green facemask. Use the pink facemask if the procedure takes longer or in the case of airborne infections. That is the main rule."	Reminding the nurses of a clinical issue Addressing the evidence precisely Holding expert nurses responsible	Providing for regular professional updates	
Individual interview: "We have been working in groups with an EBP project that ended in some EB guidelines, which we try to implement into daily work. But to search for literature during daily work–we are not quite there yet. Focusing on EBP has been a goal in the groups."	Encouraging the nurses to search for research literature Teaching EBP Focusing on EBP	Focusing on EBP	

Abbreviation: EBP, evidence-based practice.

tasks. Conditions that could make room for EBP were the clinical nurses' valuing high professional standards and the experience of having some success using EBP. The third main condition was that the clinical nurses continuously carried huge workloads, which required working at a fast pace with insufficient time available for EBP/quality improvement. Moreover, they lacked the required resources, such as sufficient computers and optimal working spaces, to integrate EBP. Due to these conditions, there was neither the necessary time nor capacity for EBP, mandating the need to create room for EBP. Creating room for EBP was a dynamic process in which the leaders juggled strategies with continuous consideration of the actual challenges arising during the daily workflow.

3.2 | Positioning for EBP

The concept of positioning for EBP emerged as the first strategy in the process of creating room for EBP. The leaders started to create room for EBP "outside" of the clinical nurses' workflow by making themselves capable of managing EBP within the existing conditions. The leaders managed this process by using three substrategies: ensuring their own capacity, working in leader teams, and being ready for the effort. They ensured their own capacities by capitalizing on their years of experience as leaders in their present positions and earlier participation in EBP seminars. They demonstrated an understanding of and motivation for integrating EBP. When working in leader teams, the leaders structured their work by collaborating and strategically dividing tasks and responsibilities. They cooperated and interacted with each other, thus taking advantage of each other's resources and ensuring that each individual knew the way in which to contribute. One leader described how they created cooperation structurally in their leader team to position themselves for EBP integration:

> *We organized team meetings but canceled several of them because of huge workload …. Then I said: We need to go through with these meetings. And now we arrange meetings about every second week. We get much more structure, knowing who does what and which clinical issues need to be followed-up. (Individual interview)*

The head nurses were responsible for EBP management but used feedback from the teaching nurses to be able to make the best decisions. In one instance, for example, a teaching nurse was helping a clinical nurse to solve a clinical issue in the ward. Simultaneously, she observed that two other nurses were struggling to comply with a new EB recommendation. Afterwards, the teaching nurse told the ward leader about this situation, giving the head nurse the opportunity to organize the work in a way that gave these nurses allocated time to read and understand the EB recommendation.

Furthermore, the leaders became ready for the effort by handling the demands and tasks assigned to them by the division and department managers. They looked for clinical benefits of EBP integration by mapping out the nurses' interest for EBP and use of EB knowledge. The following quotation from a conversation between a leader and two clinical nurses demonstrates this.

> *Leader: It is important that you can demonstrate that you use research evidence in clinical situations.*
>
> *Nurse A: It has to fit with our daily work. Some things may only be done one particular way [according to the current policy in our ward/hospital], but in a national guideline we have found possibilities to shorten the infusion time of a medicine.*
>
> *Nurse B: Other hospitals give this medicine to outpatients. According to the guidelines, this is possible here as well. We need to change our practice. (Observation)*

The leaders also adjusted their own workloads to promote EBP integration. They assessed which tasks were most useful for the patients and the wards. For example, the leaders assessed when to guide the nurses not to choose unnecessary, routine tasks, and rather complete the tasks most essential for EBP. The leaders also changed their own routines to the best for the nurses and made themselves available to them. Thus, they could use their positions to adjust EBP integration to the clinical nurses' daily work: "By being more experienced, I can aid the nurses to search for research evidence or guidelines. Furthermore, I may participate in clinical discussions or ethical reflections." (Individual interview)

3.3 | Executing EBP

The executing EBP pattern encompassed stimulating the nurses professionally, struggling with daily EBP challenges, and buffering these challenges. This strategy in creating room for EBP was connected to the clinical nurses' workflow and influenced their daily practice. In the first strategy, the leaders sought to inspire the clinical nurses professionally by focusing on EBP and promoting the use of national guidelines as the basis for evidence in clinical practice. They encouraged the nurses to report patient safety incidents and participate in regular critical reflections. As one of them explained:

> *We have considered how to make EBP advantageous. How can we motivate the clinical nurses to feel that searching for literature may be useful and interesting? The most important thing is to motivate them to ask questions, to be critical and to think. [Help them see that] they may find answers that can lead to changes in practice. (Individual interview)*

Furthermore, in EBP, the leaders continuously struggled with daily practical challenges, such as integrating new projects and maintaining existing routines. For example, there was almost no time for professional teaching activities or for the nurses to participate in

seminars. Thus, the leaders had to ask the nurses to attend training in their spare time in the afternoons or on their days off. This request contributed to the need for compensatory time-off from an already tight work schedule, which was not always easy to accommodate. Taken together, this entire process was very challenging, as highlighted in the example below:

> *Two clinical nurses had been revising an EB standardized care plan for months and were almost finished. They now needed some time to finish this task and asked the head nurse for 2 hr allocated time each. The answer was that it was not possible because of staff shortage. They were tired of not getting finished and decided to complete the work in their spare time this afternoon. The nurse sighs: "It is not for my sake we are doing this." (Observation)*

To minimize these kinds of situations, an important strategy in terms of executing EBP was the leaders' buffering of the nurses' challenges in managing EBP integration. In this context, "buffering" refers to enacting measures to intercept or moderate any adverse influences or pressures to which the clinical nurses were exposed. The following example illustrates this "buffering" strategy: The clinical nurses were frequently observed complaining that they felt more pressure to complete standardized routine procedures mandated by the hospital-wide patient security policy than addressing individual needs of their patients. In response, the leaders would help the clinical nurses address this dilemma by adjusting the expectations. When appropriate, the leaders would tell the nurses to skip a routine task and rather prioritize performing individualized EBP to a seriously ill patient. Additionally, the leaders modified routines, helped the nurses with practical tasks, and supported them by providing a sense of security when undertaking unfamiliar tasks. They also tried to get the nurses to engage professionally with the physicians by supporting them to insist on sharing responsibilities with the physicians during pre- and regular rounds, thereby decreasing the burden on the nurses. For example, this process occurred when the leaders believed that the nurses were assigned too heavy a responsibility for unstable patients without adequate involvement of the physicians: "I have told the nurses that they have to get the physicians to define which patients they need to follow closely. Further they must have the physician affirm which checking offs they need to prioritize for each patient." (Individual interview)

The leaders also tried to give the nurses some time set aside from their daily workflow to work with EBP and requested that the nurses ask for help to complete assigned tasks when needed. As such, the leaders also organized activities without directly involving themselves into the nurses' work. The findings suggested that when the leaders were working closely with the nurses' workflow, they could better support them and identify more easily the adjustments that were needed to continuously promote EBP integration.

3.4 | Interpreting EBP responses

In the third strategy, the leaders created room for EBP by interpreting EBP responses. This strategy was an emerging concept reflecting the leaders' handling of feedback from the nurses, observing the nurses' professional performance, and considering the consequences of EBP integration. The leaders handled nurses' feedback, mostly by answering EBP-related questions arising during their daily work. For example, when the nurses asked for help finding specific knowledge, the leaders had more opportunities than the nurses to find time to search for that knowledge. The leaders also received patient safety incident reports and formal complaints from the nurses or from other departments and hospitals. Leaders acted based on these reports and complaints and discussed patient safety incidents and EBP with the nurses as a learning strategy. The following example illustrates this process:

> *The leader informs the clinical nurses about a safety incident received from another hospital regarding a central vein catheter. A clip was open, and redness was observed at the exit site. The leader could not find any relevant information in the medical record about the care of the central vein catheter. She discusses this with the staff and underlines the importance of using the available EB guideline and correct documentation. She explains how to do it. (Observation)*

In the second substrategy, the leaders observed the nurses' professional performance and provided feedback. For example, when a teaching nurse observed a clinical nurse trying to search for EB knowledge, she contributed with support, knowledge and time, thereby encouraging EBP integration by demonstrating her interest in the nurse's EBP efforts. However, the leaders had many nurses to observe and they did not always know if the nurses updated themselves or if it was accepted among them to search for literature during their daily work. Much of what the leaders concluded from their observations was based on what they believed about the nurses' behavior, but they recognized that the current system was not optimal: "We lack a system to affirm that the nurses read a guideline, for instance a digital registration. For example, when we link a guideline in information e-mails, we don't know if anyone reads the guideline." (Individual interview)

The third interpretation-related EBP substrategy used by the leaders was to consider the consequences of EBP integration—that is positive outcomes as well as no or negative outcomes. They used this information to further consider how to facilitate EBP. For example, they could see professional clinical benefits when the nurses gained an increased awareness regarding their use of knowledge or when the nurses applied EB measures during problem solving. However, sometimes the leaders observed less use of EB guidelines than they expected after the EBP integration process and they experienced patient safety issues not being discussed. The leaders discussed these results and used them to inform which strategies to use in terms of creating room for EBP.

In creating room for EBP, the leaders also needed to address the potential conflict of applying standardized EBP routines and procedures to ensure patient safety generally and ensure high quality care by addressing the needs of individual patients. From their observations, the leaders believed that the nurses often prioritized routines and standard safety reports ahead of other tasks and assumed that it was the most experienced nurses who dared to prioritize other tasks ahead of the "check offs". Although the leaders supported the application of EB routines and standardization, they also worried that there were too many "check offs" for the nurses to make and that this process would impede their ability to complete the tasks most essential for individual patients' care. Clinical nurses' and leaders' thoughts illustrate this dilemma.

> *Nurse A: We spend more time on "check offs" than we spend on the patient.*
>
> *Nurse B: Yes, it is demanding with all the reporting, it is detrimental to basic nursing care. The leaders refer to research evidence, but I think this takes too much time. We will not be able to follow-up, and just as you say, it takes up the time from the patients. The stronger you are professionally and the more careful you are with your work, the faster you will fall short of your own expectations. (Focus group)*
>
> *Leader: Quality improvement may be reached by routines and "check offs". But it does not help if the nurses use their time on checking everything on each patient and do not have the time to observe parameters that cannot be measured or ticked off. It is important to have good routines, but I think is has become too much. (Individual interview)*

The leaders could use these observations further to understand how to buffer the clinical nurses' challenges. When the leaders interacted with the nurses, they were able to make more direct observations and obtain greater possibilities to consider, understand, and influence practice.

4 | DISCUSSION

In this study, we aimed to generate a theory about the patterns of leader behavior that leaders are engaged in when attempting to integrate EBP in a clinical setting. We found that the theory of creating room for EBP was used by leaders to resolve their main concern: how to achieve EB patient treatment and care given their tight resources and without overextending the nurses. The process of creating room for EBP included three strategies positioning for EBP, executing EBP, and interpreting EBP responses. In this study, we discuss the way in which the leaders' main strategies may influence EBP integration.

4.1 | Strategies used within leader teams in creating room for EBP

In positioning for EBP, the team members interacted to promote this integration process. The leaders focused on cooperation and took advantage of each other's resources. Other research found that leaders' interest in supporting and following up with clinical leaders and the staff's participation were important towards enabling the EB guideline integration process (Van der Zijpp et al., 2016). Engagement and enthusiasm from key personnel within leader teams have been described as important for success in integrating EBP or research evidence. Engaged opinion leaders, implementation leaders, or champions working in close collaboration with the leader teams may also influence such success (Abbott, Foster, Marin, & Dykes, 2014; Flodgren et al., 2011; Mair et al., 2012). The leaders also focused on preparing themselves for managing and helping the nurses with less focus on the cooperation and roles of the team and less visible engagement in the nurses' daily work. In line with van der Zijpp et al. (2016), a managerial leader's lack of interest and/or engagement represented a barrier to the clinical leader's engagement. Furthermore, a lack of collaboration among the different levels of management hindered EBP integration (Van der Zijpp et al., 2016; Varsi, 2016). Although not identified in our study, one must also keep in mind that critical or negative opinion leaders may also act as barriers to the integration (Varsi, 2016). On the basis of our findings and other research, we argue that engagement and interactions within a leader team seems to have enabled the EBP integration process.

4.2 | Strategies influencing the clinical nurses' workflow in creating room for EBP

In executing EBP and interpreting EBP responses, the strategies more or less influenced the clinical nurses' workflow. This workflow could be understood as "… a continuum of work tasks that the nurses carried out to support medical treatment, care for the patients, organize the ward, cooperate with colleagues and maintain oversight and control, while simultaneously being a good professional and colleague" (Renolen et al., 2018, p. 184). By intervening in the clinical nurses' workflow, the leaders were stimulating the nurses with EBP activities and tasks while concurrently buffering the nurses' challenges to avoid nurse overextension. The leaders worked together, in close proximity to the nurses' daily work, so they could sense the optimal course of action for the nurses. They conducted direct observation of the clinical nurses' work, which gave the leaders opportunities to obtain useful information from clinical practice. This could enhance the leaders' ability to interpret what was happening and to provide appropriate responses. To integrate changes in practice, Stetler, Ritchie, Rycroft-Malone, and Charns (2014) highlighted the need for multifaceted leader behavior when supporting EBP. This leader behavior reflected system-oriented thinking, operational leader actions, and a combination thereof. Related to interactions between leaders and clinical nurses, several decisive

factors within the operational leader actions were identified. These included inspiring and inducing behaviors and involvement with the staff and EBP activities (Stetler et al., 2014). These findings, among others, imply that involvement and interaction with the nurses is more likely to result in successful EBP integration (Gurses et al., 2010; Ploeg et al., 2014; Stetler et al., 2014).

Our findings also suggest situations in which the leaders seemed to be less capable of considering and identifying adjustments that were needed for EBP integration. The leaders could give the nurses allocated time or tell them to ask for help when needed. The leaders' observations of clinical nurses' daily work were limited; therefore, the opportunities to adjust their responses to these observations were scarce. In line with the findings of Åkerlund (2017), leaders may have little practice or experience with observing the way in which their staff is performing and how they may influence their fellow workers. On the basis of these considerations, we argue that engagement in nurses' workflow might confer a greater likelihood of not overextending the nurses with respect to EBP integration. Another perspective indicates that involvement in clinical nurses' workflow seems to be tightly connected to facilitating EBP integration and teamwork. Leaders that facilitate their teams demonstrate support for both learning and action (Greenhalgh, 2018). Leaders that put effort into facilitating their team and the necessary tasks and are close to the team members may have success in the process of establishing new routines (Edmondson, Bohmer, & Pisano, 2001; Greenhalgh, 2018). Leaders with little emphasis on teamwork and with a focus on allocating tasks and getting results from the teams more than being a team member are less likely to succeed in changing a routine (Edmondson et al., 2001; Greenhalgh, 2018).

4.3 | Strengths and limitations

A strength of this study is that the overall empirical data from the observations, individual interviews, and focus groups reinforce the patterns of leader behavior. By being workable and having relevance, the theory explains the action and the relationships between the actions in the substantive area. Because we investigated only two hospital wards in one hospital trust, we must be cautious in terms of applicability and transferability to other hospital wards even though our study was conducted in two different geographical sites. Our sample size of leaders in this study was small. We have discussed the need for interviewing more leaders to ensure saturation (Glaser, 1978, 1998). However, this would have required us to go outside the wards or to include leaders without direct daily contact with the clinical nurses. This could conflict with the principles of theoretical sampling and emerging concepts.

4.4 | Implications for clinical practice and research

The grounded theory of creating room for EBP contributes to a better understanding of the patterns of leader behavior when leaders attempt to integrate EBP into their wards. The theory reveals the importance of the strategies for the leaders' capacity and ability to create room for EBP without overextending the nurses. Based on this knowledge, we suggest that the direction for future research should be to explore interactions between leaders and nurses in EBP integration. This could serve to further enhance the leaders' knowledge regarding the way in which clinical nurses respond to EBP integration activities and to better adjust EBP integration to clinical practice.

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CONFLICT OF INTERESTS

The authors declare that there are no conflict of interests.

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Errataliste

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