Patient participation on
nursing wards and the case
of bedside shift report

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CONTENT

LIST OF ABBREVIATIONS

BMJ	British Medical Journal
BSR	bedside shift report
CEO	chief executive officer
CPSET-COM	Care Process Self Evaluation Tool – Communication subscale
CPSET-COR	Care Process Self Evaluation Tool – Coordination subscale
CVI	content validity index
EPUAP	European Pressure Ulcer Advisory Panel
FAME	feasibility-applicability-meaningfullness-effectiveness
HAPU	hospital acquired pressure ulcer
ICS	individualized care scale
IOM	Institute Of Medicine
ISBARR	identification-situation-background-assessment-recommendations-readback
IVD	intravenous drip
JCI	Joint Commission International
MOAQ-JSS	Michigan Assessment of Organizations Questionnaire – Job Satisfaction Subscale
MOAQ-TIS	Michigan Assessment of Organizations Questionnaire – Turnover Intention Subscale
MRC	Medical Research Council
NHS	National Health Services
NIAZ	Nederlands Instituut voor Accreditatie in de Zorg
NPUAP	National Pressure Ulcer Advisory Panel
PaCT-HCW	Patient Participation Culture Tool for Healthcare Workers
PaCT-PSY	Patient Participation Culture Tool for Inpatient Psychiatric Wards
PAM13	short version of the Patient Activation Measurement with 13 items
QPP	Quality of Care from the Patient Perspective Questionnaire
RN4CAST	Nurses Forecasting in Europe-study
SBAR	situation-background-assessment-recommendations
URL	Uniform Resource Locator
WHO	World Health Organization

Chapter 1

INTRODUCTION

As you set out for Ithaka
hope the voyage is a long one,
full of adventure, full of discovery.
- C.P. Cavafy -

This dissertation discusses patient participation on nursing wards and looks at bedside shift report as a particular method for nurses to increase patient participation at the patient's bedside. As it will become clear in the chapters to follow, the two topics are closely entwined. It is therefore necessary to first introduce patient participation as the overarching concept in which bedside shift report should take place. By introducing patient participation, it will be emphasized that providing information to the patient is a prerequisite for patient participation. By introducing the bedside shift report or bedside handover next, it will be outlined that this information provision process is also a key element in bedside shift report. Bedside shift report is introduced as a method wherein information is provided to the patient during the nurses' shift-to-shift report. As the bedside shift report is one of the upcoming methods in Belgian and international nursing to increase patient participation on nursing wards, this method was specifically chosen. In order to provide sufficient background to understand the chapters to come, this general introduction elaborates on the history, the definition, the current knowledge, the importance for healthcare, and the current gaps in research concerning both patient participation and bedside shift report.

1. PATIENT PARTICIPATION

Patient participation is adapted from the construct citizen participation, which was first introduced in the sixties of last century (Arnstein, 1969). In order to fit the context of healthcare, the term 'citizen' was replaced by the term 'patient'. It is also known as patient involvement, user participation and user involvement (Castro et al., 2016). Similar to the original definition of Arnstein of citizen participation, patient participation has six degrees or steps, depending on the influence a patient has in a relationship with a healthcare worker. These degrees, commonly known as the 'ladder of participation', range from a passive role for the patient where he or she receives information from a healthcare worker, to the most active role for the patient in which (s)he has control in the healthcare process. Next to the different degrees of patient participation, patient participation or involvement can be practiced on different levels: the individual level of the patient-healthcare worker relationship (micro-level), the collective level of a ward, a patient organization or a hospital (meso-level), and the national or international level (macro-level; Castro et al., 2016). Patient participation on the individual level (i.e. micro-level) is defined as *'the patient's rights and opportunities to influence and engage in the decision making about his care through a dialogue attuned to his preferences, potential and a combination of his experiential and the professional's expert knowledge'* (Castro et al., 2016). On a more collective level (i.e. meso- and macro-level), patient participation is defined as *'the contribution of patients or their representing organizations in shaping health and social care services by means of active involvement in a range of activities at the individual, organizational and policy level that combine experiential and professional knowledge'* (Castro et al., 2016). Although the term patient participation is often used interchangeable with patient-centeredness and patient empowerment, these constructs are in their es-

sence and meaning quite different. It is essential to make a clear distinction between the terms and understand how they relate to each other (Funnel, 2017). According to the concept analysis of Castro et al. (2016), the concepts of patient participation, patient-centeredness and patient empowerment should be placed in relation to each other, each of them having a different role in increasing a hospital's quality of care and the quality of life of individuals in society. They state that patient participation should be seen as a strategy that increases the patient's rights and opportunities to influence and be involved in the decision making about his/her care. For this purpose a dialogue is used in which the patient's preferences, his/her experiential knowledge and the professional's expert knowledge are combined. By having healthcare workers that actively engage in patient participation, a patient-centered culture is facilitated within an organization. Such a culture is characterized by a biopsychosocial approach and attitude that aims to deliver care that is respectful, individualized and empowering for each individual patient. Such a patient-centred approach will lead to a process of empowerment in which patients have more control over their healthcare process and increases their capacities to be involved in important and relevant issues for themselves. In the end, leading to an increase in quality of care in hospitals and quality of life in society.

While the right and duty of patient and public involvement and its consequences were already declared by the WHO at Alma Ata in 1978, patient participation has only become increasingly important for healthcare since the beginning of the century. At the change of the century, patient participation was added as a new paradigm to the concept of quality of care (IOM, 2001). This new paradigm has been supported by important academic societies and policy makers such as the British Medical Journal (2014) and the World Health Organization (2013). Looking at the proven and presumed positive effects of patient participation, this should not be surprising.

More and more evidence suggests and supports the importance and benefits of involving patients on all levels of healthcare systems (Kickbush & Gleicher, 2012; Staniszewska et al., 2008; Mockford et al., 2011; Castro et al., 2016). On the individual level, it has positive effects on self-management of chronic illnesses, reduces medical and communication errors, increases hand hygiene adherence, is linked to enhanced patient satisfaction and positive health outcomes, and increases patient empowerment (Longtin et al., 2010; WHO, 2013; Griffin et al., 2004; Cairns & Dudjak, 2013; Gregory et al., 2014). On the more collective level, there are indications and examples that patient participation increases quality of care (Nilsme et al., 2006) and the transparency and legitimacy about using public funds (Boivin et al., 2014). The latter will possibly be contributing to the future sustainability of healthcare systems (Van de Bovenkamp et al., 2011; BMJ, 2014). Overall, patient participation can be seen as an effective method for healthcare workers, hospitals and healthcare systems to improve their quality of care on a continuous basis (Nilsme et al., 2006; WHO, 2013). Because of the postulated positive impact of patient participation, some even have described it as the '*holy grail of healthcare*' and '*the blockbuster drug of the century*' (Dentzer, 2013).

Besides the positive impact of patient participation on healthcare, three other factors are strongly contributing to the vast and widespread implementation of patient participation-related initiatives internationally. First, patient participation is incorporated through shared decision-making as an essential element in Evidence-Based Medicine (Sackett et al., 1996) and is ethically imperative (BMJ, 2014). Second, there is an increase in societal expectations concerning transparency, legitimacy and involvement (Kluge, 2013; Kickbush & Gleicher, 2012; Kok et al., 2015) as the new generations of citizens are raised in the spirit of participation and anticipate to be involved in decisions (Verhoeven, 2008; De Rynck & Dezeure, 2009). Third, the concept of patient participation is embedded in the processes of shared-decision making and informed consent in the legal framework of several countries, including Belgium (2002), and is mentioned by the leading organisations on hospital accreditation, like the Joint Commission International and NIAZ QMentum. Next to these international evolutions, the Belgian Federal Government drew more attention on the importance of patient participation in quality of care and patient safety by funding a multi-annual program to improve patient participation between 2013 and 2017. The goal of the program was to inform, instruct and train healthcare workers in order to have patient participation more spread and used in Belgium.

In contrast with the fact that patient participation is becoming a more widespread concept and is increasingly used in healthcare and hospitals, it still remains a complex and not fully understood phenomenon (Tambuyzer et al., 2011; Castro et al., 2016; Funnell, 2017). Large incongruences exist concerning the phenomenon of patient participation, the process, and the determinants (Cahill, 1998; Gallant et al., 2002; Sahlsten et al., 2008). Until recently, the definition itself remained unclear (Funnel 2016, Castro et al., 2016). Amongst other examples, Arnstein's ladder has received much critique over the last decade because it lacks the possibility to nuance, it fails to assess the quality of the relationship, and it has shortcomings in considering both process and outcome. Still, it remained a leading model, perhaps adding further to the unclarities about the concept of patient participation (Tritter & McCallum, 2006). These unclarities, often in combination with the predilection for short-term solutions in healthcare, result in the danger that patient participation and patient centeredness become eroded concepts (McCormack & Watson, 2017; Dewing & McCormack, 2017). Such eroded concepts lead to hollow exercises (i.e. window-dressing) and the risk to negatively affect the position of patients as equal partners or experts in the healthcare process (Williamson, 2014). In order to protect patients from negative experiences, more knowledge is needed on how the process of patient participation actually takes place.

So far, only a limited number of theoretical models have been developed to better understand the process of patient participation and its antecedents, often within a myopic perspective. Both the model of Longtin et al. (2010) and the model of Tambuyzer et al. (2011) identify healthcare worker-related determinants like demographic variables (e.g. age and profession) and contextual factors (e.g. leadership support) as important determinants of patient participation. Both models also emphasize the inherent power imbalance that exists at the start of patient participation. In every new patient-healthcare

worker relation, healthcare professionals have more knowledge and expertise concerning the healthcare process, and thus more power than patients. It is only when healthcare professionals are willing to share their power and actually do so, that patient participation or involvement is possible (Sarrami-Foroushani et al, 2014; Longtin et al., 2010). Still, although both models emphasize the importance of healthcare worker-related characteristics that influence the healthcare worker for engaging in patient participation, they remain limited on providing evidence and knowledge on which healthcare worker-related characteristics influence this behavior (Philips et al., 2015). This limited knowledge could be mainly attributed to the fact that no tool is at hand to measure the influence of these characteristics on the healthcare worker's engagement in patient participation.

To better understand the process of patient participation and how it is initiated, it is therefore essential and a priority to gain more insight in the determinants that stimulate or demotivate healthcare workers in engaging patient participation. As nurses regard themselves as having the historical obligation to be the patient's advocate (Hewitt, 2002) and regard themselves as crucial for patient participation (Tobiano et al., 2015), patient participation culture amongst nurses should be a main interest. It has been proven (Angel & Frederiksen, 2015) that nurses have a strong dominance as patients only have a limited acquaintance with the nurses' practices, expertise and knowledge. Due to this dominance, patients often opt for a passive role to avoid being labeled as inflexible or troublesome (Joseph-Williams et al., 2014), making patient participation in daily nursing care less likely.

2. BEDSIDE SHIFT REPORT

Bedside shift report is a process where the shift-to-shift report between nurses is executed at the patient's bedside in order to improve the patient's involvement, if agreed by the patient (Anderson & Mangino, 2006). The term was first coined in 1997 by Watkins, but the interest in bedside shift report or bedside handovers has only increased during the last decade (Ferguson & Howell, 2015). The heightened attention in this specific method can be explained by the rising interest in three main underlying ideas and their consequences.

First, by performing the nurses handover between shifts at the bedside, nurse-to-patient communication is expected to improve (Gregory et al., 2014), which is a perfect medium for the increased emphasis on patient participation in healthcare. By providing information at the bedside, the patient is informed and has the opportunity to participate, which are two essential elements of patient participation (Angel & Frederiksen, 2015).

Second, by performing the nurses handover between shifts at the bedside, also nurse-to-nurse communication is expected to improve. This is of importance for healthcare systems like wards or hospitals, as bad communication during handovers lies at the origin of a substantial number of medical errors (Kohn et al., 2000). Bedside shift reports should thus increase patient safety. Third, the increased emphasis on socio-economical sustainability has made nurses' time-use of increased importance in healthcare organizations. Introducing the bedside shift report is expected and partially proven to result in organizational benefits like enhanced handover efficiency and the immediate start of direct patient care (Evans et al., 2011), resulting in better time-use by nurses.

The three ideas described above led to several studies about the positive effects in practice for both patients and nurses, such as improved clinical outcomes and more efficient time-use. For patients, bedside shift report provides the opportunity to receive information and ask questions (McMurray et al., 2011), share medical information (Kerr et al., 2014), clarify information (Tobiano et al., 2013), and provide feedback (Anderson & Mangino, 2006). For nurses, the bedside shift report is claimed to optimize the visualization of the patient and the prioritization of the work during the shift leading to improved nurse's accountability (Maxson et al., 2012; Cairns et al., 2013), medication reconciliation and communication with physicians (Gregory et al., 2014). Also, studies indicate more job satisfaction (Caruso, 2007). Concerning clinical outcomes, bedside shift reports shorten the length of stay (Trummer et al., 2006) and decrease the 30-day post-discharge utilization (Mitchell et al., 2012). By assessing possible threats during the handover, fall incidents, pressure ulcers or clogged intravenous drips can be avoided (Evans et al., 2011). For organizations, the effectiveness of the shift report will increase and communication errors will be avoided (Novak & Fairchild, 2012), enhancing clinical performances (Haig et al., 2006) and time-use during handovers (Evans et al., 2011).

Overall, in times of emphasis on patient participation, safe and high quality care, and socio-economical sustainability, bedside shift report seems like a perfect intervention for many healthcare organizations. It is no surprise that more and more healthcare organisations are considering the overall implementation of bedside shift reports. But, in contrast with this catalogue of positive effects there is a lack of a robust body of knowledge on bedside shift reports. First, the systematic reviews of the literature so far (Gregory et al., 2014, Anderson et al., 2015, Mardis et al., 2016) have mainly provided an overview of all the positive effects that are attributed to the bedside shift handover, and have focused less on the negative effects, contradictory results, or the reporting of failed initiatives. Second, when reviewing the literature (Gregory et al., 2014; Smeulers et al., 2014), it can be concluded that multicentred and longitudinal quantitative studies on bedside shift report are non-existing, just as extensive observational studies and pre-implementation qualitative studies are lacking. There is a gap between research and practice, with negative consequences. A recent review of quality improvement projects shows that many initiatives fail and more and more nurse-related post-implementation barriers are being reported (Tobiano et al., 2018), with great similarities across settings and countries (Gregory et al., 2014). Moreover, at least one study has reported active dis-

couraging behaviour by nurses towards patients during the bedside shift report (Anderson 2015), indicating the process of bedside shift handover is not fully understood, which affects successful implementation.

This lack of strong evidence concerning the feasibility, appropriateness, meaningfulness and effectiveness of the process of bedside shift reports is in contrast with the state-of-the-art rules of conducting research, which states that initiatives should be well grounded in research before overall implementation is recommended and initiated, in order to protect the patient (van Achterberg, 2013; Williamson, 2014; McCormack & Watson, 2017). More importantly, all the above underlines the importance of providing a more robust body of knowledge on the bedside shift report concerning its feasibility, appropriateness, meaningfulness and effectiveness before wide implementation.

3. GENERAL OBJECTIVES AND OUTLINE OF THE DISSERTATION

As mentioned before, bedside shift report is a specific method to enhance patient participation, closely intertwining the two topics. During this introduction, patient participation and bedside shift report were discussed more in detail, and patient participation was elaborated as the overarching concept for bedside shift report. Therefore, before looking into the case of bedside shift report, this dissertation first addresses the patient participation culture behavior amongst Flemish nurses to identify nurse-related elements that should be taken into account when implementing bedside shift report in nursing practice.

In the introduction, the need for further exploration of the specific nurse-related determinants of patient participation was described as a pressing objective. In the attempt to provide an answer to this objective, this dissertation discusses the nurse-related determinants of patient participation in chapter two and three. These chapters discuss the development of a validated questionnaire (chapter two) for general hospitals as such a tool is currently missing and provide more details on the results of a cross-sectional study amongst Flemish nurses on their patient participation culture (chapter three).

Next, this dissertation studied bedside shift report as a specific method to improve patient participation in the nursing profession. As elaborated in detail in the introduction, bedside shift report is increasingly used despite the fact that rigorous research is lacking. Therefore, the objective of this dissertation was to determine the feasibility, appropriateness, meaningfulness and effectiveness of bedside shift report in a multi-centred, longitudinal mixed methods study.

From chapter four to chapter nine, the subject of bedside shift report is addressed specifically. In chapter four, the study protocol to investigate the feasibility, appropriateness, meaningfulness and effectiveness of bedside shift report is outlined. It is important to

point out that not all results from this study protocol are already included in the following chapters of this dissertation. Some results of follow-up have not yet been described in the manuscript and some studies are to be finalized after this dissertation. Chapter five discusses the issues concerning the development of the bedside shift report intervention before implementation, and puts these issues in relation to how nursing care is organized on a ward. In chapter six and chapter seven, the results from the observational part of the study are elaborated. In particular, compliance to the intervention protocol and time-use are addressed. In chapter eight, the possibility of infringement of privacy during the bedside shift report is addressed in detail due to the importance of this issue for successfully implementing bedside shift report. Chapter nine looks at the longitudinal quantitative results of the study for both nurses and patients and determines whether or not the use of bedside shift report has generic effects on both groups. Finally, in chapter ten a general discussion on the dissertation is given. In this general discussion, we reflect on the results from all our studies, in order to provide an answer on how the process of bedside shift report works, on who or what benefits from the method, and on whether bedside shift report is a suitable and effective method to implement in nursing practice on a wide scale. In this general discussion, the results from the studies that are still ongoing are also incorporated to provide a broader perspective for the overall conclusions. An overview of the research question of every chapter, also shortly describing the used methodology can be found in Table 1. At the end of the dissertation, a praxis-oriented summary of the dissertation is given in both English and Dutch.

Table 1: overview of the chapter in the dissertation, the adressed research question and used methodology

Chapter	Title	Research question/goal	Methodology
2	The Patient Participation Culture Tool for healthcare workers (PaCT-HCW) on general hospital wards: A development and psychometric validation study	to develop and validate a tool that measures the healthcare worker-related factors of patient participation and information sharing and dialogue in patient participation from the healthcare worker's perspective	A four-phased validation study: (1) defining the construct, (2) development, (3) content validation, and (4) psychometric evaluation.
3	The influence of nurses' demographics on patient participation in hospitals: A cross-sectional study	To determine if nurses' demographic characteristics influence their willingness to engage in patient participation	A cross-sectional multicenter study with multilevel analysis
4	Feasibility, appropriateness, meaningfulness and effectiveness of patient participation at bedside shift reporting: mixed-method research protocol	To develop a protocol that evaluates the feasibility, appropriateness, meaningfulness and effectiveness of bedside shift reporting in a minimum of five interventions and five control wards	A matched, controlled, mixed-method, longitudinal study design
5	'It is more than changing the handover': A study on nurses' beliefs towards barriers and facilitators for implementing bedside shift report on hospital wards	To identify barriers and facilitators for implementing and using bedside shift report and to determine their relation to the nursing care system on a ward	A pragmatic descriptive study with content analysis, based on qualitative research principles. With semi-structured interviews
6	Conducting a bedside shift report: An observational multi-centered study	To determine whether staff presented information during the bedside shift report in accordance with a structured content approach and whether there were differences between wards regarding the compliance to this content protocol	A multicentred observational study with unannounced and non-participatory observations
7	Does bedside shift report reduces handover time-use: An observational study	To clarify the impact of bedside shift reports on the time-use during the shift handover	A descriptive study in which time-measurements after implementation were compared to the time-use before the implementation of bedside shift report
8	The challenges of patient participation for the nursing profession: issues emerging during a mixed methods study on bedside shift report	To discuss whether or not privacy is a problem for executing the bedside shift report	A discussion paper in which observations, interviews with nurses, and interviews with patients from an ongoing multicentred and longitudinal mixed method study on bedside shift report are combined with a narrative review of international literature.
9	The effectiveness of bedside shift reports: A multilevel, longitudinal study on nurses and patients	To investigate the longitudinal effects of bedside shift report for nurses and patients	A longitudinal, controlled, multicentred study with multilevel, (un)pared data analysis
10	General discussion	To discuss the findings concerning patient participation culure amongst nurses and to determine the feasibility, appropriateness, meaningfulness and effectiveness of bedside shift reports	A mixed method discussion of the findings, combining results from published, finished and ongoing studies.

4. KEYWORDS OF THE DISSERTATION

Advanced nursing skill; appropriateness; bedside shift report; bedside handover; confidentiality diagnostic interviews; effectiveness; feasibility; hospitals; implementation; individualized care; intervention compliance; ISBARR; longitudinal; meaningfulness; mixed methods study; MRC framework; multi-centred; nursing; nursing care system; patient involvement; patient participation; power and responsibility sharing; privacy; quality of care; questionnaire; questionnaire development; SBAR; shift handover; time-use.

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Chapter 2

THE PATIENT PARTICIPATION CULTURE TOOL FOR HEALTHCARE WORKERS (PACT-HCW) ON GENERAL HOSPITAL WARDS: A DEVELOPMENT AND PSYCHOMETRIC VALIDATION STUDY[1]

[1] Chapter based on: Malfait S, Eeckloo K, Van Daele J, Van Hecke A (2016). The Patient Participation Culture Tool for healthcare workers (PaCT-HCW) on general hospital wards: A development and psychometric validation study. International Journal of Nursing Studies, 61, 187-197. http://dx.doi.org/10.1016/j.ijnurstu.2016.05.015

Background: Patient participation is an important subject for modern healthcare. In order to improve patient participation on a ward, the ward's culture regarding patient participation should first be measured. In this study a measurement tool for patient participation culture from the healthcare worker's perspective, the Patient Participation Culture Tool for healthcare workers (PaCT-HCW), was developed and psychometrically evaluated.

Objectives: The aim of this study was to develop and validate a tool that measures the healthcare worker-related factors of patient participation and information sharing and dialogue in patient participation from the healthcare worker's perspective in order to represent the patient participation culture on general and university hospital wards.
Design: A four-phased validation study was conducted: (1) defining the construct of the PaCT-HCW, (2) development of the PaCT-HCW, (3) content validation, and (4) psychometric evaluation.

Settings: The Belgian Federal Government invited all Flemish general and university hospitals by e-mail to distribute the PaCT-HCW in their organization. Fifteen general hospitals took part in the study.

Participants: Units for surgery, general medicine, medical rehabilitation, geriatric and maternal care were included. Intensive care-units, emergency room-units, psychiatric units and units with no admitted patients (e.g. radiology) were excluded. The respondents had to be caregivers, with hands-on patient contact, who worked on the same ward for more than six months. Nursing students and other healthcare workers with short-time internship on the ward were excluded. The tool was completed by 1329 respondents on 163 wards.

Methods: The PaCT-HCW was psychometrically evaluated by use of an exploratory factor analysis and calculation of the internal consistency.
Results: A model containing eight components was developed through a literature review, individual interviews, and focus interviews. The developed model showed high sampling adequacy and the Bartlett's test of sphericity was significant. An exploratory factor analysis identified eight components, explaining 49.88% of the variances. The eight original included components were retained. The PaCT-HCW also showed high internal consistency. Conclusion: The PaCT-HCW offers an in-depth and differentiated perspective of the healthcare worker-related factors of patient participation and information sharing and dialogue in patient participation. The PaCT-HCW has been developed thoroughly, resulting in a strong, psychometric evaluated tool and is a valuable measure for both scientists and clinicians to measure these two aspects in general and university hospitals. By using the PaCT-HCW, the opportunity is created to develop specific actions to improve patient participation.

1. INTRODUCTION

In 2013 the Belgian Federal Government emphasized the importance of patient participation in quality of care and patient safety by announcing a multi-annual program to improve patient participation. A first step in this program was the development of the Patient Participation Culture Tool for healthcare workers (PaCT-HCW) to measure and represent the patient participation culture on general and university hospital wards, based on the perceptions of healthcare workers. Special attention for patient participation related to patient safety issues was included in the tool.

2. BACKGROUND

The positive effects and advantages of patient participation are well known. Besides being an essential element of Evidence-Based Medicine (Sackett et al., 1996) and the ethical imperativeness that is embedded in the concept (British Medical Journal, 2014), patient participation is an effective method to improve quality of care (Nilsme et al., 2006; World Health Organisation, 2013). Patient participation has a positive effect on self-management in chronic illnesses (Longtin et al., 2010), improves patient safety by reducing medication errors (World Health Organisation, 2013), stimulates hand hygiene (Longtin et al., 2010), and is associated with positive health outcomes (Griffin et al., 2004). Moreover, there is emerging evidence that patient participation is an essential concept in guarding the cost-effectiveness and therefore the sustainability of healthcare (British Medical Journal, 2014). Although patient participation is a widespread concept and is commonly used in healthcare, it remains a complex and not fully understood phenomenon (Tambuyzer et al., 2011). Currently, incongruities exist regarding the definition, the process, and the determinants or factors of participation (Cahill, 1998; Gallant et al., 2002; Sahlsten et al., 2008). Few theoretical models have been developed to outline the determinants and factors of patient participation. The model of Longtin et al. (2010) identifies three factors that influence patient participation: patient-related determinants, effective communication (including feedback) and healthcare worker-related determinants. The healthcare worker-related determinants for patient participation include several demographic variables (e.g. age and profession), contextual variables (e.g. support), but also variables related to role behavior (e.g. acceptance of a new role). Knowledge on these healthcare worker-related factors of patient participation is limited. No study has identified the combined influence of these factors on the culture of patient participation (Phillips et al., 2015). Research has mostly focused on the influence of each separate factor. These factors are essential for the process of patient participation as they stimulate healthcare workers to abandon their traditional, paternalistic role for a patient-centred, collaborative role where power and responsibilities are shared between both. As proven for nurses (Cahill, 1998; Henderson, 2003) and physicians (Frosch et al., 2012), taking up this new, collaborative role poses a challenge, but is a necessity to facilitate patient participation (Larsson et al., 2011). Healthcare workers have to be able

or willing to share their responsibilities and power with their patients before participation can actually take place (Millar et al., 2015). Patient participation is a reciprocal process where healthcare workers and patients act upon each other's behavior (Longtin et al., 2010), and the patient initially depends on the healthcare worker's willingness to collaborate. In this process, it is the healthcare worker's participation stimulating behavior that encourages and enables patients to decide whether they are willing to participate or prefer a passive recipient role (Arora and McHorney, 2000; Biley, 1992; Sims, 1999). Like most interactional behavior, the healthcare worker's behavior is embedded in a collective culture. Culture refers to the pattern of beliefs, values and learned ways of coping with experience that have developed during the course of an organization's history, and which tend to be manifested in its material arrangements and in the behaviors of its members (Brown, 1998). Based on this definition, a culture is formed by individual factors (e.g. competence), work configuration factors (e.g. lack of time) and organizational context (e.g. support) (Nembhard et al., 2015), and is commonly referred to as 'the way things are done around here' (Drennan, 1992). Combining the responses of each healthcare worker of a ward for each factor offers an overview of the ward's patient participation culture, as a culture is tended to be manifested in the behaviors and beliefs of their members (Brown, 1998). As proven for continuous quality improvement (Hamilton et al., 2014), patient-centred care (Abdelhadi and Drach-Zahavy, 2012) and service improvement (Wood et al., 2015), the culture on a ward is essential in change management. It is useful to investigate the current status of a ward culture on patient participation in order to enable specific interventions. In conclusion, patient participation is an important subject for healthcare in general and in particular for patient safety. Although essential for role changing behavior, there is limited knowledge about the influence of the different healthcare worker-related factors on power and responsibility sharing, which is essential for the reciprocal process of patient participation. Thus, more insight in the influence of the factors of healthcare worker's behavior is needed. Since there is no validated tool at hand that measures these healthcare worker-related factors (Phillips et al., 2015), a tool is needed and has to be developed.

3. THE STUDY

3.1. Aim

The aim of this study was to develop and validate a tool that measures the healthcare worker-related factors of patient participation and information sharing and dialogue in patient participation from the healthcare worker's perspective in order to represent the patient participation culture on general and university hospital wards from the healthcare worker's perspective. Special attention for patient participation related to patient safety issues was included in the tool. A four-phased tool validation study was conducted: (1) defining the construct of the PaCT-HCW, (2) development of the PaCT-HCW, (3) content validation, and (4) psycho-metric evaluation. An overview of the tool development process is given in Figure 1.

3.2. Phase one: defining the construct of the PaCT-HCW

The construct of the tool was based on a literature review, three focus group interviews and six individual interviews with different stakeholders in order to identify components in patient participation culture.

3.3. Literature review

A review was conducted in PubMed®, Web Of Science® and Cinahl® using ''patient participation'' (including synonyms) AND ''questionnaire'' (including synonyms) AND ''Validity'' (including synonyms) OR ''psychometrics'' (including synonyms) in order to identify already developed questionnaires. Additionally Google Scholar® was searched for grey literature using these terms. No similar questionnaires were found, which underlines the importance of this study. Next, a similar review was conducted using the term ''patient participation'' (including synonyms) in order to identify possible models for constructing the questionnaire. Reviews and concept analysis studies were selected. In both searches, no date limits were used. To construct the PaCT-HCW, patient participation was defined as: ''The use of the patient's unique expertise of the healthcare process with the goal of improving the quality of care'' (Dutch Institute for Healthcare Improvement, 2013). This definition fits the purpose of the PaCT-HCW as it describes patient participation from the perspective of the healthcare worker by underlining the patient within the process of patient participation as an equal partner ('unique expertise'), but also indicating the essential and initiating role ('the use') for the healthcare worker. Two theoretical models were used for the main construct of the PaCT-HCW: The 'conceptual model of patient participation in error prevention' by Longtin et al. (2010) and the 'comprehensive model of patient involvement' by Tambuyzer et al. (2011). The other contributing literature was used for the tool development (phase two). The model of Longtin et al. (2010) is based on an extensive systematic review and is used by the World Health Organization (WHO, 2013) as a key model in reducing health-care-related safety risks by the use of patient participation. Although primarily focused on patient participation and patient safety, this model adds understanding of the general concept of patient participation. This model consists of (1) healthcare worker-related determinants, (2) patient-related determinants and (3) the interaction between healthcare workers and patients (e.g. effective communication and feedback). The PaCT-HCW focuses on the first group of determinants and effective communication. The model identifies eight healthcare worker-related determinants. Additionally, the 'comprehensive model of patient involvement' by Tambuyzer et al. (2011) was used to identify supplementary components. The model describes four healthcare worker-related factors as key for patient participation in a mental health setting: support, resources, communication, and education. Overlap between the two models was large, but both models have their own valuable emphasis. By combining the models, five healthcare worker-related factors and effective communication were identified as components for the construct of the PaCT-HCW: 'competence', 'support', 'perceived lack of time', 'type of problem', 'acceptance of a new role', and 'information sharing and dialogue'. Consequentially, in this study patient participation culture refers to a combination of all these individual and organizational

factors and behaviors (Brown, 1998) that describe 'how things are done around here' (Drennan, 1992) concerning power and responsibility sharing, and therefore patient participation. The component 'training in the healthcare worker– patient relationship' from the model of Longtin et al. (2010) and 'education' from the model of Tambuyzer et al. (2011) were not separately included, but categorized in 'competence' (Campinha-Bacote, 2002). The component 'beliefs' from the model of Longtin et al. (2010) was incorporated in the component 'acceptance of a new role' as the distinction between both is difficult to make (Longtin et al., 2010). The name of the component 'effective communication' from the model of Longtin et al. (2010) was changed into 'information sharing and dialogue' because the latter term does not refer to effectiveness of the communication and is more compatible with the measured perceptions of the healthcare worker (Eldh et al., 2014). The component 'resources' from the model of Tambuyzer et al. (2011) was closely related to the component 'perceived lack of time' and therefore included in the latter.

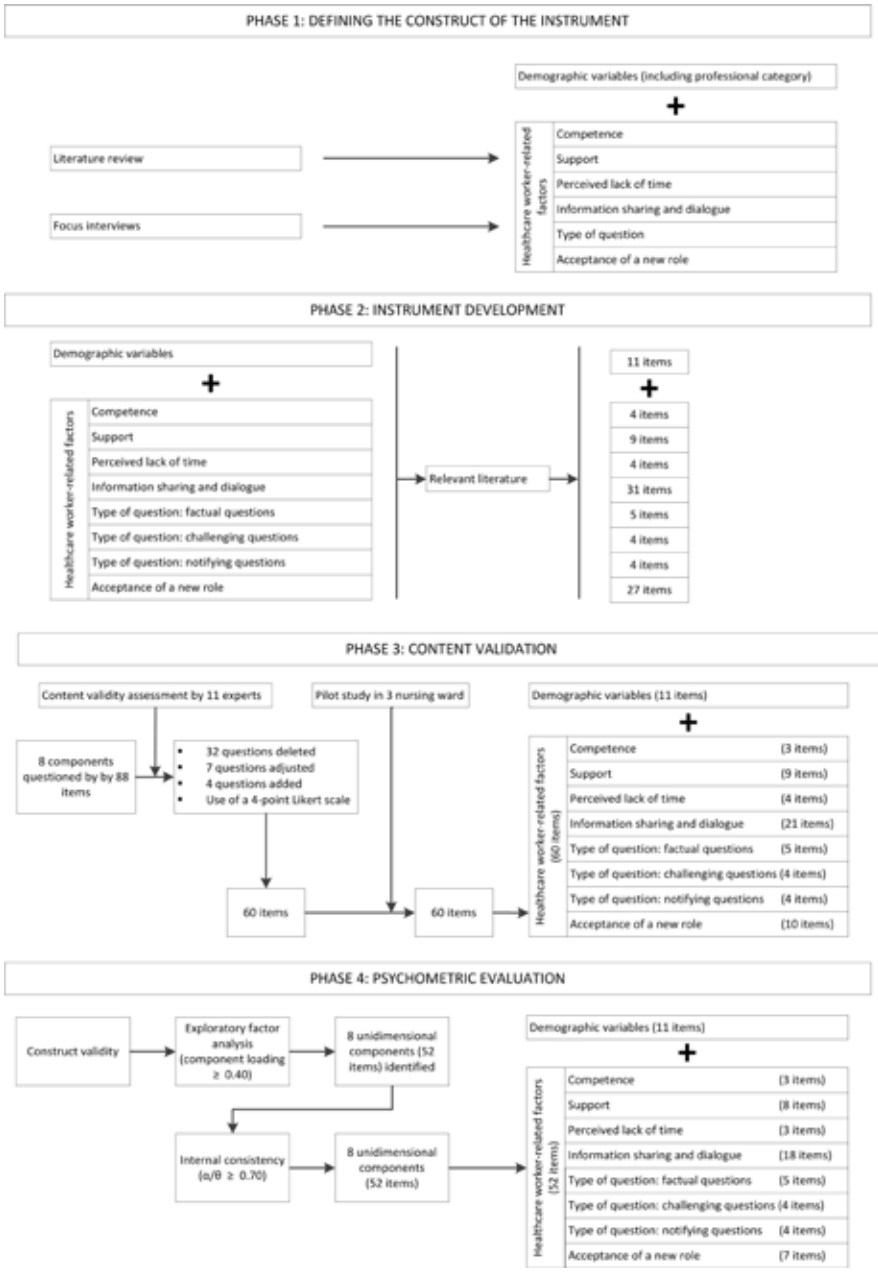

Figure 1: Overview of the four-phased tool validation study.

3.4. Focus interviews

In order to discuss the construct of the tool, three focus interviews with different stakeholders groups were organized. Experts with different background were invited to participate in the interviews. From the experts willing to participate, three groups were purposively sampled in order to create a differentiated perspective on the topic. During the sampling, experts from different hospitals and universities were chosen. Patient experts were purposively sampled based on their illness. In order to incorporate both managerial and clinical views on the topic, six additional individual interviews were held. The first group interview was research-oriented and was composed of six researchers with expertise in patient participation. A second group was patient-oriented and was composed of four patient representatives. The third group existed of quality of care experts. Six individual interviews were also held: two interviews with nursing managers, two interviews with advanced nurse practitioners and two interviews with nurses. During the interviews an interview guide was used in which the researchers asked about the relevance of the components (e.g. 'Is this item important for patient participation?'), the completeness of the model (e.g. 'Are there any items missing in the model?') and the clarity of the components ('Do you understand what is meant by this component?'). All interviews were conducted in the presence of three researchers and recorded. Afterwards, the recordings were replayed separately by the three researchers in order to identify returning themes in the interviews. By use of researcher triangulation possible themes or adjustments were identified and discussed. Based on these individual and focus interviews no further components were added to the construct of the PaCT-HCW.

3.5. Phase two: development of the PaCT-HCW

The tool contains two separate parts: (1) demographic variables and (2) the healthcare worker-related factors of patient participation and information sharing and dialogue in patient participation. The definition of patient participation (Dutch Institute for Healthcare Improvement, 2013) was given in the beginning of the tool in order to provide a framework for the respondents.

3.6. Demographic variables and care setting

Ten items were questioned: gender, age, ward's focus (i.e. surgical, internal medicine, geriatric, maternity or medical rehabilitation), duration of employment in the hospital, duration of employment on the ward, job time (i.e. full-time or part-time), profession, and whether or not the respondents had a managerial position. These items were identified in the review of Longtin et al. (2010) as possible variables. In order to identify differences between organizations, the hospital and ward of employment were added.

3.7. Healthcare worker-related factors and information sharing and dialogue: initial tool (88 items)

The six components identified from the models of Longtin et al. (2010) and Tambuyzer et al. (2011) were further developed with research from the literature review. Hofstede et al. (2013) found that lack of knowledge about shared decision making, poor professional behavior and negative interpersonal relationships were perceived by patients and healthcare workers as barriers on micro-level for patient participation. These three elements (i.e. knowledge, skill and encounter) form the healthcare worker's competence (Campinha-Bacote, 2002). The participants were asked to score their perceived competence on three degrees of patient participation (Arnstein, 1969; Dutch Institute for Healthcare Improvement, 2013) and their overall competence regarding the involvement of patients in the area of patient safety. The component 'competence' consisted of four items. The concept of 'support' included three organizational levels, based on the 'perceived organizational support'- model for nurses (Patrick and Laschinger, 2006): support by hospital management, by the supervisor, and by the peers or colleagues (9 items). The 'perception of lack of time' was measured through four items. Respondents were asked whether inadequate staffing and increased work pressure on the ward influence patient participation (Ball et al., 2013), and which effects patient participation has on the perceived time (Henderson, 2003; Weingart et al., 2011; Park et al., 2013). The component 'information sharing and dialogue' was measured by 31 actions of patient participation. For each item the respondents were asked to which degree they performed the action during the last week. The possible actions were identified based on the standards of the Joint Commission International (JCI, 2013), the Flemish Patient Questionnaire (Vlaams Patiënten Platform, 2015) and one extensive article concerning nurses' and physicians' patient participation behavior after a myocardial infarct (Arnetz et al., 2008). The component 'type of question' was further divided. According to the type of question or situation confronting a healthcare worker, the degree to which the healthcare worker permits patient participation may vary (Van den Brinck-Muinen et al., 2006). There are three types of questions or situations that a patient can state to a healthcare worker: factual questions (e.g. 'How long will the pain remain?'), challenging questions (e.g. 'Is this the right medication?') and notifying questions (e.g. 'I have not received my results yet'). The degree to which the patient can participate is dependent of the possibilities of the healthcare worker to cope with these questions (Davis et al., 2011). The component 'type of question' was split in these three categories: 'factual questions' (5 items), 'challenging questions' (4 items), and 'notifying questions' (4 items). The component 'Acceptance of a new role' consisted of two key aspects: the healthcare worker's willingness to share information with the patient in order to stimulate patient participation and the healthcare worker's attitude towards a more active role for the patient in the care process, including the healthcare worker's beliefs about the skills of the patient. Both aspects are a reflection of the degree to which the healthcare worker has accepted a new, collaborative role or not (Happel et al., 2010) for himself or herself and the patient. Twenty-seven items were included in this component.

3.8. Phase three: content validation

The content of the tool was validated in a Delphi procedure. The tool was also tested on three pilot wards.

3.9. Delphi procedure

The initial tool, containing 88 items, was evaluated by eleven experts with both academic and/or clinical expertise in patient participation. The expert panel also included one patient representative who discussed the tool with the quality committee of the Flemish Patient Platform. The group of experts was asked to evaluate each question and the possible answer categories on a dichotomous scale for accuracy, clarity, readability, and relevance. The Content Validity Index (CVI; Lynn, 1986) was calculated for each question to evaluate the experts' agreement. A two-round Delphi procedure was conducted in two separate groups of experts (professional experts/non-professional experts). Based on the Delphi procedure, two questions about the demographic variables were adjusted. Seven questions in the healthcare worker's factors were alternated in order to be more accurate. Thirty-two questions were removed because they had no relevance according to the experts or they were too similar to other questions. Four questions were added by the expert panel in the component 'information sharing and dialogue' in order to make the tool more inclusive. Based on the comments of the experts, the initial five-point Likert scale of the components was changed. Instead a four-point Likert scale was used to exclude a central (neutral) value. Although the methodological discussion on the type of Likert scales to use is considerable (Dawes, 2012; Lozano et al., 2008; Østerås et al., 2008), the choice was based on the advice of the consulted experts and literature stating that excluding a midpoint (e.g. neutral) decreases the chance of social desirability bias (Garland, 1991) and results in more accurate answers. Furthermore, due to the extensive number of questions the number of response categories should be decreased to avoid response fatigue and boredom (Matell & Jacoby, 1972). The four-point Likert scale was used in all questions. Only for the component 'information sharing and dialogue' the option 'not applicable' was included in case an action was not part of the job content of the respondent. After the Delphi procedure, 60 items were included in the tool.

3.10. Pilot study

A pilot study of the PaCT-HCW was conducted on three wards: one ward at an academic hospital and two wards at two general hospitals. The patient capacity of the wards ranged from 25 to 30 beds. A multidisciplinary group of healthcare workers participated in each hospital and each group counted between six and ten participants. In each pilot group minimally a physician and a nurse were present, the other attendees could be other healthcare worker with hands-on patient contact. Three items were evaluated: the clarity of the items, the format of the tool and the time needed to complete. No major adjustments had to be made to the tool. Due to the extensiveness of the PaCT-HCW, the respondents in the pilot study recommended to repeat the used definition more frequently. The tool took 20–25 min to complete.

3.11. Phase four: psychometric evaluation of the tool

First, construct validity was assessed by an exploratory factor analysis to identify the possible components in the tool. Second, reliability was assessed with an internal consistency analysis of the items in the components.

3.12. Methods, participants and ethical considerations

The Federal Government invited all Flemish general and university hospitals by e-mail to distribute the PaCT-HCW in their organization. Hospitals willing to participate had to give an informed consent signed by the CEO. In a separate registration form a list had to be provided with an enumeration of all the participating wards. Units for surgery, general medicine, medical rehabilitation, geriatric and maternal care were included. Intensive care-units, emergency room-units, psychiatric units and units with no admitted patients (e.g. radiology) were excluded. The respondents had to be caregivers, with hands-on patient contact, who worked on the same ward for more than six months. Caregivers in this study are nurses, midwifes, physicians, nurse assistants and other paramedical professions. The latter group is composed of professional healthcare workers on the ward, which are not part of the first four groups (e.g. physiotherapists, psychotherapists and dieticians). Nursing students and other healthcare workers with short-time internship on the ward were excluded. All participating hospitals and wards were added in a pick list of an online tool. The URL of the tool was then distributed to the head of the quality committee of each hospital. Distribution of the URL was the responsibility of each hospital. The data were collected in September 2014. The study was approved by the central committee for ethics of the Ghent University Hospital. An approval from the local ethics committees from each hospital was acquired.

3.13 Data analysis

The data were analyzed using SPSS Statistics 21.0 (IBM, 2012). The 21 items with 'not applicable'-answers (only available in the component 'information sharing and dialogue') were excluded from statistical analysis. One item ('A more important role for patients in patient safety issues could have negative effects on the healthcare worker–patient relationship') had to be recoded as it had a reversed scale. Because of the use of an electronic tool, respondents could not skip questions or leave questions blank. Consequentially, there were no missing data. Casewise deletion was used for the 'not-applicable'-answers. All data were also checked on response patterns in order to identify acquiescence response bias. When patterns in responses were identified, all answers of the respondent were deleted. Construct validity was analyzed with an exploratory factor analysis through SPSS's 'dimension reduction'-option. Principal axis factoring method and varimax rotation were used. The Kaiser–Meyer–Olkin measure of sampling adequacy 0.80 and the Bartlett test of sphericity with $p < 0.05$ were used to determine the appropriateness of an exploratory factor analysis. Eigenvalues > 1 and a scree plot were applied to determine the number of extracted factors. To assess the internal consistency, both the number of items and the mean inter-item correlations were

taken into account (Gliem & Gliem, 2003). As measure for internal consistency the Cronbach's alpha were calculated. As a rule of thumb Cronbach's alpha which are higher than 0.70 are considered 'acceptable', Cronbach's alpha higher than 0.80 are considered 'good' (George & Mallery, 2013). However, the magnitude of coefficient alphas of questionnaires with complex composites of the content, high numbers of included items, big sample size (Ercan et al., 2007), and Likert scales with less than five scale points (Zumbo et al., 2007) could be deflated. Therefore, Armor's theta coefficient (1974) was also calculated in order to ensure the internal consistency of the scales. The interpretation of this coefficient, which accounts for multidimensionality in a scale, is similar to the Cronbach's alpha. Furthermore, all items considered to be deleted, based on the psychometric analysis, were assessed by the authors on relevance for the topic of the study before they were removed.

3.14. Results: participants

Overall, 1329 respondents on 163 wards in 15 hospitals completed the tool. The respondents were mostly female (n=1088; 81.9%) and nurses (n=873; 5.7%). The group of respondents aged between 25 and 34 years old (n=402; 30.2%) was represented the most. The majority of the respondents already worked on the ward for over a year (n=1237; 91.3%) and worked full-time (n=765; 57.6%). Most respondents had no managerial function (n = 1092; 82.2%) and about half of the respondents had a bachelor degree (n=723; 54.4%). An overview of the characteristics of the respondents is given in Table 1.

Table 2: Characteristics of the participants

Variable		n	%	Variable		n	%
Gender				Managerial position			
	Male	241	18.13		Yes	237	17.83
	Female	1088	81.87		No	1092	82.17
Profession				Job time			
	Nurse	873	65.69		< 50%	115	8.65
	Midwife	122	9.18		50-99%	449	33.78
	Physician	144	10.84		100%	765	57.56
	Paramedical prof.	146	10.99				
	Nurse assistant	44	3.31				
Education				Age			
	Secondary school	37	2.78		< 25 years	108	8.13
	Undergraduate	315	23.70		25-34 years	402	30.25
	Bachelor	723	54.40		35-44 years	331	24.91
	Master or higher	254	19.11		45-55 years	344	25.88
					> 55 years	144	10.84
Employment on the ward							
	< 1 year	92	6.92				
	≥1 year	1237	93.08				

3.15. Results: construct validity

An exploratory factor analysis was conducted on the 60-item tool which measured healthcare worker-related factors of patient participation. As responding to each item was compulsory, there were no missing data. With exception of the component 'information sharing and dialogue' all components were analyzed using 1329 responses. For the component 'information sharing and dialogue', respondents could answer 'not applicable'. These answers were deleted. Response rate for this component ranged between 831 and 1318. This component was analyzed using 831 responses. The model showed high sampling adequacy (Kaiser-Meyer-Olkin Measure = 0.905) and the Bartlett's test of sphericity was significant (χ^2=15,082.47; df=1485; p<0.001). Therefore, the prerequisite conditions to conduct an exploratory factor analysis were satisfied and confirmed the suitability of reducing the dimensionality of the PaCT-HCW. A correlation-matrix showed no correlations higher than 0.80 indicating there was no multi-collinearity (Mortelmans & Dehertogh, 2008). Within all the components, factorability was higher than 0.30 and significant at the 0.001-level (Williams et al., 2012). The loading of all the items, except two, for each component was above 0.40. Each component contained at least three items and items scoring on multiple dimensions were deleted to obtain unidimensional components (Mortelmans & Dehertogh, 2008). Based on the scree plot and the varimax rotated component matrix, a model containing 52-items and covering eight components was found. The components are displayed in Table 2. An overview of the questionnaire with the factor loadings and the number of included respondents for each item can be found in Appendix 1 (English version) and Appendix 2 (Dutch version). The Cronbach's alpha of each component was between 0.67 and 0.93. The Armor's theta was slightly higher, varying between 0.76 and 0.94. An overview of the Cronbach's alpha and Armor's theta is presented in Table 2. The eight components combined explained 49.88% in the variances of the responses on the PaCT-HCW. The first three components: 'information sharing and dialogue' (13.34%), 'support' (7.23%) and 'factual questions' (8.25%), explained half of the variances. An overview of the variances explained by each component is given in Table 3.

Table 3: An overview of the components with the explained variances and Cronbach's α

Components	Nr of items	Nr of respondents	Scale mean	Standard deviation	Interitem correlations	% of variances	Cumulative %	Cronbach's α	α if item deleted	Armor's α
Competence	3	1329	10.02	1.51	0.49-0.67	3.50	3.50	0.82	0.80	0.82
Support	8	1329	22.87	4.06	0.33-0.75	7.23	10.73	0.83	0.85	0.89
Perceived lack of time	3	1329	8.74	1.73	0.30-0.69	2.40	13.13	0.67	0.81	0.76
Information sharing and dialogue	18	831	48.76	10.74	0.31-0.75	13.34	26.47	0.93	0.93	0.93
Factual questions	5	1329	16.67	2.55	0.58-0.70	8.25	34.72	0.90	0.88	0.94
Challenging questions	4	1329	13.45	2.28	0.55-0.66	5.69	40.41	0.86	0.83	0.90
Notifying questions	4	1329	14.15	1.86	0.53-0.65	4.72	45.13	0.85	0.83	0.90
Acceptance of a new role	7	1329	18.98	3.02	0.29-0.57	4.75	49.88	0.70	0.71	0.77
Total	52	831	152.91	16.70	0.22-0.75	49.88	49.88	0.92	0.92	0.92

3.16. Results: component reduction

Based on the exploratory factor analysis, eight questions could be removed. Except for the component 'perceived lack of time', all the a-values were higher than 0.70. The mean inter-item correlations for the components ranged from 0.30 to 0.64. The u-values of all components were higher than 0.70. As a consequence, removing any items to obtain a higher a- or u-value was not required. The Cronbach's alpha and Armor's theta for the total tool (52 items) of the PaCT-HCW were 0.92. An overview of the item-total statistics for Cronbach's alpha and Armor's theta for each remaining component is given in Table 2.

4. DISCUSSION

The goal of the PaCT-HCW is to measure the healthcare worker-related factors of patient participation and information sharing and dialogue in patient participation from health-care worker's perspective in order to form a representation of the patient participation culture on general and university hospital wards. As no similar instruments were found in the literature, a tool was developed based on the model of Longtin et al. (2010) and Tambuyzer et al. (2011). In the discussion, the psychometrical and content issues are discussed.

4.1. Psychometrical issues

Four points concerning the psychometrical decisions in this study should be elaborated. First, the construct validity and internal consistency of the PaCT-HCW can be perceived

as high. The PaCT-HCW measured the originally included components. Only the component 'perceived lack of time' showed low internal consistency (a = 0.671). Removing an item from this component to obtain a higher a-value was not possible, as each component should have at least three items in the questionnaire to be considered as a component (Mortelmans & Dehertogh, 2008). The item was also considered relevant to the content. Moreover, the Armor's theta showed higher values (0.76). Consequentially, this component was not removed but should be used with caution. The component 'support' would have a higher a-value if one item was removed. In reducing multiple-item scales, a sufficient number of items and a reasonable a-value to ensure the reliability of a scale (Tavakol & Dennick, 2011). Because of a Cronbach's alpha above 0.80, the relevance for the content by retaining the question, and the limited gain in a-value, no item was removed. In the components 'acceptance of a new role' and the component 'perceived lack of time', respectively one item ('A more important role for patients in patient safety issues could have negative effects on the healthcare worker–patient relationship') and one item ('Patient participation leads to short term loss of time in the individualized care of the patient') were kept in the PaCT-HCW although their loadings were under 0.40. Because of their relevance for the tool and the relativity of the scores (0.37–0.39) the authors made the deliberate choice to retain the items. As a rule of thumb, factor loadings above 0.40 are considered meaningful and should be included, but factor loadings above 0.35 should also be explored on their importance for the questionnaire (Floyd & Widaman, 1995). Especially when taking into account that, depending on the study size, factor loadings can vary (Peterson, 2000). Second, in the component 'information sharing and dialogue', 18 items were included which could put the component at risk of measuring different aspects within this component (Tavakol & Dennick, 2011). Based on the content of the items, three subscales in this component can be identified: general information, information concerning tests, and information concerning dismissal. Because of a unidimensional factor analysis, the component is retained in its current form. Future research with the PaCT-HCW should also try to identify these subscales. Third, in order to fully establish a well validated tool, a test–retest will have to confirm the stability of the tool. Moreover, repeated measures could also be instructive to determine the sensitivity of the instrument if used for evaluation studies. Because the PaCT-HCW measures patient participation culture from the healthcare worker's perspective, it is presumable that it might be challenging to identify minor changes in patient participation culture on a ward with this tool. After all, culture ('the way things are done around here'; Drennan, 1992) is a multi-facet phenomenon, and therefore hard to change (Solomon, 2004). Fourth, the PaCT-HCW was perceived by the respondents as long and time consuming to complete. This could affect the response rate and representativity, non-completion, and missing data (Sahlqvist et al., 2011). In addition to these challenges, electronic surveys tend to have even lower response rates (Hunter, 2012). To overcome these limitations, evidence suggests that shortening the questionnaires is effective until a certain degree (Mond et al., 2004), and enhancing the clarity and ease of administration compensates for questionnaire length (Subar et al., 2001). The PaCT-HCW had to be shortened. Based on the data-analysis and results, data reduction was possible. Nearly 10% of the questions were deleted without a loss of any of the initial included

components. Safeguarding the right balance between the quality and comprehensiveness of the tool, and the reduction of items is essential (Mond et al., 2004). By including a range of experts in the Delphi procedure and conducting thorough pilot studies, the clarity and the ease of administration were addressed.

4.2. Content issues

Three remarks concerning the content of the tool should be highlighted. First, the used models are not specifically directed on patient participation in the context of general and university hospital wards. Patient participation in the model of Longtin et al. (2010) is conceptualized in the context of patient safety. The model of Tambuyzer et al. (2011) is more fitted for mental healthcare. No other models were at hand. By use of the Delphi procedure and the interviews the PaCT-HCW was adjusted to the context of general and university hospital wards. Second, this tool only considers the healthcare worker's side of patient participation. High scores on the healthcare worker-related factors for patient participation do not mean actual power and responsibility sharing, and consequentially patient participation, will be established. As described in the Theory of Reasoned Action (Ajzen & Fishbein, 1980) behavioral intention depends on more than attitude, but is also subject to subjective norm. Additionally, it would be premature to conclude that the factors included in the model explain all variances on healthcare worker's side. It is likely that other variables are essential. Both used models (Longtin et al., 2010; Tambuyzer et al., 2011), and as a consequence the PaCT-HCW, are not exhaustive. This study tried to avoid incompleteness of the model, as a consequence of missing influential factors, by conducting comprehensive individual and group interviews with experts from different backgrounds. Also, the factors on the patient's side are not included in the PaCT-HCW. The remark concerning the healthcare worker's side could be made vice versa. Some patients refuse an active role within the healthcare process (Davis et al., 2011; Levinson et al., 2005) or have characteristics that negatively influence their participation. For example, patients of young age (Huang et al., 2014) or with lower health literacy (McCaffery et al., 2010) tend to be less involved in decisions concerning their health situation. This underlines that patient participation is also dependent on patient-related variables. Third, the actions in the component 'information sharing and dialogue' are measured from the healthcare worker's perspective and as a consequence subject to the healthcare worker's perception. As research shows, communication is a two-way system (Harrington et al., 2004). It should be underlined that the patient's perspective on communication could be different. Both remarks indicate that healthcare worker should be trained to involve patients more in the process of patient participation, but evidence of effective interventions is scarce (Légare et al., 2012).

5. CONCLUSION AND FURTHER RESEARCH

The goal of this study was to develop and validate a tool that measures the healthcare worker-related factors of and information sharing and dialogue in patient participation

from the healthcare worker's perspective on general and university hospital wards. The PaCT-HCW showed strong construct validity and internal consistency. The PaCT-HCW offers an in-depth and differentiated perspective of the healthcare worker-related factors of patient participation as seven specific and clearly distinct healthcare worker's factors are included and measured. Information sharing and dialogue from the healthcare worker's perspective is also included, but should be further refined. From the initial components that were identified in the literature as factors of healthcare worker's behavior, all remained. Future research with repeated measures could determine the PaCT-HCW's sensitivity and indicate if the tool is applicable in other healthcare settings. A test-retest study will provide information on the PaCT-HCW's stability. The PaCT-HCW offers a valuable chance to both scientists and clinicians to measure healthcare worker's factors for patient participation, in order to create more insight into these factors and take specific actions to address factors of patient participation.

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Chapter 3

THE INFLUENCE OF NURSES' DEMOGRAPHICS ON PATIENT PARTICIPATION IN HOSPITALS: A CROSS-SECTIONAL STUDY[2]

2 Chapter based on: Malfait S, Eeckloo K, Van Hecke A (2017). The Influence of Nurses' Demographics on Patient Participation in Hospitals: A Cross-Sectional Study. Worldviews on Evidence-Based Nursing, epub ahead of print. http://dx.doi.org/10.1111/wvn.12254

Background: Patient participation is an important issue in contemporary healthcare as it improves quality of care and enhances positive health outcomes. The participation of patients is mainly initiated by the nurses' willingness to share their power and responsibility, but knowledge on nurses' demographic characteristics influencing this behavior is nonexistent. This knowledge is essential to understand and improve patient participation.

Aim: To determine if nurses' demographic characteristics influence their willingness to engage in patient participation.

Methods: A cross-sectional multicenter study in 22 general and three university hospitals with 997 nurses was performed. The Patient Participation Culture Tool for healthcare workers, which measures patient participation behavior, was used. Multilevel analysis, taking into account the difference in wards and hospitals, was used to identify the influence of demographic characteristics.

Results: A position as supervisor (range: $p<0.001–0.028$) and a higher level of education (range: $p=<0.001–0.012$) show significant higher scores. Younger nurses seem to be more reluctant in accepting a collaborative patient role ($p=0.002$) and coping with more active patient behavior ($p < .001$). This new role was less accepted by nurses on geriatric wards ($p=0.013$), who also showed less sharing of information with their patients ($p<0.001$).

Linking Evidence to Action: Age and level of education influence nurses' willingness to share power and responsibility with their patients, perhaps indicating that patient participation behavior is an advanced nursing skill and multifaceted interventions, are needed for optimal implementation. Moreover, supervising nurses have different perceptions on patient participation and possibly regard patient participation as an easier task than their team members. This could lead to misunderstandings about the expectations toward patient participation in daily practice, leading to struggles with their nursing staff. Both findings implicate that implementing patient participation on a wide scale is more difficult than expected, which is conflicting with the widespread societal demand for more participation.

1. BACKGROUND

In contemporary healthcare, patient participation is perceived as one of "the blockbuster drugs of the century" (Dentzer, 2013) and can be defined as the patient's rights and opportunities to influence and engage in the decision making about his care through a dialog attuned to his preferences, potential and a combination of his experiential and the professional's expert knowledge (Castro et al., 2016). The concept is widely used in practice and research (Sahlsten et al., 2008). On the one hand, this is not surprising. From an evidence-based practice (Sackett et al., 1996) and ethical (Tambuyzer et al., 2011) point of view, it is imperative. There is an increasing body of knowledge showing that patient participation improves quality of care (Nilsme et al., 2006), enhances patient safety (Longtin et al., 2010), and is related to positive health outcomes (Griffin et al., 2004). On the other hand, patient participation is still a complex phenomenon that is surrounded by an atmosphere of unclarity during almost two decades (Castro et al., 2016; Tambuyzer et al., 2011). The lack of knowledge regarding the definition, the process, and the determinants of patient participation (Castro et al., 2016; Sahlsten et al., 2008) led to examples where initiatives to enhance patient participation missed the objective of patient participation. Such examples were reported in studies on patient participation in guideline development (Van de Bovenkamp & Hester, 2009), the use of patient experts (Vandewalle et al., 2016), and patients as stakeholders in strategic decision making (Malfait et al., 2017). By not being grounded in scientific evidence, these initiatives led to a fragile, vulnerable, and discouraging situation for patients, which stands in contrast with the initial objective of more participation (Williamson, 2014). The strive toward more patient participation as well as the lack of knowledge on this topic emphasize the need for further research. One of the unexploited areas is the influence of the healthcare worker-related factors on the healthcare worker's willingness to engage in patient participation by sharing his or her professional power and responsibility with the patient (Philips et al., 2015). This behavior is an essential step before patient participation can be established. The reciprocal process of patient participation is very dependent on the willingness of the healthcare worker to engage in such behavior (Longtin et al., 2010). Within the topic of healthcare worker-related factors for patient participation, a particular interest should go to the influence of the basic demographic characteristics of nurses on patient participation. The model of Longtin et al. (2010) showed that demographic characteristics could be of significant influence on the healthcare worker's willingness to engage in patient participation. Findings indicate (Davis et al., 2007; Tay et al., 2011) that demographics of nurses should not be overlooked. Still, studies show that the bulk of the research concerning demographic characteristics of healthcare workers in patient participation is focused on physicians, and is understudied for nurses (Davis et al., 2007; Tobiano et al., 2015). In conclusion, the lack of a comprehensive body of knowledge on the influence of these nurse-related demographics contrasts with the essential position that hospital nurses play in enabling patient-centered care and patient participation. Nurses' continuous bedside presence imposes the responsibility to engage

daily in collaboration with their patients. Therefore, research on the demographic characteristics of nursing groups in relation to their willingness to share power and responsibility is a first and essential step needed for understanding and improving patient participation.

2. AIM

The aim of this study is to determine which of the nurses' demographic characteristics influence their willingness to share their power and responsibilities with patients in order to encourage patient participation.

3. DESIGN

A cross-sectional multicenter study design was used. Twenty-two general and three university hospitals participated in the study. Overall, 997 nurses completed the questionnaire.

4. METHODS

4.1. Participants and Data Collection

All general (n=102) and university (n=7) hospitals in Belgium were invited in 2014 by e-mail by the Federal Public Service of Health. Only units for surgery, general medicine, medical rehabilitation, and geriatric care were included. Intensive care units, emergency room units, psychiatric units, and units without admitted patients (e.g., radiology) were excluded. Nurses willing to participate had to have hands-on patient contact (including nursing supervisors), and had to be working on the same ward for more than 6 months. Nursing students could not participate. The convenience sample was collected during September 2014.

4.2. Instrument

To determine the influence of nurses' demographic characteristics on their willingness to share power and responsibility, the patient participation culture tool for healthcare workers (PaCT-HCW) was used (Malfait et al., 2016). The PaCT-HCW is a self-assessment tool that measures several healthcare worker-related factors of the willingness to share power and responsibility in the process of patient participation. Currently, it is the only tool that measures the healthcare worker's side of patient participation (Malfait et al., 2016; Philips et al., 2015). The instrument is based on the comprehensive model of patient

involvement by Tambuyzer et al. (2011) and the conceptual model of patient participation in error prevention by Longtin et al. (2010). The four-phased development and validation study (Malfait et al., 2016) showed that the 52-item PaCT-HCW is composed of eight distinctive subscales (Table 1). All questions have a four-point Likert scale (1: strongly disagree; 4: strongly agree).

Table 1: An Overview of the PaCT-HCW (Malfait et al., 2016)

Components	Description	Items	Cronbach's α
Competence	Perceived competence of nurses to engage in patient participation	3	0.82
Support	Perceived support nurses receive from the hospital's management, supervisors, and peers to engage in patient participation	8	0.83
Perceived lack of time	Perceived shortage in time to engage in patient participation	3	0.67
Information sharing and dialog	Communication and dialog with the patient concerning patient participation	18	0.93
Factual questions	Perceptions on coping possibilities with factual questions by the patient	5	0.90
Challenging questions	Perceptions on coping possibilities with challenging questions by the patient	4	0.86
Notifying questions	Perceptions on coping possibilities with notifying questions by the patient	4	0.85
Acceptance of a new role	Self-reported attitude toward a more collaborative relationship with their patients	7	0.70
Total		53	0.92

The following demographic characteristics of nurses were also included: Gender (male or female), age (<25 years; 25–34 years; 35–44 years; 44–54 years; ≥55 years), time of employment on the ward (≤1 year; >1 year), time of employment in the hospital (≤1 year; >1 year), type of ward (surgery, general medicine, medical rehabilitation, or geriatric care), work status (employment less than half-time [<50%], part-time [50%–99%], full time [100%]), level of education (graduate, bachelor, or master), and supervising role as (assistant) head nurse (yes or no).

4.3. Data Analysis

All data were analyzed using SPSS 22.0 (IBM, 2012). Questionnaires with more than 25% of the answers missing were removed and data were checked on response patterns to exclude acquiescence response bias. When such patterns were identified, the entire questionnaire of the respondent was deleted. One item in the component "acceptance of a new role" (i.e., "A more important role for patients in patient safety issues could have negative effects on the healthcare worker–patient relationship") had to be recoded as

it was a reversed question. For all components, the sum-score was calculated. Descriptive statistics (frequencies within groups) were used to determine the distributions of the nurses' demographic characteristics. The differences between the groups of nurses' characteristics were analyzed using a linear mixed model, a method that overcomes any difficulties for the multilevel data clustering (Jaeger, 2008). The three identified levels in the analysis to identify possible clustering were (a) individual nurse, (b) ward, and (c) hospital. In order to obtain multivariate results, all demographic variables were used as fixed factors and included in one model. The hospital and ward were used as random effects to overcome problems with possible clustering (Heck et al., 2012). The target variable was the component.

4.4. Ethical Approval

The study was approved by the Ethics committee of Ghent University Hospital (B670201421350). An approval from the local ethics committees from each hospital was acquired. All nurses participating in this study gave an informed consent.

5. RESULTS

5.1. Demographic Characteristics of the Respondents

In total, 997 nurses from 178 wards, located in 25 hospitals, were included in the study. Table 2 gives an overview of the distribution of the nurses' demographic characteristics. The distributions of the nurses' characteristics are in line with the results of other large-scale research on nurses in Belgium (Ausserhofer et al., 2014).

Table 2: Overview of the Respondents' Characteristics

Variable	Options	n	%	Variable	Options	n	%
Gender	Male	150	15.0%	Employment in hospital	<1 year	48	4.8%
	Female	847	85.0%		>1year	949	95.2%
Age	< 25 years	89	8.9%	Employment on ward	≤ 1 year	72	7.2%
	25-34 years	303	30.4%		> 1 year	925	92.8%
	35-44 years	253	25.4%	Work status	≤ 50%	64	6.4%
	45-54 years	251	25.2%		50 – 100 %	323	32.4%
	≥ 55 years	101	10.1%		100%	610	61.2%
Type of ward	Surgical	329	33.0%	Education	Graduate	351	35.2%
	Internal medicine	352	35.3%		Bachelor	570	57.2%
	Geriatric	176	17.7%		Master of higher	76	7.6%
	Revalidation	140	14.0%	Supervising role	Yes	154	15.4%
					No	843	84.6%

5.2. The Influence of Nurses' Characteristics

The results of the multilevel analyses are presented separately for each of the included demographic characteristics. First, the overall significant differences for each of the included demographic characteristics in the components are given (Table 3). Next, the results are elaborated in detail by describing the p-value, the beta-coefficient (b; difference in comparison to the reference category), and the confidence interval of 95% (95% CI) is given. An overview of the detailed results for each component can be found in the additional file (Appendix 3).

Gender. Gender only showed significant differences in the level of "information sharing and dialog" (p=0.028). Male nurses showed higher (p=0.028; b=2.168; 95% CI 0.230–4.105) scores, meaning they perceived their behavior as more focused on "information sharing and dialog" than their female colleagues.

Age. Age groups showed differences in the "perceived lack of time" (p=0.009), the "acceptance of a new role" (p=0.002), and their behavior toward "challenging" (p<0.001) or "factual questions" (p<0.001). The age groups <25 years (p=0.016; b=0.676; 95% CI 0.126–1.228), 25–34 years (p=0.003; b=0.619; 95% CI 0.207–1.030), and 35–44 years (p=0.047; b=0.414; 95%CI 0.005–0.822) perceived more "lack of time" than their older colleagues. A decrease when nurses become older could be noticed. Younger nurses were also more reluctant to "accept a new collaborative role" than their older colleagues, in particular nurses <25 years (p=0.024; b=-0.753; 95% CI -1.405 to -0.102), 25–34 years (p<0.001; b=-0.804; 95% CI-1.290 to-0.319), and nurses between 35 and 44 years (p=0.031; b=-0.534; 95% CI -1.017 to -0.050). Only the age groups of nurses <25 years (p=0.025; b=-0.772; 95% CI -1.445 to -0.098) and between 25 and 34 years (p=0.037; b=-0.535; 95% CI -1.037 to -0.033) were more reluctant to answer "challenging questions" from patients. A parallel finding was found for "factual questions" for the <25 years (p=0.014; b=-0.951; 95% CI -1.711 to -0.191) and 25–34 year old nurses (p=0.030; b=-0.626; 95% CI -1.192 to -0.060) in comparison with their older colleagues.

Type of ward. The type of the ward where the nurses were employed seemed to influence their willingness to share power and responsibility, in particular for the "information sharing and dialog" (p<0.001) and the "acceptance of a new role" (p=0.013) component. Nurses on surgical wards are likely to engage in more "information sharing and dialog" (p=0.044; b=2.708; 95% CI 0.073–5.342) than nurses from other wards. Nurses from geriatric wards were less likely to engage in this behavior (p=0.006; b=-4.125; 95% CI -7.040 to -1.211). Nurses from geriatric wards were also less likely to "accept a new collaborative role" (p=0.002; b=-0.789; 95% CI -1.298 to -0.280).

Duration employed in hospital. No significant differences were found regarding the duration nurses were employed within the hospital. The p-values for all eight of the components in the PaCT-HCW ranged from 0.253 to 0.770.

Duration employed on ward. The differences in the duration that nurses were employed on the ward showed no significant values. The p-values for the measured components of the PaCT-HCW ranged from p=0.071 to p=0.842.

Work status. The nurses' work status only showed significant differences in "support" from their supervisors and peers (p=.040). Results (p=0.013; b=-1.350; 95% CI-2.411 to-0.290) indicate that nurses with a work status less than 50% employment perceived less "support" from their supervisors than their colleagues with a higher work status (e.g., 50% employment or more). None of the other included characteristics showed significant results (range p=0.182–.776).

Level of education. The level of education made differences in perceived "competence" (p<0.001), "support" (p=0.006), the level of "information sharing and dialog" (p=0.012), "acceptance of a new role" (p<0.001), and the coping with "notifying" (p=0.018) or "factual questions" (p<0.001). Subanalyses on "competence" showed no significant differences. Undergraduate nurses (p<0.001; b=1.699; 95% CI 0.653–2.744) and bachelor nurses (p=0.010; b=1.276; 95% CI 0.304–2.248) felt more "support" than their colleagues with a master degree. In contrast, undergraduate nurses (p<0.001; b=-1.108 to 95% CI -1.660 to -0.556) and bachelor nurses (p=0.005; b=-0.747; 95% CI -1.261–0.232) were more reluctant to "accept a new role" in comparison with master nurses. Nurses with a bachelor degree engaged in more "information sharing and dialog" (p=0.029; b=2.916; 95% CI 0.300–5.531) than both undergraduate and master nurses. In coping with "notifying questions," undergraduate nurses (p=0.008; b=-0.657; 95% CI -1.141 to -0.174) scored significantly lower in comparison with nurses with a bachelor or master degree. Concerning "factual questions," both undergraduate nurses (p<0.001; b=1.213; 95% CI -1.854 to -0.572) and bachelor nurses (p=0.036; b=-0.640; 95% CI -1.240 to -0.041) scored lower than master degree nurses.

Supervising role. Whether or not the nurses had a managerial position made a significant difference on all eight measured components of the patient participation culture. P-values ranged from <0.001 to 0.028. Supervising nurses felt more competent" (p< 0.001; b=0.670; 95% CI 0.392–0.947), perceived a more "supportive" environment (p=0.028; b=0.845; 95% CI 0.090–1.600), had the feeling they have "more time" for patient participation (p=0.022; b=-0.396; 95% CI -0.735 to -0.057), accepted a more "collaborative role" (p<0.001; b=0.753; 95% CI 0.350–1.155), engaged more in "information sharing and dialog" with patients (p<0.001; b=4.481; 95% CI 2.799–6.883), and coped better with "challenging" (p<0.001; b=0.970; 95% CI 0.533, 1.386), "notifying" (p<0.001; b=0.705; 95% CI 0.354–1.056), or "factual questions" (p<0.001; b=0.863; 95% CI 0.392–1.335).

Table 3: Overview of the components of the PaCT-HCW and the differences between the nurse's characteristics

	Competence	Support	Perceived lack of time	Information sharing and dialogue	Acceptance of a new role	Challenging questions	Notifying questions	Factual questions
Gender	p=0.285	p=0.144	p=0.224	p=0.028*	p=0.793	p=0.582	p=0.601	p=0.965
Age	p=0.694	p=0.364	p=0.009*	p=0.740	p=0.002*	p<0.001**	p=0.070	p<0.001**
Type of ward	p=0.55	p=0.575	p=0.319	p<0.001**	p=0.013*	p=0.354	p=0.676	p=0.073
Time in hospital	p=0.470	p=0.770	p=0.285	p=0.346	p=0.762	p=0.253	p=0.409	p=0.641
Time on ward	p=0.622	p=0.842	p=0.322	p=0.071	p=0.860	p=0.198	p=0.681	p=0.317
Job time	p=0.713	p=0.040*	p=0.182	p=0.436	p=0.776	p=0.491	p=0.753	p=0.565
Education	p<0.001**	p=0.006*	p=0.545	p=0.012*	p<0.001**	p=0.275	p=0.018*	p<0.001**
Supervisor	p<0.001**	p=0.028*	p=0.022*	p<0.001**	p<0.001**	p<0.001**	p<0.001**	p<0.001**

* α is significant at the 0.05-level

** α is significant at the 0.001-level

6. DISCUSSION

The findings of this study could add three new insights in the complex process of patient participation. First, age seems to be closely related to patient participation, in particular the "acceptance of a new role" and "the perceived lack of time." Older nurses seem to accept more easily a new collaborative role with their patient, coping better with challenging or factual questions. In addition, there is a difference in patient participation based on educational level. Although not as clearly as the age groups, the findings indicate that education has an influence on the nurses' power and responsibility sharing. The interpretation is mixed as higher education did not lead to higher results in the component "information sharing and dialog." Nonetheless, there is an influence of age and level of education, which could be explained by the novice to expert theory by Benner (1982). In the light of this theory, sharing power and responsibility to stimulate patient participation could be viewed as an advanced nursing skill that has to be learned throughout the nursing career or needs specialized training. Advanced nursing behavior is linked to nurses who are more qualified, both by experience and training or education (Cotterill-Walker, 2012). Moreover, the findings from our study also indicate that nurses on geriatric wards significantly involve their patients less in the care process. This endorses the statement of patient participation being an advanced role. Geriatric care has become increasingly complex and patients become more functionally dependent, making it more difficult to involve them. This creates an overall need for more advanced nursing practitioners to care for this population (Fougère et al., 2016), of which patient participation should be a particular area of interest. A second important finding is the difference in

perceptions between nurses and their supervisors when it concerns patient participation. Based on the responses of the nursing supervisors, in particular on the component "perceived lack of time," it could be presumed that supervising nurses perceive engaging in patient participation as an easier task than their employees. This difference in perceptions could initiate tensions. Such tensions can lead to a decrease in retention of nurses (Brunetto et al., 2013) and consequently higher nursing replacement costs (Farr-Wharton et al., 2011). Moreover, when nurses-in-charge are under the idea that implementing patient participation is easy and not more time-consuming for the practice of a ward, this could lead to higher work pressure when patient participation activities are imposed on nurses. Nurses indicate that due to work pressure and lack of time, they have other priorities than engaging in patient participation (Simon et al., 2004) and talking with and educating patients is frequently missed care (Ball et al., 2014). This could be an actual problem for nursing practice as a majority of nursing wards in Europe already experience high work pressure (Aiken et al., 2014). By combining the first finding, the possibility that patient participation is an advanced nursing skill, and the second finding, the difference in perspective between nursing supervisors and staff, a third conclusion can be made. There is a societal demand for more participation on all levels of healthcare and most hospitals are determined to follow this evolution in order to have an additional competitive strength (Brandão et al., 2013). The findings from this study are an indication that involving patients in their care is more than a change in mindset, and that some of the essential structural conditions are missing. First, by labeling patient participation as an advanced nursing skill, a lack of qualified and highly trained nurses is exposed. A possibility has been suggested before (Simon et al., 2004). This means that there are not enough nurses to comply with the steadfast global pursue for and implementation of more patient participation. Second, most nurses already experience high work pressure due to inadequate staffing (Aiken et al., 2014; Simon et al., 2004). A different perspective on the impact of patient participation on workload between nurses and their supervisors, as the results of this study suggest, could even increase the work pressure and lead to less patient participation. By combining these two findings, the question arises if it is currently possible to implement good patient participation sector-wide without proper education and adequate staffing. Inadequate staffing and underqualified nurses could even negatively influence the power of patient participation.

6.1. Study Limitations

As this study has a cross-sectional design, it is difficult to make any causal inference. At best, this study has identified the differences in nurses' willingness to share power and responsibilities based on demographic characteristics and pinpoints the areas for further studies. A cross-sectional design is merely a single point measurement, which means that results may be differ depending on the time frame. This limits the transferability of the results. This latter limitation is enhanced by the national character of the study. The sample is representative for the Belgian nurses' population (Ausserhofer et al., 2014). Future studies should try to include nurses from different countries and measure on different time points. A self-assessment tool is used, making it unclear if the perceptions

of the nurses on the different components are a clear representation of reality. Among others, the danger of social desirability bias exists (Van de Mortel, 2008). Moreover, the theory of reasoned action (Ajzen & Fishbein, 1980) stipulates that the mere presence of a positive attitude toward patient participation does not necessarily lead to behavioral changes. The subjective norm and the perceived behavioral control also have to be positive before changes in behavior are made. As proven for changes in quality improvement (Hamilton et al., 2014) or service improvement (Wood et al., 2015), the subjective norms of a ward's culture are essential and should not be underestimated. Therefore, high scores on the PaCT-HCW might not necessarily indicate a high-standard patient participation culture on a ward.

7. CONCLUSIONS

So far, the influence of the nurses' demographic characteristics concerning patient participation is understudied. The results of this cross-sectional study pinpoint two areas of interest. First, perceptions of supervisors and nurses differ. Misunderstandings could arise about the expectations of engaging in patient participation in daily practice, leading to tensions in the nurse– supervisor relationship. Second, younger nurses indicate they have less ability to cope with an active patient than their older colleagues, and highly trained nurses feel more capable to deal with patient participation. These latter two findings could indicate that engaging in patient participation is an advanced nursing skill. This could indicate that there is a lack of properly prepared nurses. Still, the expectations to use patient participation in daily practice are high. The lack of a significant number of properly trained or educated nurses and adequate staffing could be a thread to patient participation. Future studies are necessary and should include multiple countries and repeated measures.

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Chapter 4

FEASIBILITY, APPROPRIATENESS, MEANINGFULNESS AND EFFECTIVENESS OF PATIENT PARTICIPATION AT BEDSIDE SHIFT REPORTING: MIXED-METHOD RESEARCH PROTOCOL[3]

3 Chapter based on: Malfait S, Eeckloo K, Lust E, Van Biesen W, Van Hecke A (2017). Feasibility, appropriateness, meaningfulness and effectiveness of patient participation at bedside shift reporting: mixed-method research protocol. Journal of Advanced Nursing, 73(2), 482-494. http://dx.doi.org/10.1111/jan.13154

Aim: To evaluate the feasibility, appropriateness, meaningfulness and effectiveness of bedside shift reporting in a minimum of five interventions and five control wards.

Background: Hospitals continually improve their quality of care. Next to improvements in clinical performance, more patient participation is stimulated through different methods. Methods to enhance patient participation such as bedside shift reporting lack rigorously performed research to determine their feasibility, appropriateness, meaningfulness and effectiveness. Small-scale research and a previous pilot study indicate that bedside shift reporting improves patient participation, nurse–nurse communication and nurse–patient communication.

Design: The development, implementation and evaluation of bedside shift report are based on the Medical Research Council framework for complex interventions in healthcare. A matched, controlled, mixed-method, longitudinal study design will be used. The Feasibility-Appropriateness-Meaningfulness-Effectiveness framework will be applied for the quantitative and qualitative evaluation of bedside shift report.

Methods: A tailored intervention and implementation process for bedside shift report will be developed using diagnostic interviews, co-design and acceptability testing. The intervention will be evaluated before implementation and three times after implementation. Individual and focus group interviews will be performed. Questionnaires, observations and analysis of the medical records and administrative databases will be completed. This study was funded in October 2015. Research Ethics Committee approval was granted in March 2016.

Discussion: There is a pressing need for rigorous research into the effects of interventions for improving patient participation. This study addresses the significance of bedside shift report as an intervention to improve quality of care, communication and patient participation within a large-scale, matched, controlled research design.

1. INTRODUCTION

Hospitals face the challenge of continually improving their quality of care. To achieve this goal, hospitals have to focus on both improving clinical practice and increasing the involvement of patients in the healthcare process. Both factors are equally important to quality of care (IOM, 2001). The World Health Organization highlights the role that patients and their family can play in the improvement of healthcare (Longtin et al., 2010). Active patient participation reduces communication errors (Cairns et al., 2013), increases patient empowerment (Gregory et al., 2014) and is associated with positive health (Griffin et al., 2004) and psychosocial outcomes (IOM, 2001). A possible strategy to improve patient participation through communication is the bedside shift report. Bedside shift reporting (BSR) is a process where shift-to-shift reporting between nurses is, if approved by the patient, executed at the patient's bedside to improve the patient's involvement (Anderson & Mangino, 2006). BSR has the potential to result in more patient satisfaction, better clinical outcomes, improvement of health education and enhanced team coherence (Gonzalo et al., 2014). Preliminary research indicates that BSR decreases safety incidents, adverse events (Evans et al., 2011) and readmissions (Gregory et al., 2014). BSRs also positively influence staff satisfaction, offer beneficial financial effects by reducing nurses' overtime (Evans et al., 2011) and allow direct patient care to start earlier (Evans et al., 2011). Despite these effects, rigorous and large-scale scientific research on this topic is lacking (Smeulers et al., 2014). Currently the available evidence is scarce and mostly consists of single-case or small-scale studies (Gregory et al., 2014). Longitudinal results on the effectiveness and sustainability of BSR are scarce or inconclusive. There is a need for an increased number of controlled studies to evaluate the impact of BSR on patient, staff and economic outcomes and its longitudinal results (Gregory et al., 2014).

2. BACKGROUND

The evidence of a systematic review of small-scale studies suggests that the implementation of BSR positively changes communication in nursing practice in two respects: nurse–patient communication and nurse–nurse communication (Gregory et al., 2014). As a result of enhanced nurse–patient communication, patients are able to ask questions (McMurray et al., 2011), share extensive medical information (Kerr et al., 2014), request clarifying information (Tobiano et al., 2013), and give feedback when wrong information is communicated (Anderson & Mangino, 2006). Moreover, patients have the opportunity to indicate their preferences and expectations more actively (McMurray et al., 2011). By making their preferences and expectations clear, the likelihood that the patient will be more involved in the decision making process increases and potentially more patient-centred care can be achieved. This process is intertwined with improved patient empowerment and activation (Wakefield et al., 2012) and could result in more individualized care. An increase in nurse–patient communication and therefore information ex-

change, has also been shown to shorten the length of stay (Trummer et al., 2016) and decreases 30-day post discharge use (Mitchell et al., 2012). As a result of enhanced nurse–nurse communication, exchange of irrelevant information will decrease or will be avoided, as the patient is present. Consequently, the efficiency of the shift handover will increase and communication errors will be avoided (Novak & Fairchild, 2012), resulting in enhanced clinical performances (Haig et al., 2006). This effect may be amplified by the presence of the patient, who can give feedback in case of wrong information (Anderson & Mangino, 2006). The interaction with the patient and the room during the shift report enables nurses to prioritize their shift work better (Maxson et al., 2012; Cairns et al., 2013). This enhanced prioritization improves the nurse's accountability, medication reconciliation and enables more effective communication with physicians after the handover (Maxson et al., 2012). An additional benefit of BSR is reduced incidental overtime (Evans et al., 2011), indicating that the planning and execution of care proceeds more effectively. During BSR, rooms can also be assessed for possible threats for fall incidents, the presence of preventive measures for pressure ulcers or potential risks for clogged intravenous drips. These assessments can lead to the avoidance of adverse events and safety incidents (Evans et al., 2011). Finally, studies indicate that increased nurse–nurse communication leads to more job satisfaction (Watkins, 1997; Caruso, 2007) and more efficient time use (Nelson & Massey, 2010; Evans et al., 2011) by avoiding irrelevant information or socializing during the shift report (Evans et al., 2011). As a consequence of these effects, it is expected that the overall quality of care in the ward will increase.

3. THE STUDY

3.1. Aims

The aims of this study are fourfold:

- The development and fine-tuning of a BSR intervention and implementation protocol by using diagnostic interviews, co-design and feasibility studies.
- A quantitative evaluation of BSR compared with care as usual on patient-related, clinical and nurse-related outcomes.
- A qualitative evaluation of the feasibility, appropriateness and meaningfulness of BSR as a method to improve communication and patient participation, with a particular interest in the benefits and disadvantages to healthcare professionals and patients.
- A process evaluation of BSR to determine the compliance to the intervention and to assess the evolution of BSR over the period of the study (e.g. adaptations, consistent practice).

Figure 1 shows the cohesion of the quantitative variables included in the study to evaluate the effectiveness of BSR. In this scheme, BSR is seen as the intervention that will improve both nurse–nurse communication and nurse–patient communication. This improvement in communication will have an impact on several factors that will improve

patient-related, clinical and nurse-related outcomes. Overall, it is expected that the quality of care will increase. Patient activation will be used as the primary outcome for the study and is used to calculate the power. An enlarged scheme is added in Appendix 4.

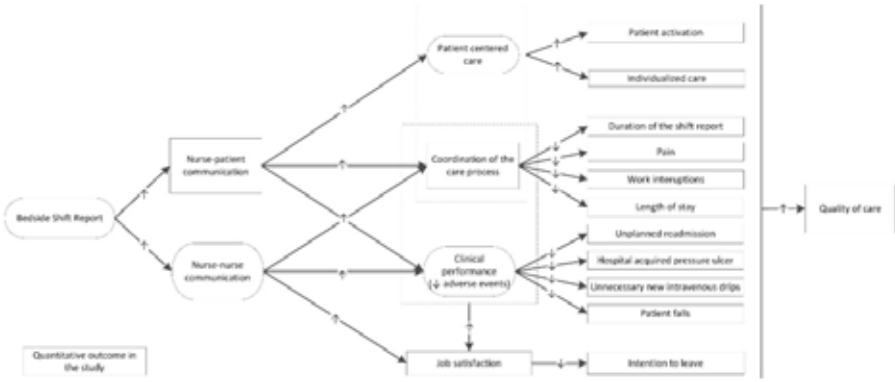

Figure 1: Hypothetical relationship between the quantitative variables.

3.2. Design and methodology

The study design was based on the Medical Research Council (MRC) framework for complex interventions in healthcare (MRC, 2000; 2008; 2015), as: (1) there are several interactions between components and outcomes; (2) the implementation of BSR requires a tailored intervention; and (3) there are several new behaviors required for those delivering BSR. Four key phases are identified in the MRC framework: (1) development, (2) feasibility (3) implementation and (4) evaluation (MRC 2000, 2008, 2015). A previous pilot study (Schillemans et al., 2010) within the researchers' university hospital already addressed the main core intervention development and the feasibility of the method used, study protocol and implementation strategy. Still, to develop a well-tailored intervention of the method for all participating wards in this study, the study protocol provides, to a certain extent, all four stages of the MRC framework (MRC, 2000) for each participating ward.

Development of draft intervention. Based on previous experiences (Schillemans et al., 2010; Agency for Healthcare Research and Quality 2013) and relevant literature on BSR (Gregory et al., 2014), a draft intervention for BSR will be developed. The purpose of this draft intervention is to give a starting point that could be further tailored to the ward. The ISBARR structure (Introduction-Situation-Background-Assessment-Recommendations-Readback) will be used to organize the communication during BSR, as it is suggested that it enhances the effectiveness of BSR (Novak & Fairchild, 2012).
Next, a three-phase, adapted version of experience-based co-design will be used to further tailor the BSR intervention for each experimental ward. The method of experi-

ence-based co-design positions patients and nurses as active partners in the development of the intervention (MRC, 2008; Locock et al., 2014). In the first phase, patients and nurses in a ward will individually assess the intervention protocol of BSR and give written feedback to the researchers. The researchers will structure their answers in general topics. In the second phase, separate focus groups will be organized for patients and nurses. These groups are characterized by an interaction between participants which stimulates debate (Holloway & Wheeler, 2010) and provides richer data (Krueger & Casey, 2009). A topic guide will be used. The following questions will be addressed in the patient group: How would you like to be involved in BSR? What would be important elements/topics for you to discuss during BSR? Would you want family (if present during BSR) to participate in BSR? How should privacy issues be handled in BSR? For nurses, questions will include: What are important elements for the content of BSR? What is the most appropriate and suitable method for the transfer of information during BSR? How will privacy issues be handled in BSR? In the third phase of the co-design, a joint task force of nurses and patients will redesign and refine the intervention, based on the topics of the focus groups. Multiple sessions will be organized to discuss previous topics. After the co-design, the researchers will adjust the intervention protocol and give feedback to the participants for final approval.

Feasibility study. The draft intervention of BSR will be tested for acceptability – an important part of feasibility (Murphy et al., 1998) – in a part of the ward to address the adequacy of the intervention and the accompanying protocol (MRC, 2008; Arain et al., 2010). It could also identify some minor additional potential problems with the developed BSR intervention and methodological issues with the protocol (Polit & Beck, 2012). Individual interviews with patients and nurses will be held in each ward to explore their experiences and the acceptability of the method to give adequate patient involvement. If necessary, minor adjustments will be made before the final implementation of the intervention in the wards.

Implementation. Two months before implementation, implementation barriers and facilitators of BSR in the wards will be identified to enhance the success of implementation (MRC, 2008). The contingency model of Van Linge (1998) will be used. This model assumes that congruity between the demands of the innovation and characteristics of the context is necessary for successful implementation (Van Os-Medendorp et al., 2008). To gain insights into the facilitators and barriers, diagnostic interviews with the staff will be used to analyse the context. Four components will be assessed: structural (organizational aspect), human resources (nurse-related aspects), cultural (experience with change) and political (aspect of power). The social climate questionnaire (Kouvonen et al., 2006) will also be used to assess the social capital in a ward. Social capital describes the quality of relations between individuals and groups of people, as low-quality professional relationships can be a significant barrier for implementing change in a nursing ward (Angus et al., 2003). For each of the identified barriers, a tailored implementation action will be provided in the implementation process. These actions are based on the theoretical behavioral approach (Huis et al., 2012) and address the determinant of the barrier or the barrier itself. If necessary, the intervention protocol will be altered to overcome barriers or strengthen

facilitators. Implementation of the intervention will take two months. Supervisors (e.g. head nurse and nurse managers) and informal team leaders (e.g. 'champions') in each hospital are to be trained so they can support the participating wards. Also, staff will be trained by the supervisor in executing BSR. Later on, the intervention will be implemented in the ward. Intermediate evaluation of BSR will be performed after approximately 6–8 weeks. This allows revision of the intervention if needed. If revision is needed, a time surplus of 1 month is taken into account in the timeline of the study.

Evaluation. The study uses a mixed methods design to evaluate the BSR intervention (MRC, 2000; 2008). The Feasibility-Appropriateness-Meaningfulness-Effectiveness framework (FAME; Pearson et al., 2009) is used to organize the evaluation. A multicentre, matched-control, experimental design is applied. Repeated measures will be used. Quantitative data are to be collected by means of questionnaires and data collection in medical records and administrative databases. Qualitative data will be collected through observations, individual interviews and focus groups. An overview of the study design, the data collection methods and the points of data collection is provided in Figure 2.

3.3. Sample/participants

Quality coordinators, chief nursing officers and chief medical officers of all Flemish hospitals will be invited to participate in the study. To assure transferability of the results, a variety of wards will be included. The study will be performed in wards in both general and university hospitals. Psychiatric wards and wards currently going through major redesign of patient-related work processes will be excluded. A convenience sample of the wards with an interest in participating in the study will be included. If possible, a variety of surgical, internal medicine, geriatric and revalidation wards will be included. The hospital, the specialization of the ward and the nurse/patient ratio will be used for the matched-control assignment. A sample size calculation for continuous outcome superiority was used to determine the needed number of patients in each ward (Julious, 2004). Intracluster correlation was taken into account. Results from previous research on patient activation were used for the calculation (Solomon et al., 2012). The mean difference was 5.03 with a standard deviation of 13.74. A significance level (a) of 5% (P = 0.05) and a power (1-b) of 80% were used. A minimum of 10 wards, five experimental and five control wards, will be included. For each participating ward, 35 patients should be included. To be included in the sample of the experimental group (BSR), patients should: (1) be admitted in a ward and should have participated in at least three BSR sessions; (2) be conscious; and (3) speak Dutch. Nurses included in the experimental group: (1) have to be involved in clinical care; (2) have participated in ≥10 BSR sessions; and (3) have at least 6 months of experience in the ward. The experimental groups will receive the developed intervention protocol. To be included in the control ward, patients have to: (1) be admitted for at least three days; and (2) be conscious. Also for the control group, participating nurses have to be involved in clinical care and have at least 6 months of experience on the ward. The control group will have care as usual. Care as usual is defined as a traditional shift report, without the presence of the patient (Wakefield et al., 2012).

3.4. Data collection

Data will be collected at four points (T0, T1, T2 and T3). The quantitative data will be collected at all four measuring points by use of a questionnaire for nurses, a questionnaire for patients, data from the medical record and data from other administrative databases. An overview of all included quantitative variables can be found in Table 2. The qualitative data will be collected by individual interviews with patients and focus group interviews with nurses at T1.

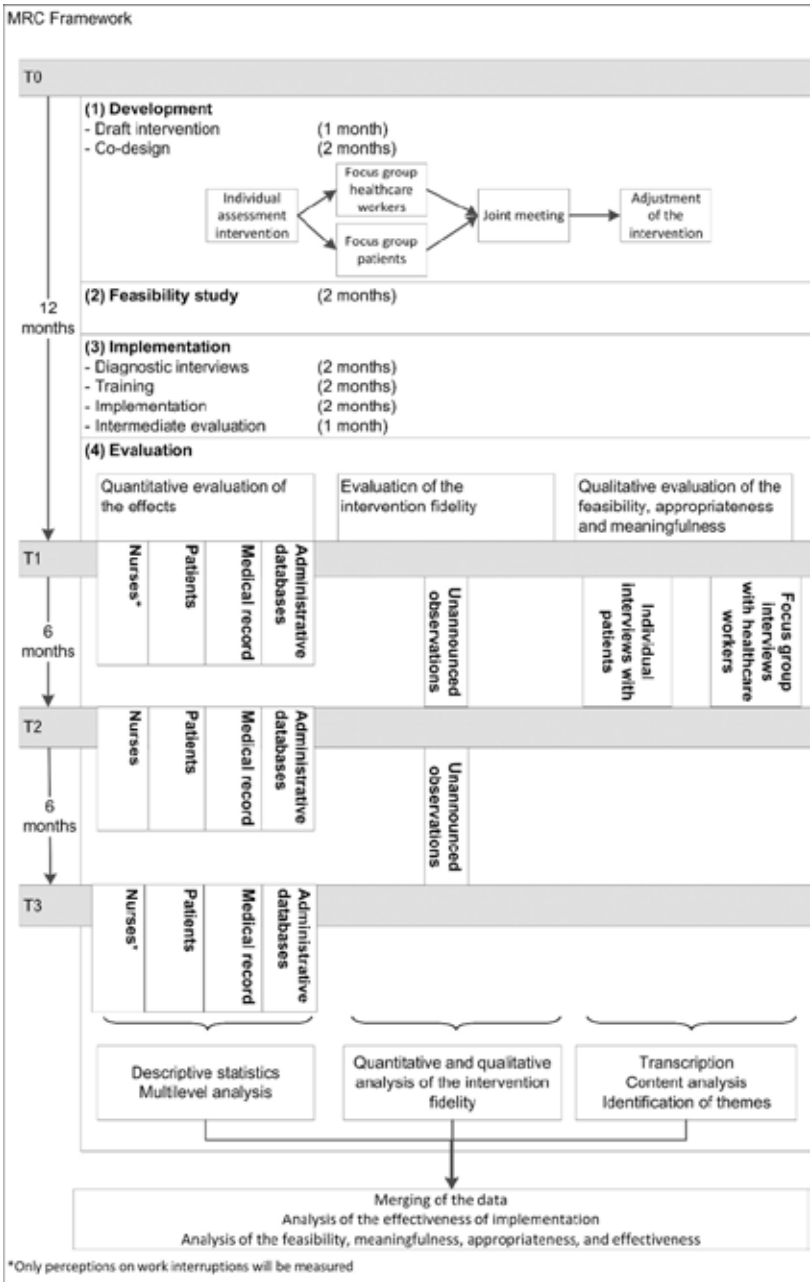

Figure 2: Time frame of the study, based on the MRC framework (MRC 2000, 2008, 2015).

Intervention compliance will be assessed by unannounced observations between T1 and T2 and between T2 and T3. Additionally, all actions taken in the process of the development, implementation and sustainment of the intervention (e.g. number of meetings, reminders, hours of training) will be mapped. Combined with the observations for the intervention compliance, this will enable the researchers to gain greater insight in the implementation process (MRC, 2015). A range of demographic variables of the participating wards, nurses and patients will be recorded at each point of measurement. An overview of these variables for each level is given in Table 1.

Table 1: An overview of the demographic variables

Ward	Nurse	Patient
Number of beds	Date of birth	Date of birth
Number of nurses	Gender	Gender
Number of admissions	Educational level	Educational level
Number of discharges	Job time	Profession
Percentage of patients participating in BSR Master/bachelor/graduate nurse ratio New nurses on the ward Bed/nurse ratio	Years of experience within nursing on the ward in hospital	Number of days admitted on ward Health literacy (Chew et al. 2004) Health status First time on ward Reason of admission
		Chronic/acute illness Number of beds in the room

The questionnaire for patients. Three aspects are queried in the questionnaire for patients: patient empowerment, quality of care and individualized care. Patient empowerment will be measured by the 13-item version of the patient activation measurement (PAM13). The PAM13 was developed and validated by Hibbard et al. (2005). The Dutch version of the PAM13 was developed and validated by Rademakers et al. (2012). The quality of care in the ward will be measured by the short form of the Quality from the Patient's Perspective questionnaire (QPP). The QPP has 24 items that explore the patient's perspective on four dimensions of quality of care (Larsson & Larsson, 2002): medical technical competence (4 items), physical-technical conditions (3 items), identity-orientated approach (12 items) and socio-cultural atmosphere (5 items). Instead of the original 4-point Likert scale, a 5-point Likert scale will be used to include the possibility of a neutral answer. The degree of individualized care will be measured by the individualized care scale for patients (ICS-Patient). The ICS-Patient was developed and validated by Suhonen et al. (2000, 2005, 2006) and consists of two parts with 17 items. Both parts have three subscales: clinical situation (seven items), personal life situation (four items) and decisional control over care (six items). The first part, the ICS-A-Patient, explores the patient's perceptions on how nurses should support patient's individuality through nursing activities. The second part, the ICS-B-Patient, explores the degree to which the patient perceives his/her care as individual.

The questionnaire for nurses. The questionnaire for nurses explores seven aspects: job satisfaction, turnover intention, coordination of the care process, communication with patients and family, work interruptions, individualized care and degree of patient participation. Both job satisfaction (JSS) and turnover intention (TIS) are measured by a subscale of the Michigan Organizational Assessment Questionnaire (MOAQ), contain three items and are scored on a 7-point agree-disagree scale (Cammann et al., 1983). Two questions from the RN4CAST study (Sermeus et al., 2011) will be used to gain more insight into: (1) whether nurses are planning to leave or would consider finding a new job in nursing; and (2) whether nurses would recommend their hospital as a good place to work to a colleague. Coordination of the care process (COR) and communication with patient and family (COM) are measured by a subscale of the Care Process Evaluation Tool (CPSET), on a scale ranging from 1 (totally disagree) – 10 (totally agree). The CPSET-COR is measured by seven items and the CPSET-COM is measured by six items (Vanhaecht et al., 2007). Nurse's perceptions of work interruptions are explored using a 10-point Likert scale. The nurses are asked to assess the prevalence of: (1) calls for assistance; (2) questions from colleagues/family/patients in the ward; (3) incoming calls from family/other healthcare workers; and (4) calls to other responsible healthcare workers, using a scale ranging from 1 (never) to 5 (very often). Additionally, nurses will be asked what the impact of these interruptions is on their care planning, also using a scale from 1 (no impact) to 10 (strong disruptions of their planning). The degree of individualized care is measured by the individualized care scale for nurses (ICS-Nurse). The ICS-Nurse was developed by Suhonen et al. (2000, 2005, 2006). The ICS-Nurse consists of 34 items and assesses nurses' perceptions of individualized care in two dimensions. First, the ICS-A-Nurse (17 items) explores nurses' perceptions on how nurses support the patients' individuality through nursing activities in general. Second, the ICS-B-Nurse (17 items) explores the degree to which their care is considered as individual. Both parts of the ICS consist of three subscales: clinical situation (seven items), personal life situation (four items) and decisional control over care (six items). Additionally, three questions about patient participation will be added based on the participation ladder of Arnstein (1969). First, the nurses are asked to assess the degree of patient participation in the ward on a 5-point Likert scale ranging from 1 (very weak) – 5 (excellent). Second, nurses are asked to score the degree to which patients (1) are informed, (2) are asked for their advice and (3) can decide on their care. Finally, nurses are asked if patient participation is a topic that is 'never discussed on the ward', 'sometimes discussed in the ward' or 'frequently discussed during a meeting'. These questions were used during a previous study by the researchers and validated by Lust et al. (in progress). The internal consistency of these questions from a study of 1329 healthcare workers is 0.75.

Outcomes based on medical records. As stated in the introduction, BSR could have positive effects on clinical performances and the incidence of adverse events and safety incidents. Six patient outcomes were identified: hospital-acquired pressure ulcers, patient falls, unnecessary intravenous drips, length of stay, unplanned readmissions and pain. The medical records of participating patients will be screened on these six aspects. Hospital-acquired pressure ulcer (HAPUs) on heels and the sacrum will be identified using the European Pressure Ulcer Advisory Panel and National Pressure Ulcer Advisory Panel

(2014). Based on registration in the medical record, the number of patient falls in a ward will be identified and calculated. All hospitals have a protocol concerning the standard time for changing an intravenous drip. The number of unnecessary intravenous drips (IVDs) will be calculated by subtracting the number of given IVDs from the number of IVDs that would be given if the protocol were used. A positive outcome means that more IVDs were given than expected. The average length of stay and the difference between the initial expected length of stay on admission and the real length of stay will be identified. Unplanned readmissions of patients that have participated in the study are defined as a readmission occurring within 30 days of the index admission discharge date (Hechenbleikner et al., 2013). There are a wide variety of methods to measure pain and each method has pros and cons, (Williamson & Hoggart, 2005) and hospitals tend to differ in the methods they use to measure pain. Rather than changing the practice in each hospital, pain scores on the scale used by each hospital will be recorded at the start of each afternoon shift. To assess the effectiveness of pain management, the percentage of pain-free days will be calculated. The standardized cut-off points for each scale will be used (Van Dijk et al., 2012).

Outcomes based on the administrative database Since BSR is expected to improve the effectiveness of nurse–nurse communication, the duration of the shift report will shorten, information will be more accurate for the persons involved and the number of work interruptions is expected to decrease. The duration of the shift report will be analyzed in two ways. First, the overtime of nurses will be determined through time-clock registrations. Second, the shift reports will be recorded at T0, T1, T2 and T3 to determine the duration of the shift reports. The number of calls for assistance will be measured by each hospital's electronic recording system.

Table 4: An overview of quantitative outcomes

Outcome	instruments/ measurement	Authors	Items	α	Data collection
Patient empowerment	PAM13	Hibbard et al. (2005) Rademakers et al. (2012)	13	0.88	Questionnaire (patient)
Quality of care	QPP	Larsson & Larsson (2002)	24	0.67-0.91	Questionnaire (patient)
Individualized care	ICS-Nurse	Suhonen et al. (2010)	34	0.73-0.84 0.73-0.84	Questionnaire (nurse)
	ICS-Patient	Suhonen et al. (2007)	34		Questionnaire (patient)
Job satisfaction	MOAQ-JSS	Cammann et al. (1983) Bowling & Hammond (2008)	3	0.67-0.94	Questionnaire (nurse)
Turnover intention	MOAQ-TIS	Cammann et al. (1983) Cook et al. (1981)	3	0.83	Questionnaire (nurse)

	RN4CAST	Sermeus et al. (2011)	2	N/A	Questionnaire (nurse)
Coordination of the care process	CPSET-COR	Van Haecht et al. (2007) Seys et al. (2013)	7	0.90	Questionnaire (nurse)
Communication	CPSET-COM	Van Haecht et al. (2007) Seys et al. (2013)	6	0.90	Questionnaire (nurse)
Work interruptions	Perceptions	N/A	9	N/A	Questionnaire (nurse)
	Recorded calls	N/A	1	N/A	Administrative database
Patient participation	N/A	Lust et al. (in progress)	3	0.75	Questionnaire (nurse)
Hospital acquired pressure ulcers	NPUAP/EPUAP classification system	NPUAP/EPUAP (2014)	1	N/A	Medical record
Patient falls	Recorded patient falls in medical record	N/A	1	N/A	Medical record
Unnecessary new intravenous drips	Number of IVDs	N/A	1	N/A	Medical record
Length of stay	Length of stay	N/A	1	N/A	Medical record
	Expected length of stay according to initial diagnosis	N/A	1	N/A	Medical record
Unplanned readmissions	30-day readmission rates	N/A	1	N/A	Medical record
Pain	N/A	Williamson & Hoggart (2005)	1	N/A	Medical record
Duration of the shift report	Shift handover duration	N/A	1	N/A	Observations
	Nurses' overtime	N/A	1	N/A	Administrative database

Focus groups with healthcare workers. To analyse the feasibility, meaningfulness and appropriateness of BSR for healthcare workers, one focus group with nurses for each ward will be organized. Important areas of interest will include: How did you experience BSR? What could be improved? How confident do you feel when using BSR?

Individual interviews with patients. To analyse the feasibility, meaningfulness and appropriateness of BSR for patients, 30 interviews will be conducted with patients. Maximum variation sampling technique will be used to include patients with diverse characteristics (e.g. age and gender) and to explore varied cases (Holloway & Wheeler, 2010). Also, patients not willing to participate in BSR or patients who do not appreciate the intervention will be specifically selected. The interviews will be semi-structured and will address the following areas of interest: How did you experience BSR? Did you have the opportunity to ask questions during BSR? Were you involved during BSR? What are elements for improvement? How confident do you feel when BSR is used?

Observations. For an intervention to contribute to quality of care, it must not only be effective but must also be monitored adequately (Grol & Grimshaw, 2003; MRC, 2015). Different factors (patient, healthcare professional, intervention and organization) may influence the compliance to the intervention. In our study, an intervention compliance of 80% will be considered appropriate (Van Os-Medendorp et al., 2008). At regular intervals the researchers will conduct non-participatory, structured observations to assess the compliance to the intervention: 20 unannounced and randomly selected observations of the bedside shift report in each participating ward between T1 and T2 and between T2 and T3. To evaluate the reliability of the observations, 20% of the structured observations (including the time registration of the bedside communication, use of the ISBARR method, content) will be conducted by two researchers using a structured observation form. The interrater reliability will be calculated. For evaluation of this interrater reliability, values ≥0_75 will be regarded as substantial (Landis & Koch, 1977).

3.5. Data analysis

Quantitative data will be analyzed using SPSS version 21.0 (IBM Corp, 2013). To compare the experimental groups and the control group, multilevel analyses with wards as random factors will be performed. This method is used to overcome any difficulties with multilevel data clustering (Jaeger, 2008). If applicable, analyses of subgroups (e.g. medical specialty) will be made. The differences in outcomes over time will be calculated by use of repeated measures.

Qualitative data will be analyzed with QSR International's (2012) NVivo 10.0 software. All interviews and focus groups will be recorded and transcribed verbatim. The transcriptions will be coded and categorized to identify main themes (Holloway & Wheeler, 2010). The constant analysis of qualitative data will enhance the iterative process of identifying new themes to optimize further interviews or focus groups. To enhance the quality of the analysis, both data triangulation (data from different groups and methods) and researcher triangulation (multiple researchers) will be used.

3.6. Ethical considerations

Approval was obtained from both the central ethics committee of the Ghent University hospital in March 2016 (B670201627044) and from the local ethics committee of each participating hospital. Each respondent will be informed about the goals of the study and the process of data collection. A written informed consent will be obtained from each respondent. Patients can refuse BSR during their care when admitted in a ward. All data will be anonymized for further analyses and reports. The study is funded by a grant of the Ghent University Hospital (HA/RP/2015/086/EC) in Belgium and is registered as a clinical trial (NCT02714582) on ClinicalTrials.gov.

3.7. Validity, reliability and rigour

A mixed methods design is used to enrich the gathered data. The use of complementary data collection methods has the benefit of creating insights into both the processes and the observed effects (MRC, 2008; 2015). This method creates the opportunity to triangulate and integrate quantitative and qualitative data (Onwuegbuzie & Leech, 2005). Several actions have been taken to safeguard the rigour of the quantitative part of the study. The questionnaires that are used are assessed for reliability and internal validity. A multicentred design is used to enhance the generalizability of the findings. Several of the included variables should increase the possibility of identifying cohesion between variables and intermediate processes. To preserve the rigour of the qualitative part of the study, three specific measures will be taken: the collection of qualitative data will be performed following a strict protocol (MRC, 2000), both data and researcher triangulation will be used to analyse the data and maximum variation sampling will be used to enhance transferability.

4. DISCUSSION

Currently a large-scale study on BSR is lacking. Because the implementation of BSR means a significant change in a ward, only wards expressing a willingness to implement BSR can be included. A study of the effects of BSR has a naturalistic approach and has to be implemented in real-time, hard-to-control situations. This convenience sample creates three possible pitfalls in the study design.

5. LIMITATIONS

First, the possibility exists that, because of the multicentred design of the study, factors other than BSR may affect the results of this study. Therefore, one control ward from the same hospital is included for each participating ward. The inclusion of different hospitals in the study could actually be turned into an advantage, as it provides better insights into implementation processes, as cultures between hospitals tend to differ.
Second, the included wards offer different specialized care. It is very likely that effects

between geriatric, revalidation and surgical/internal wards are different. Therefore, statistical analysis of these subgroups will have to be explored. If addressed properly, this limitation could be used as a strength in terms of transferability of the results.
Third, BSR might be very different from the traditional shift report, implying that the impact of this intervention could be too substantial for a ward. The researchers should take into account that it is possible that a ward will withdraw from the study. Therefore, more wards than the initial numbers from the power calculation will have to be included in the study.
As already mentioned, this study has to have a naturalistic approach since it is being implemented in real-time, hard-to-control situations. In these circumstances, there is a complex interaction between a variety of components and outcomes, further highlighting the need for a research framework for complex interventions. The MRC framework (MRC, 2000; 2008; 2015) was used to organize this study, but it has a slightly different nature because of a sequential approach. Although development steps were already undertaken in a pilot study, the authors deliberately choose to partially repeat the development, feasibility and implementation phases of the original MRC framework (MRC, 2000) in all wards to give a well-tailored intervention with a significantly greater chance of success. This offers the opportunity to actively involve patients from all participating wards during these phases. As pointed out by Richards and Rahm Hallberg (2015), research methods concerning complex interventions should be an iterative process, where repeating some phases is possible if there are indications of necessity.

6. CONCLUSION

The importance of this study is emphasized by the magnitude and the rigour of the study design. The study addresses the methodological limitations of previous, small-scale, non-controlled, quantitative outcome-oriented studies. Moreover, a wide range of variables are taken into account in this study to report an in-depth image of the effects of BSR and to gain greater insights into the process of improvement. To evaluate the effectiveness, feasibility, meaningfulness and appropriateness of BSR, a mixed methods approach is used. The goal of this mixed methods design is to enrich the quantitative data. By including a rigorous methodology concerning the development of the intervention, the scientific knowledge of nursing implementation sciences will be enriched. The use of both the patient's and the nurse's perspective in the development of the BSR intervention, through an adapted form of experience-based co-design, is unique.

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Chapter 5

‘IT IS MORE THAN CHANGING THE HANDOVER’: A STUDY ON NURSES’ BELIEFS TOWARDS BARRIERS AND FACILITATORS FOR IMPLEMENTING BEDSIDE SHIFT REPORT ON HOSPITAL WARDS [4]

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4 Chapter based on: Malfait S, Eeckloo K, Lust E, Van Biesen W, Van Hecke A. (2017). ‘It is more than changing the handover’: A study on nurses’ beliefs towards barriers and facilitators for implementing bedside shift report on hospital wards. Submitted.

Background: Bedside shift report, where the shift handover between nurses is conducted at the patient's bedside, is an innovative method to improve the quality of care. Previous studies identified barriers for implementing bedside shift report, but have not taken into account the ward's nursing care system, a major determinant for the ward's organizational context.

Objectives: To identify barriers and facilitators for implementing and using bedside shift report and to determine their relation to the nursing care system on a ward.

Design en methods: A pragmatic descriptive study with content analysis, based on qualitative research principles. Semi-structured individual interviews were performed with an interview guide based on the contingency model.

Setting and participants: 106 individual interviews with nurses on 14 nursing wards with the intention to implement bedside shift report.

Results: Barriers and facilitators in this study can be divided into two groups. There are elements generic across wards as barrier or enabler: issues about confidentiality, non-native speakers, structured handover, patient's competence, the patient's duration of stay and hospital processes. Other elements seem to change, dependent on the nursing care system on a ward: the loss of socializing, nurses' perceptions about patient participation, staff's attitude towards the shift report, the head nurse' role, nurse-physician communication and the physicians role, time, and the role of colleagues were identified as barriers by some and facilitators by others. The existing nursing care system on the ward substantially influenced open mindedness to change towards the bedside handover, but could not provide in an explanation for all elements.

Conclusion: Implementing bedside shift report is challenging due to the connectedness with many organizational elements on a nursing ward. Some facilitators and barriers are generic for all wards, but other factors can be either facilitator or barrier depending on the ward's nursing care system. Therefore, determining the utilized nursing care system and probing attitudes towards patient participation is needed. A step-by-step process towards a devolved nursing care system could prove to be more successful for implementing bedside shift report in comparison to a single overall change. The connectedness of the shift report with many other organizational elements and the reluctant attitude of nurses towards bedside shift reports, indicates that the change process towards bedside shift report should be approached with caution.

1. INTRODUCTION

Since the declaration of Alma Ata (WHO, 1978), patient participation has become increasingly important in healthcare. Patient participation is associated with improved quality of care (IOM, 2011), increased patient safety (Longtin et al., 2010), better health outcomes (WHO, 2013) and is expected to be an essential element in guarding the cost-effectiveness of the healthcare system (BMJ, 2015). As a consequence, hospitals are constantly searching for methods to improve patient participation. In nursing, bedside shift report is such an innovative method. During the last decade, the method is increasingly practiced in Anglo-Saxon countries (Ferguson & Howell, 2016), and is now spreading across the European continent. But, changing the handover is difficult due to the routine, the fact that it is based on traditions, and is linked to the organization of a ward. As a consequence many organizations fail in implementing the bedside handover. More insight in how the situation before affects implementation is needed.

2. BACKGROUND

Bedside shift report is a process where, after approval by the patient, shift-to-shift report between nurses is delivered at the patient's bedside in order to improve the patient's involvement (Anderson & Mangino, 2006). Referred to in many ways, the essence remains the same: improving nurse-nurse and nurse-patient communication by allowing patient involvement and participation during the shift handover (Gregory et al., 2014). Bedside shift handover is reported to improve patient- and nurses-related outcomes such as patient and family satisfaction (Tidwell et al., 2011) and enhanced team coherence (Gonzalo et al., 2014). Reported advantages such as clarifying information, intercepting errors, visualizing patients, and better organization of care (Jeffs et al., 2013a) could lead to better adherence to safety standards, a decreasing number in safety incidents and adverse events (Evans et al., 2011), and thus improved clinical outcomes. Also, the nurses' efficacy increases, which reduces overtime (Tidwell et al., 2011; Evans et al., 2011).
Bedside shift report can be the solution to currently used and ineffective handovers between nurses, taking into account that nurse handover are the most critical process in patient care for ensuring patient safety (Gregory et al., 2014). But, changing to bedside shift report is complex and difficult as the traditional way of shift handovers is still taking place far away from the patient's bedside and the handover is well anchored in nursing traditions (Tidwell et al., 2011; Anderson & Mangino, 2006; Hagman et al., 2013). The body of knowledge on bedside shift report consequentially identifies multiple barriers of implementing a bedside shift handover, like time-use (Sand-Jecklin & Sherman, 2014), change-discouraging environments, confidentiality (Gregory et al., 2014) and contradictory patient preferences (Jeffs et al., 2013b). Moreover, Tobiano et al. (2017) recently suggested that the organizational setting of a ward can modify the implementation of bedside shift report. The care processes, service provision, and day-to-day running that shape the organizational context of a ward is influenced by the nursing care system

(Sjetne et al., 2010). It is therefore essential that knowledge on implementation processes, especially barriers and facilitators of bedside shift report is further explored in different organizational contexts to allow tailored implementation (van de Glind et al., 2012; Achterberg, 2013; Cheater et al., 2005). According to van Achterberg (2013) it is essential that implementation studies also consider care organization as this is perhaps the most important facilitator for effective the use of evidence based practice in nursing.
This study is part of an ongoing multicenter, longitudinal study on the feasibility, appropriateness, meaningfulness and effectiveness of bedside briefing (Malfait et al., 2017). The study design was based on the MRC-framework for complex interventions (MRC, 2000; 2008; 2015) and was initiated to investigate the use of bedside shift report in a matched-controlled, longitudinal study in multiple hospitals. As part of a systematic approach (Grol et al., 2005) and to enhance the possibility of successful implementation, diagnostic interviews with nurses were conducted in the beginning of the implementation-phase of the MRC-framework e.g. before the use of bedside shift reports). The interviews were used to identify possible barriers and facilitators on the nursing wards.

3. AIM

The aim of this study is twofold: (1) identify barriers and facilitators for bedside shift report, and (2) to determine how these barriers and facilitators relate to the nursing care system on the ward.

4. METHODS

4.1. Sample: Participating wards and nurses

In December 2015 an invitation was sent by the Federal government to all Flemish general and university hospitals. Head nurses, nursing managers and quality supervisors were invited to three workshops where the study on bedside shift report (Malfait et al., 2017) was explained. After the three workshops, wards could register to participate in the study. Fourteen nursing wards in eight different hospitals opted to be included in the study. On each ward, the head nurse and the researchers selected nurses from the nursing staff on the ward using a purposive sampling method to include both supporters and opponents of bedside shift report in the study. On each ward a minimum of five nurses was selected. The head nurse was always interviewed. Nurses were included until repetition of barriers and enablers occurred (i.e. saturation by repetition). All interviews were conducted on the wards. An overview of the participating wards, the numbers of interviews, and the duration of interviews can be found in Table 1.

4.2. Data collection

A semi-structured interview guide was used to conduct the interviews. The structure of the guide was based on the contingency model of Van Linge (1998) which consists of four components: culture (e.g. is a good handover appreciated in the team), human resources (e.g. are people trained for effective communication), structure (e.g. how is the handover structured) and power relations (e.g. do nurses respect each other). The contingency model of Van Linge was chosen because of its suitability for implementation projects and our research question. This model assumes that a congruence is needed between the requirements of the innovation and the characteristics of the context for a successful implementation. In the case of bedside shift report, the presence on the ward of the requirements in each component to use bedside shift report were questioned. A full overview of the included questions can be found in Appendix 5. For each of the components, several questions concerning the requisites for utilizing bedside shift report were formulated. Key elements, issues and themes concerning the bedside shift report that were already identified in previous studies (Jeffs et al., 2013b; Gregory et al., 2014; Sand-Jecklin & Sherman, 2014) and a pilot study (Schillemans et al., 2010) were also included in the interview guide, for example time-use, overview and socializing.
In order to assess the nursing care system on the ward, the model of Adams et al. (1998) was used. This model describes three classifications of organizational systems for nursing: (i) devolved nursing, (ii) two-tier nursing, and (iii) centralized nursing. In devolved nursing, the focus of responsibility for care is firmly vested in the assigned and individual nurse. In centralized nursing, power and control are firmly in the hands of the head nurse or charge nurse. Two-tier nursing refers to the system in between and is characterized by groups or teams amongst the nursing staff, working independently but under strict supervision. Using these three types was preferred over the model describing the generic types of care systems (i.e. functional/team/primary nursing) as nursing systems are often not as clear cut in practice (Adams et al., 1998; Sjentne et al., 2010). In order to determine the care system on the wards, the significant criteria of Adams (1998) to determine the care system on a ward were used. Based on the following criteria, wards can be divided into one of the three types: who completes the care plans (i.e. task-assigned nurse/patient-assigned nurse/head nurse), who accompanies the physician on his/her round (i.e. patient-assigned nurse/head nurse), on which patients is a daily briefing received (i.e. assigned patients/all patients), how is oral medication delivered (i.e. task-assigned nurse/patient-assigned nurse/head nurse), who contacts other health professions/relatives (i.e. patient-assigned nurse/head nurse).

Table 1: An overview of the characteristics of the participating wards and the interviews conducted

ward	Specialty	nr. of interviews	duration of the interviews (min-max-	nursing care system		
				Devolved	Two-tier	Centralized
1	Geriatric	6	28m31s - 50m48s			x
2	Medical rehabilitation	8	25m02s - 46m05s		x	
3	Surgical	7	25m10s - 41m49s		x	
4	Medical rehabilitation	8	42m38s - 27m14s		x	
5	Geriatric	10	18m05s - 42m00s		x	
6	Surgical	7	28m27s - 39m18s	x		
7	Surgical	5	27m28s - 58m52s	x		
8	Medical rehabilitation	6	27m26s - 43m49s		x	
9	Intensive care	9	20m39s - 33m24s	x		
10	Intensive care	8	21m50s - 38m22s	x		
11	Surgical	6	26m38s - 45m59s			x
12	Geriatric	9	21m01s - 30m28s			x
13	Medical rehabilitation	9	17m59s - 36m12s			x
14	Surgical	8	15m58s - 50m06s			x
Total	N/A	106	15m58s - 58m52s	N/A	N/A	N/A

4.3. Data analysis

As mentioned during the introduction, these interviews were part of a study design, but were also performed in order to enhance the successful implementation of bedside shift report. Tailoring an intervention enhances the chance on success (Cheater F et al. 2006). As a results, two challenges were met. First, interviews had to be performed on each of the wards, leading to a great number of interviews. Second, interviews were mainly focused on identifying the visible -perhaps superficial- barriers and facilitators in order to address these in the intervention, and less on probing on the underlying processes. Therefore, a pragmatic approach (Weaver & Olson, 2005) was used to perform a descriptive study with content analysis, based on the qualitative research principles of reflexivity, relevance and validity (Malterud, 2001a).

To analyze the content of the interviews, the model of Halcomb et al. (2006) was used. Based on the types and numbers of research interviews conducted, Halcomb and colleagues (2006) argue that trans verbatim transcriptions are not a necessity if there is concurrent audiotaping and note taking followed by a reflexive, iterative process with multiple researchers listening to interviews in different phases. Six steps should be taken in the data analysis (Table 2):

Table 2: Data management steps according to Halcomb et al. (2006)

#	Action
Step 1	Audio taping and concurrent note taking
Step 2	Reflective journaling immediately post-interview
Step 3	Listening to the audiotape & amending/revision of field notes and observations
Step 4	Preliminary content analysis
Step 5	Secondary content analysis
Step 6	Thematic review

During step 1, all interviews were conducted by the primary researcher. The researcher was not affiliated to the wards in any way. A second researcher listened to the initial interviews to provide feedback on the interview style and method of the primary researcher to prevent bias. The actions in the second and third step were performed by the primary researcher consecutively without input from other researchers. Next, the primary researcher summarized the data of the interviews in a brief report which was member checked by the participating nurses and head nurses. In step 4, the primary researcher conducted a preliminary content analysis. Three additional researchers were included, who listened to a random selection of five interviews (i.e. +/- 15% of all interviews) and gave feedback on the preliminary content analyses. In step 5, a new and different selection of interviews (n=5) was distributed among the same researchers (i.e. +/- 15% of all interviews). Based on this selection of interviews, the three researchers commented on the secondary content analysis by the primary researcher. In the final step, the primary researcher conducted a review of all identified themes. Finally, an additional analyses was performed to connect the barriers and facilitators to the nursing care systems on a ward, in order to answer the second research questions in relation to the nursing care systems on the ward. In other words, which elements were perceived as barriers and/or facilitators on the different types of wards. The COREQ-checklist (Tong et al., 2007) was used as guideline to write this manuscript.

4.4. Trustworthiness and reflexivity

In total, four complementary strategies were used to increase and preserve the trustworthiness of the data analysis. First, member checking was used in order to avoid misinterpretation or misunderstanding of the data (Holloway and Wheeler, 2012). Member checking was accomplished by providing the overall interpretations for each ward to the interviewed nurses. Nurses could make adjustments when, from their point of view, wrong interpretations were made. This occurred on three wards. Second, to have more depth into the analysis and to enhance its validity, researcher's triangulation was used (Holloway and Wheeler, 2012). In total, approximately 30% of all interviews was listened two researchers. Third, a constant process of iterative reflexivity was incorporated (Holloway and Wheeler, 2012). Fourth, the interviewer had no affiliation with the included wards to avoid social desirability bias.

5. RESULTS

In the results, the identified elements are described as barriers and facilitators. Barriers are thresholds, pitfalls and concerns that made nurses less willing to implement bedside shift reporting. Facilitators are advantages that made nurses more willing to implement bedside shift report. In this study, barriers and facilitators could also be divided based on their consistency. Some barriers and facilitators are consistent between wards (i.e. invariable across wards). Other elements are barriers on some and facilitators on other wards, or vice versa (i.e. variable across wards). An overview of all barriers and facilitators, and when applicable in relation to the nursing care system, can be found in Table 3. The identified elements are described below in detail.

Confidentially issues. According to the nurses, they are reluctant to share information about a patient's health status on a semi-private room due to by concerns on confidentiality. Especially sensitive information or serious diagnoses cause concern. Nurses also express concerns about sharing information during visiting hours when family or visitors are present in the room. They regard it as disrespectful and difficult to ask these persons to leave the room. Moreover, they believe that these persons will not understand why they are requested to leave the room and will therefore refuse. Some nurses also indicate they are uncertain about which medical information can be shared with the patients. In their opinion, some information cannot be shared with the patient, such as unconfirmed diagnoses, and that patients have the right not to know certain information. They report that sometimes family members prohibit that information is shared with the patient, especially in the case of older patients. Nurses fear that they, by delivering a bedside shift report, accidentally will share information that should not have been known by the patient, breaking confidentiality. Also, most nurses regard the initial provision of medical information not as their responsibility, but the physician's. A substantial number of nurses is uncertain on when and where during the process of bedside shift report confidential information about the patient's health status can or should be transferred from nurse-to-nurse in absence of the patient. In their opinion, it will be difficult to give a comprehensive shift report without sharing these pieces of information. A number of nurses report that, if bedside shift report is implemented, strict guidelines on how, which and when information is given should be provided.

> *"We will have to be well aware of what we will be saying at the bedside [...] we will have to pay attention not to offend the patient or provide them with information they are not supposed to know."*

Non-native speakers. Especially in hospitals in larger cities, nurses report that speaking the native language is essential for patients in order to be involved in the bedside shift report. Without the ability of the patient to engage in the conversation, nurses see less advantages in conducting the shift report at the bedside. On nursing wards with a high number of non-native patients, this is perceived as a barrier for using bedside shift report. Nurses indicate reluctance to use family members as interpreters because of the

impossibility of knowing if the translation is adequate.

> *"For us, as a nurse, it is very difficult to involve people that speak another language…even in small activities like transferring a patient from the bed to the toilet. I'm almost certain that they won't understand a single word of the bedside shift report."*

Hospital processes. On a considerable amount of wards, head (nurses) indicate that the operational processes in the hospital make it impossible to provide in bedside handovers. For example, on some surgical wards the transfers from and to the operation theatre or recovery unit are continuous. Such a continuous process makes it necessary for all nurses to be aware of the situation of all patients on the ward as often colleagues are absent from the ward. Moreover, by leaving the nursing station for bedside handover, nurses indicate they will lose control over the processes on the entire ward. Also mentioned is the fact that bedside handover is practically impossible to organize if the numbers of morning shifts and evening shifts are unequal. Moreover, if visiting hours are during the handovers, family members will have many questions. Finally, physicians often come to the ward during nursing handovers. By doing the handover in the nursing station, one nurse is always available.

> *"What the bedside handover expects is that we leave the nursing station during the handover. To be honest, that will be impossible. The nursing station is the central place for many activities that we, as nurses, have to take care off in the hospital and these activities do not stop during the handover."*

On other wards, no positive or negative remarks concerning the influence of hospital organization on the handover were made.

A structured nurse-to-nurse handover. Achieving a more structured nurse-to-nurse shift handover was, according to the interviewed nurses, a positive influence for supporting the implementation of bedside shift report. Nurses reporting this, often complain about the absence of a structured shift handover. They remark that the degree of structure during the handover is person-dependent, that they miss a protocol, and that the shift handovers are chaotic. This leads to loss of information, and irrelevant or equivocal information. The nurses are convinced that using a predefined structure, combined with the presence of a patient, will reduce miscommunication and will make the shift report more efficient.

Nursing wards where a structured handover, like SBAR (i.e. situation-background-assessment-recommendations), was already used during the shift report are also less reluctant to make the transition to bedside shift report. They have experienced or are experiencing the advantages of structured handovers and admit that nurse-to-nurse handovers are essential for delivering quality care.

> *"We have learned to give a structured handover by using SBAR, minimizing time loss and mistakes. This has made me feel more confident in giving handovers…so, I don't really mind the patient being present."*

Patient's competence. When evaluating the possibility of implementing bedside shift report nurses tend to evaluate the competences of the patients on their ward to actively participate in bedside shift report, comply with the process of bedside handovers and understand medical information. The nurses perceive that patients who are well-informed by physicians, nurses or other health professionals will be more able to interact during the bedside shift handover and are able to actually contribute to the advantages of a shift handover at the bedside: preventing miscommunication and expressing their wishes. Nurses also respond that young people and patients with a chronic disorder are more likely to be well-informed, leading to a more efficient and effective handover.

> *"Patients who know something about their illness are easier to talk to and to be open with. They don't panic that fast and often are very strict in following treatment."*

When nurses assess a majority of their patients as being capable of participating in bedside shift report, they evaluate the implementation of bedside shift report more positively. The most commonly reported reasons for perceiving patients as incapable are presence of degenerative mental illness or problems with mental health. Also, the perceived competence of patients is closely related to percentage of older patients (70+) on the ward. Nurses say that how older the population is, the less bedside shift report will be possible. Nurses are also unsure if being confronted with their diagnoses and information regarding their healthcare process is good for older patients. Nurses fear that this type of patient will not understand what is happening or understand what is being said, leading to unnecessary panicking patients.

Patient's duration of stay. Nurses express the believe that for patients with a longer duration of stay on the ward, the bedside handover will progressively be more effective, as these patients will have more knowledge on their care process, know the process of bedside shift report and will be able to express their wishes in a more effective way. This will result in a more effective use of bedside shift report. In order words, nurses indicate that their organization of the care process is not disturbed.

> *"If patients are aware of what happens during a beside shift report because they have already experienced it, they will be more compliant to the process, will less interrupt us and will know what is expected from them."*

Nurses show concern that patients will have a lot of practical questions making the process of bedside shift report longer. Also, patient's with a longer duration of stay were perceived as more independent and having a less acute care situation, which could speed up the shift report, because less vital information has to be transferred. Patients with a longer duration of stay are known by all nurses on the ward which could also shorten

the shift handover. Nurses working on wards where the average duration of stay is longer, perceive newly admitted patients as a challenge during the shift handover. Such patients will not understand the process of bedside shift report and will apply the handover moment for asking practical questions, or starting a conversation. In the perception of these nurses, such activities will disturb the fluency of the handover process, and in the long-term the organization of the afternoon care.

Loss of socializing, overview and collegiality amongst team members. When implementing bedside shift report, there is a need for a more extensive division of the ward into care sectors with a fixed number of allocated patients per nurse. As a consequence, collective handovers will disappear and the accountability and responsibility of a single nurse for a selection of patients will be increased. For many nurses, this could lead to a loss of socializing, overview ('knowing all the patients'), and collegiality or team spirit between nurses. Such experiences of loss were absent or minimally present on wards with a devolved nursing system. Nurses in a centralized or two-tier nursing system, where a collective shift handover with all nurses was more common, express these concerns very often. For them, the shift handover is one of the only possibilities to have a shared moment in which they can express their frustrations, emotions and feelings to each other. They admit the handover is not always patient-related, but also relates to their personal stories and family life (e.g. complaining about difficult patients or talking about their daily activities). They designate this as the only moment when they do not have to interact with patients and can speak freely. Implementing a model of bedside shift report would mean losing this unique moment.

> *"The overlap between the early shift and the late shift is the social moment of the day. It has always been this way. It will be very difficult for us to abandon this behavior and not to fall in old habits…It will certainly be missed."*

Moreover, some nurses indicate that shared basic information on each patient between all the nurses in the shift is essential to enable them to assist each other. This basic information varies across the types of wards. For example, on an orthopedic ward prescriptions about movement were important. If this basic information is not shared, nurses fear that peer support during the care process will be minimized and collaboration will disappear. They think that their colleagues will become self-centered and the culture of helping each other will be lost. Nurses express that they themselves will be more reluctant to answer calls for assistance in other parts of the ward because of the fear of making mistakes.

> *"If we want to help each other…like a colleague that has a difficult part of the ward… and we do not have basic information it will be more difficult to help each other. For me personally, I will be scared to make mistakes."*

For nurses, the loss of basic knowledge of all patients also means the impossibility to answer questions of a patient's family, physicians or to respond to calls for assistance

from a colleague's patients in an adequate manner. This makes them feel less professional. This necessity of having information on all patients on the ward to respond to questions was especially present on nursing wards with a two-tier or centralized nursing system. These nurses indicate that they have to assist their colleagues more regularly.

> *"To me, it feels unprofessional to have a family member of a patients asking some questions...to which I have to respond: I'm sorry, I'm not responsible for this patient, you will have to ask my colleague. I'm not sure if family members will understand this."*

Nurses in decentralized nursing systems explained that they have learned to deal with these issues due to the already present extensive division of the ward into care sectors, and do not regard this as being problematic. On these wards, questions are referred to the responsible nurse, nurses ask information to each other first before assisting a patient assigned to another nurse, and have social moments if there is time left after all patients were cared for.

Patient participation. The nurses identifying patient participation as a barrier, admit that their knowledge on the exact meaning of patient participation is limited. When they are talking about patient participation they often refer to the right of the patient to take decisions in their own healthcare. The nurses indicate to be reluctant to such a (co-)ownership as they think this will make the care process more complex and will disrupt the nurses' organization of care.

> *"It is impossible for me to take into account all the wishes and expectations of the patients in my planning of care. I just don't have the time to do this and I want to stay in control (of my own time-use)."*

Most of the nurses referring to this interpretation of patient participation admit to limit their communication towards patients concerning their care process in order to prevent additional tasks. Unlike their colleagues, the interviewed nurses working on wards with a devolved nursing system, were mostly advocating for more patient participation. They indicate that patient participation helps them in working more efficiently and reduces errors. Having the bedside shift report as an additional moment for information transfer only adds to this goal.

> *"The patient should be central during my shift. He's the only one that is present 24/7. His insights and feedback actually help me during my shift and prevent unnecessary or wrong care actions, which speeds things up."*

On decentralized wards, nurses indicated that for the most of them, implementing bedside shift report meant the possibility of involving patients more in the care process on a daily basis, which they supported. Nurses expressed the expectation to inform patients (and their families) on a more effective way by involving them during the shift handover. Moreover, they hoped that by having the patient present during the shift handover, ar-

rangements with the patient could be instantly made and the patient's concerns could be better taken into account.

Staff's attitude towards bedside shift reporting. An important facilitator of the willingness to implement bedside shift report is the actual belief in the attributed efficacy of the bedside shift report-method by a majority of the nursing team. If a majority has a positive idea of bedside shift report, nurses indicate that the entire team is willing to test the method although some practical issues or single opponents remain. In contrast, overall reluctance in the nursing staff towards the method had a negative impact on the nurses' perceptions on the future success of bedside shift report.

> *"If the majority of my colleagues are not convinced of bedside shift report, it will be very difficult for me to keep on continuing with the bedside shift report."*

Nursing teams in a two-tier system have less confidence towards using bedside shift report. They explain that the bedside shift report will change things for the worst, making the organization of care more difficult, unpractical and unnecessary more complex. On wards with a centralized nursing or devolved nursing system, nursing team overall regard the implementation of bedside shift report as a positive evolution. Most nurses in a centralized nursing system see it as an opportunity to professionalize more and gain more responsibility. Most nurses in devolved nursing system think it is the next logical step in their patient-centered approach.

Head nurse's role. Between the wards, nurses reported an ambivalent role concerning the role of the head nurse in implementing bedside shift report. On all wards head nurses were the designated leaders to implement and support the method. But, on wards with a centralized or two-tier system, they are also often a central point of knowledge on patient care, making them indispensable during a collective shift handover. Therefore, by implementing bedside shift report, they would have to give up this position, which nurses indicate would be difficult. The role of the head nurse is often endorsed by physicians who demand a central contact and a single person to accompany them during their patient visits, by head nurses themselves who find it difficult not be supervising clinical care, or by nurses who want head nurses to be responsible for patient care. Some head nurses also had their doubts about the competences of their nursing staff to talk to physicians and being solely responsible for their patients. On these wards, some nurses indicate that the head nurses' behavior give them a safe and stress-free feeling while other nurses point out that they suspect that their head nurse prefers not to delegate this clinical role.

> *"Our head nurse won't easily leave her position as clinical leader of daily care. The physicians demand that she is up-to-date on all patients, and to be honest…it makes my work more easy as well."*

On wards with a devolved system, physicians visit patients in the presence of the assigned nurse, reducing the head nurse's clinical role. Head nurses on these wards have a more facilitating and management role, meaning that they organize staff allocation and are responsible for operational management. In case of sudden staff shortage or work pressure for the nursing staff, they will work in nursing care, but the primary responsibility for the patient remains for the designated nurse. These head nurses also have a moderating role in the behavior of the physicians so that they will adhere to ward rules, like the hours for ward rounds.
Overall, the head nurses' role and behavior is described by both nurses and head nurses as an essential influencing element for the nursing care system on the ward.

The physician's role and nurse-physician communication. According to nurses on some wards, physicians expect a central point of contact with immediate availability, for both ward rounds and questions. During office hours, nurses designate their head nurse as the primary responsible person for this role as they themselves are occupied with direct patient contact and have to provide care. Consequentially, the head nurses possess essential clinical information and thus expertise on which the nurses are dependent to take care of the individual patient. Outside office hours, it is perceived that physicians tend to address a random nurse on the ward with their questions. Therefore, nurses report that they feel safer to have basic information on all patients on the ward in order to answer the physician. Nurses report that both situations make it more complicated to be assigned to a limited number of patients on the ward and show the need to have a shared shift report of all patients with all nurses, including the head nurse.

> *"I'm not feeling comfortable to say to a physician: those are not my patients, you will have to wait for my colleague. You know how physicians hate it when they have to wait."*

The opinions above were less expressed on wards where the physicians perform the ward round with the designated nurse, more often a standard procedure in a devolved nursing system than in two-tier or centralized systems.
Nurse-physician communication, which is linked to the physicians' role, is perceived as both barrier and facilitator by the nurses, depending on the quality and form of the communication. When communication between physicians and nurses is inadequate or indirect (e.g. via patient files or head nurse), nurses are more reluctant to transfer information in front of the patient as they fear they will give incorrect or outdated information. Some nurses also express a distress of breaking professional confidentiality. Nurses that identify nurse-physician communication as a barrier, seem to intentionally communicate superficially with their patients. Such behavior is often reported on wards with a two-tier system or centralized system.

> *"As a nurse we are not always aware about what our patient's already know [...] it's not our task to share medical information. We are not aware of what the phy-*

sician already shared. It's not our task to share such information for the first time with patients, but I'm afraid of making a mistake"

In contrast, when communication between nurses and physicians is direct, nurses are less reluctant and are optimistic of sharing information in front of the patient as this will enable the latter to ask questions and have more insight in their care process. A frequent collaborative round of the assigned nurses and physicians is perceived as a positive and enhancing element. Direct contact between nurses and physicians was more often seen on wards with a devolved nursing system.

Time for the shift report. The perception of the time needed for the current handover was very important to make decisions on whether or not bedside shift report could be implemented. None of the interviewed nurses are willing to do extra time as a consequence of the bedside shift report and all nurses believe that the shift handover at the bedside would take longer than a traditional shift handover because the patient is being involved. When nurses already experience time pressure during the shift handover, they are more reluctant to using bedside shift report. Nurses experiencing time pressure regularly complain about interruptions during the shift report, mostly by physicians and family members of admitted patients. Such complaints are more often heard on centralized and two-tier systems, where a handover is executed with all nurses about all patients.

"I think that the shift report will take longer than usual because…when patients see two nurses at their bedside, they will ask for practical things like going to the toilet. […] Patients will be able to ask questions which are hard to refuse."

When nurses have the idea that the shift handover is already efficient and no additional time will be needed, they are neutral to the impact of time on the bedside shift handover. This is more common on wards with a devolved nursing system, where nurses report to have more than sufficient time to perform the handover, because they have a limited number of assigned patients.

Role of colleagues. A number of nurses in two-tier and centralized systems express an eagerness and willingness to be individually responsible for a number of patients but felt restrained by their colleagues to work individually. In their opinion, these colleagues felt more comfortable in a team-based (e.g. two-tier) or task-oriented (i.e. centralized) environment because they pass tasks for which they do not possess the competencies. On wards with a devolved nursing system, nurses express a stronger confidence in the competences of their colleagues than in other systems and explained this confidence is rooted in the fact that they have always worked individually.

"I would not want anything else than having my own patients. If my colleagues can't work up to these standards, they should not work here."

Table 3: overview of the identified barriers and facilitators in relation to the nursing care system

	Element	Nursing care model		
		Devolved	Two-tier	Centralized
invariable elements	Confidentiality issues	Barrier*	Barrier	Barrier
	Non-native speakers	Barrier	Barrier	Barrier
	Hospital processes	Barrier/neutral‡	Barrier/neutral	Barrier/neutral
	Structured handover	Facilitator#	Facilitator	Facilitator
	Patient's competence	Facilitator/barrier	Facilitator/barrier	Facilitator/ barrier
	Patient's duration of stay	Facilitator	Facilitator	Facilitator
variable elements	Loss of socializing, Collegiality and overviews	Neutral	Neutral/barrier	Barrier
	Patient participation	Facilitator	Barrier	Barrier
	Staff's perception towards bedside shift reporting	Facilitator/neutral	Barrier	Facilitator/ neutral
	Head nurse's role	Facilitator	Neutral/barrier	Barrier
	Nurse-physician role and nurse-physician communication.	Facilitator	Barrier	Barrier
	Time for the shift report	Neutral	Neutral/barrier	Barrier
	Role of colleagues	Neutral	Barrier	Barrier

*Barrier: the element is identified as a threshold, pitfall or concern that made nurses less cooperative to implement bedside shift reporting

‡Neutral: nurses have no opinion on the element in being positive or negative

#Facilitator: the element is perceived as an advantages that support the implementation of bedside shift report

6. DISCUSSION

The aims of this study were to (1) identify barriers and facilitators for implementing bedside shift report, and (2) to determine how these barriers and facilitators relate to the nursing care system on the ward. Concerning the first study aim, the study identified several barriers and facilitators for bedside shift reporting that have been reported before: fear of losing overview, losing a moment for socializing with the team, confidentiality issues, a structured handover and the patient's competence, and time-use during the bedside handover. With our study, the generalizability of these elements is confirmed even more (Gregory et al., 2014; Anderson et al., 2015; Mardis et al., 2016). Next to the confirmation and adding to the generalizability of previous findings, this study adds new elements that can act as barrier or facilitator to the body of knowledge concerning bedside shift report: the role of colleagues, physicians and nursing supervisors, the confidence in bedside shift report, the native tongue of patients, hospital organization, and the patient's duration of stay.

Concerning the second study aim, the study determined that some elements can be both barriers and facilitators, depending on characteristics on the ward. A main conclusion is that the changeability of these items is not only limited to the nursing care system, but that perceptions about their patients also play an important part.

Concerning care organization, respondents indicated that a devolved nursing system was the leading example to organize nursing care on the ward as each nurse was allocated to a fixed number of patients during their shift. On most wards, respondents subsequently mentioned that practical adjustments, like task assignment, had to be made in order to ensure the efficient workflow of the ward. From the nurses' point of view, themselves or their colleagues, physicians and their head nurses were responsible for these adjustments. Incongruence between the ideal nursing system and the actual nursing system are reported to cause problems like inter-professional friction and unclear communication (Sjetne et al., 2010). Our study provides indications that unclarities and incongruences between the alleged nursing care system used and the actual system used could mean that there are more barriers than expected in practice at the start of implementing bedside shift report. Therefore, correctly identifying the right care model could be of high use for preparing the implementation of bedside shift report and which role the head nurse plays. The role of the latter is important as Lashinger and Leiter (2006) have shown that nursing leaders have an important role in supporting a nursing care system and stimulating a collaborative relationship between nursing staff and physicians.

Concerning the nurses' perceptions about patients and patient participation, not all wards included in this study were motivated to implement bedside shift report to improve patient participation. Moreover, for a number of wards, the main accelerant was the demand for more structure in the shift report and minimizing the loss of information. More patient participation was rarely a major incentive, except for a number of nurses in a devolved nursing care systems. Patient participation was even referred to as a barrier by nurses in other care systems. In their editorial Dewing and McCormack (2017) point out that patient-centeredness refers to more than a compassionate nurse-patient relationship and an acknowledgement of the values, choices and preferences of patients. Only focusing on these two elements leads to an unhelpful simplification of the concept. For them, patient-centeredness refers to a specific culture and organization, and cannot be technically applied. Our study findings seem to indicate that such a culture had a higher chance of being found in a devolved nursing systems. In two-tier or centralized nursing care systems, where team-spirit is of significant importance to 'get the job done', often show lower responsibility and accountability levels in individual nurses (Fairbrother et al., 2010). Also, several studies have confirmed this reluctance in nurses' behavior during the bedside shift report as they actively take steps to exclude the patient (Spinks et al., 2015; Tobiano et al., 2017).

The results indicate that a significant amount of the perceived barriers of bedside shift report are linked to the practical organization of a nursing ward and a hospital. This is not surprising. The traditional shift report – where nurses sit together in the nursing station – is a long lasting tradition in nursing, has not changed drastically throughout the years and is a moment used by nurses to plan the nursing care on the ward (Kitson

et al., 2014). The results show a strong entanglement with other elements, indicating that changing the nurses' shift report should include more than just changing the process of the handover. Adjustments in the ward's and hospital organization to facilitate the use of bedside shift report, like sufficient time, should also be made. As one nurse puts it:

> *"You have to realize that changing the handover will need and cause more changes on the ward. I mean…the idea is nice, but it is more than changing the handover… it will resemble a make-over".*

In conclusion, it is hypothesized in this study that current nursing systems would impact on the success of implementation of bedside shift report. Although some generic barriers and facilitators for successful implementation of bedside shift report can be brought in relation to the nursing care system, our data suggest that there are also other influencing factors. As part of a systematic approach (Grol et al., 2005), it is important to identify the barriers or facilitators concerning the implementation of an intervention. Still, it remains uncertain to which extent these items will actually be barriers or facilitators in the individual setting, as contextual and subjective elements can be of importance as well (Ajzen and Fishbein, 1980; van de Glind et al., 2012). With this study, we have tried to provide more clarity in the relation between a ward's organization and the perceived barriers and facilitators of bedside shift report, and have succeeded by linking some barriers and facilitators of bedside shift report to the nursing care system on a ward. There are strong indications that evolving towards a devolved nursing system, will reduce barriers, resistance and reluctance for implementing a bedside shift report. But the success of this evolution is also dependent on the major players on a ward willing to change their behavior.

6.1. Limitations

Although this study systematically, collected, organized and interpreted of textual material from interviews in order to investigate experiences by people (Malterud, 2001b), this study is deliberately not labeled as a qualitative study. Due to the goal of this study, a classic qualitative paradigm did not fit the needs and was not cost-effective. A pragmatic, descriptive approach with qualitative elements was chosen, which lead to four differences, and therefore possible limitations concerning data analysis, in comparison to traditional qualitative studies.

First, in contrast with the traditional process of qualitative research, the interviews were not transcribed verbatim. This is often referred to as a central element to safeguard the reliability and validity, and veracity of qualitative data collection (MacLean et al., 2004). Due to the amount of conducted interviews, transcription was not feasible nor advisable. Our goal was to look at content and not to create deep insights in processes. To assure reliability, a theoretical model for analyzing non-transcribed interviews (Halcomb et al., 2006) was used and researchers' triangulation was increased. This increased researchers triangulation also assured 'staying naïve' throughout the study. Second, the

model of Halcomb et al. (2006) contrasts with more traditional methods of qualitative research because of its pragmatic fundament. Using pragmatism often offers disruptive views and therefor new perspectives on society, creating new insights and understanding (Morgan, 2014). It should be stressed that pragmatism in this case does not refers to 'practical', but has a deeper philosophical nature. A pragmatic approach has – in comparison to older, more dogmatic approaches – more room to deviate. Due to the inclusion of the description of nursing systems, which could be viewed as more quantitative matter, such an approached seemed advisable. We used universal criteria to support rigor (Tracy, 2010): self-reflexivity about subjective values of the researcher(s); transparency about the methods and challenges; methods and procedures that fit the stated goal. Third, the number of included interviews goes beyond the point of data saturation (O'Reilly & Parker, 2012). To define the number of interviews, a minimum for each separate wards was set. This was a necessity in order to be able to determine differences in nursing care systems, enhance validity as both supporters of and nurses who opposed the implementation were also included (Morse, 2015); and gave every nurse on the ward the possibility to be interviewed. The latter can be seen as an alternate strategy to reduce resistance for implementation (Tyler et al., 2014). While qualitative studies are often limited to studying a specific issue or phenomenon in a focused context (Lueng, 2015; Morse, 2015), this study was performed in multiple settings. The similarities with international reviews on the topic, as described in the discussion, indicate that there is, with relative certainly, a common body of knowledge between settings. This strengthens the possibility that our findings are generalizable.

Moreover, it is important to point out two limitations concerning the conduction of the interviews. First, by using the contingency model of Van Linge (1998) and results from previous studies (Schillemans et al., 2010; Jeffs et al., 2013b; Gregory et al., 2014; Sand-Jecklin & Sherman, 2014), our interview guide is in danger of being "leading" (Polit & Beck, 2012). We retained the mode of Van Linge due to its possible merits for this study, but in order to prevent possible bias researcher's triangulation was enhanced and three open ended questions were also added to the questionnaire to ensure that nurses could also provide in elements not included in the used framework. The identification of new barriers and enablers in this study showed that this strategy was effective. Second, the interviews were conducted on the ward. Although this had the advantage of proximity (e.g. the interview was easy accessible for nurses), the same proximity could also results in possible bias. Amongst others, the interview could possibly be overheard by others or nurses could experience some stress to 'get-back-to-the-job' as soon as possible. Therefore, interviews were conducted in a remote room where interruptions were non-existent, was sound proof, and sufficient time was provided by the head nurse to conduct the interviews.

Finally, regarding future research, the authors point out that in the results of this study, underlying processes have come to the surface that could benefit from further and specific analysis. While these processes were not the aim of this study, future research should look into topics like control, professionalism, responsibility and accountability in relation to bedside shift report and nursing care systems using a more comprehensive qualitative method than the one used in this study.

7. CONCLUSION

This study identified several perceived barriers and facilitators for implementing bedside shift report on inpatient nursing wards in general hospitals before implementation. Most of these barriers have been reported in international literature, confirming the commonalities between countries and adding new elements: the role of colleagues, physicians and nursing supervisors, the confidence in bedside shift report, the native tongue of patients, hospital organization, and the patient's duration of stay. When implementing bedside shift report, one should take into account that the shift report is often a nursing tradition based on habits and, by using a bedside shift report, it is changed dramatically and affects the organization of nursing care on a ward. By linking barriers and facilitators to the nursing care systems on the wards, it was identified that the used nursing care system can reduce or increase the number of barriers for implementing bedside shift report, or even be a facilitating factor. Still, not all barriers or facilitators were linked to the nursing care system. This indicates that evolving towards a decentralized nursing care system is an important implementation strategy for bedside shift report, but perhaps insufficient. Hospital organization and the nurses' perceptions about patient participation should also be taken into account when forging a strategy for implementing bedside shift report.

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Chapter 6

CONDUCTING A BEDSIDE SHIFT REPORT: AN OBSERVATIONAL MULTI-CENTERED STUDY [5]

5 Chapter based on: Malfait S, Eeckloo K, Van Biesen W, Deryckere M, Lust E, & Van Hecke A (2018). Compliance with a structured bedside handover protocol: an observational, multicentred study. International journal of nursing studies, 84, 12-18. 10.1016/j.ijnurstu.2018.04.011

Background: Bedside shift report is the performance of the nurse-to-nurse shift handover at the patient's bedside. The method is increasingly used in nursing, but the evidence concerning the implementation process and compliance to the method is limited.

Objectives: To determine whether staff presented information during the bedside shift report in accordance with a structured content approach and whether there were differences between wards regarding the compliance to this content protocol.

Design: A multicentred observational study with unannounced and non-participatory observations one month after the implementation of bedside handovers with a structured content protocol (n=638).

Settings and participants: Observations of individual patient handovers between nurses from the morning shift and the afternoon shift in 12 nursing wards in seven hospitals (five surgical; four medical rehabilitation; three geriatric) in Flanders, Belgium.

Methods: A tailored intervention of bedside shift report with a structured content approach was developed, and nurses were trained accordingly. One month after implementation, a minimum of 50 observations were performed, with a checklist, in each participating ward. To enhance reliability, 20% of the observations were conducted by two researchers, and inter-rater agreement was calculated. Data were analyzed using descriptive statistics, one-way ANOVAs and multilevel analysis.

Results: Average compliance rates to the structured content protocol during bedside handovers were high (83.63%; SD 11.44%), and length of stay, the ward's specialty and the nursing care model were influencing contextual factors. Steps that were most often omitted included identification of the patient (46.27%), the introduction of nurses (36.51%), hand hygiene (35.89%), actively involving the patient (34.44%), and using the call light (21.37%). Items concerning the exchange of clinical information were executed more correctly. Absence of the patients (27.29%) and staffing issues (26.70%) accounted for more than half of the non-executed bedside shift reports. A bedside shift report took 146 seconds per patient.

Conclusions: Compliance to the structured content during bedside handover was high, indicating that the execution of a bedside shift report is a feasible step for nurses. The compliance rate was influenced by the patient's length of stay, the nursing care model and the ward's care specialty, but their influence was limited. Future implementation projects on bedside shift report should focus sufficient attention on standard hospital procedures and patient involvement. High rates of failure to deliver the bedside handover signal a hesitation in practice to use bedside shift reports.

1. INTRODUCTION

The bedside shift report, the nurse-to-nurse handover performed at the patient's bedside (Anderson & Mangino, 2006), is gaining rising interest in nursing due to its claimed positive effects on patients', nurses' and clinical outcomes (Gregory et al., 2014). Despite these reported advantages, a comprehensive scientific body of knowledge based on rigorous and large-scale studies of using a shift-to-shift handover at the bedside is lacking (Smeulers et al., 2014). Most studies have been performed on a small scale or during a short period of time (Gregory et al., 2014; Malfait et al., 2016). Moreover, next to measuring the effectiveness and impact of bedside shift report, the characteristics of how the bedside shift report is performed are largely unknown (Clarke & Presaud, 2012). This is in contrast to the current paradigm in nursing science, stating that feasibility and description of the implementation process of quality improvement methods are essential (van Achterberg, 2013).

Current studies on the bedside shift report describe the occurrence of unstructured bedside shift reports with little cohesion (Laws & Amato, 2010) and behavior by nurses to prevent the patient from participating (Evans et al., 2012). Furthermore, there is no clarity about the exact time-use of bedside shift reporting (Anderson & Mangino, 2006; Gregory et al., 2014). The persistent use of unstructured bedside handovers should especially raise concern. Unstructured handovers are an important cause of medical errors and breakdowns in communication (Anderson & Mangino, 2006). Structured handovers, at the bedside or not, are essential for safe and comprehensive information transfer between nurses and should be used in practice (Riesenberg et al., 2009). The increasing use of bedside shift reports (Ferguson & Howell, 2016) underlines the need for such structured handovers even more, but studies on structured content during bedside shift reports are limited (Novak & Fairchild, 2012; Smeulers et al., 2014; Johnson et al., 2016); failing to use a structured approach might undermine the improved patient safety reported for bedside shift reports (Gregory et al., 2014).

Providing more evidence about the implementation process of bedside shift reporting (Candy et al., 2011), in combination with a structured handover, is important for nurse practitioners and administrators, and helps overcome the current gap between practice and scientific knowledge (Whittemore & Grey, 2002). Determining the compliance to a structured intervention creates insight in the reasons for suboptimal performance, is important to protect patients from the negative consequences of substandard adherence (Santacroce et al., 2004), ensures patient safety and avoids ethical concerns or questions about professionalism (Van Achterberg & Sales, 2011). For structured handovers, all of these factors are applicable. Therefore, the goal of this study is to describe the compliance to an intervention where bedside handovers are combined with structured handover content.

This research is part of a larger multicentre, matched-controlled and longitudinal study of the feasibility, appropriateness, meaningfulness and effectiveness of bedside shift reporting (Malfait et al., 2016), which is currently ongoing in the Flemish-speaking part of Belgium. On a range of wards, the traditional handover was replaced by a structured-content bedside shift handover, in which patient participation and nurse-to-nurse

communication were essential elements. For each of the intervention wards, a control ward was added. The study used a mixed-method research design that included questionnaires, interviews and observations to answer the research question. One of the main advantages and assets of this study, in comparison to previous studies (Smeulers et al., 2014), was the multicentre approach, which included several hospitals and a variation of specialized nursing wards. This approach enabled insight across contexts (Van Achterberg & Sales, 2011). The design of the study was primarily based on the medical research council (MRC) framework (2000, 2008, 2015). An essential part of this MRC framework was evaluating whether the intervention was correctly implemented and complied with in practice by determining compliance with the intervention, which was incorporated in the study.

2. AIM

The observational study aimed to determine whether staff presented information during bedside shift reports in accordance with a structured content protocol, following Introduction-Situation-Background-Assessment-Recommendations-Readback (ISBARR), and whether there were differences between wards regarding compliance with this structured content protocol.

3. MATERIALS AND METHODS

3.1. Recruiting, settings and participants

At the beginning of the study, a call for participation was sent out to all general and university hospitals in Flanders together with the research protocol (Malfait et al., 2017). When hospitals were willing to include wards in the study, an exploratory meeting took place with the head nurse and the chief nursing officer to discuss their eligibility in the study. Wards were eligible for participation in the study if they did not practice bedside shift reporting and no major changes (e.g., merger) were made or ongoing on the ward or in the hospital. Twelve wards in seven hospitals engaged in the study: five surgical wards, four wards for medical rehabilitation and three geriatric wards. As one of the conditions of the overall study, was to include different contexts (Van Achterberg & Sales, 2011; Smeulers et al., 2014; Malfait et al., 2017); the settings of the wards differed substantially. An overview of the settings can be found in Appendix 6.

3.2. The intervention: development, training and process

Bedside shift reporting is an intervention in which, when approved by the patient, the nurse-to-nurse handover is performed at the patient's bedside (Anderson & Mangino, 2006). To develop the intervention, three steps were taken. First, a draft intervention was developed. Because a predefined structure is essential for optimal execution (Novak & Fairchild, 2012), different methodologies for structuring a handover were explored (Riesenberg et al., 2009). The ISBARR-structure was chosen because ISBARR provides a preparatory step (i.e., Introduction) and a summarizing step (i.e., Readback), is commonly known in Belgian healthcare and is relatively easy to learn (Randmaa et al., 2014). Based on experiences from a pilot study (Schillemans et al., 2010), the bedside shift report would only be performed from the morning shift to the afternoon shift to avoid unnecessarily waking patients. Second, both patients and nurses in the included wards tailored the intervention to the specific demands of the ward through an adapted, three-phased version of accelerated co-design: (1) patients and nurses individually, (2) patients and nurses in focus groups and (3) patients and nurses together (Locock et al., 2014; Malfait et al., 2016). Third, each tailored intervention was formalized in a checklist and peer-checked by the nursing staff and the ward's supervisor to ensure completeness. Variation in the composition of the checklists between wards was minimal. Only the used jargon differed, not the used constructs.

To train the nurses, an educational program was used. This educational program combined theoretical knowledge transfer (i.e., slideshow presentation and an information brochure) with practical, hands-on workshops in which the intervention was simulated and trained in small groups of nurses. Depending on nurses' needs, as based on individual diagnostic interviews to determine barriers and facilitators for implementation (Malfait et al., 2017), a training of two hours (concerning bedside shift report) or a training of six hours (concerning patient participation, bedside shift report and ISBARR) was given.

The process of the bedside shift report was as follows: At the beginning of the afternoon shift, all nurses (including the nurses from the early shift) gathered in the nursing station. A short safety briefing, discussing ward-related issues, was discussed in one or two minutes. After that, each nurse of the afternoon shift teamed up with the nurse from the early shift who was assigned to her section of the ward. They would enter the first patient's room and provide a handover, using the structured content protocol. For patients whom both nurses knew (i.e., third shift in a row), the background and assessment section could be skipped. This process was continued until all patients in the section were discussed. If patients were absent, nurses would deliver the shift report at the nursing cart.

3.3. Observations (data collection)

Data were collected between October 1, 2016, and January 30, 2017, by use of the developed checklists and by the primary researcher. During the observations, a nurse from the morning shift was followed while she was delivering the structured-content bedside handover to her colleague of the afternoon shift. An example of the checklist used to register which steps were performed and which steps were forgotten is provided in Appendix 7. The days of the observations were randomly chosen and included both weekdays and days in the weekend. All observations were unannounced and non-participatory. A goal of 50 individual patient observations per ward was set as a minimum in the research protocol (Malfait et al., 2017). This accounted for approximately 5 percent of all individual patient bedside shift reports on each ward during the data collection period.

3.4. Analysis

During the observations, several other parameters were also registered in addition to the checklist. First, the time needed to execute the bedside shift report per patient was registered. This additional observation was mainly based on the fact that in current literature, only one study with indications of time-use could be found (Johnson et al., 2016). Time-use was recorded with a chronometer. Time registration was started when nurses left the nursing station to provide a handover at the bed of their first patient, and interval times were taken when nurses started walking to the next patient. At the end of all handovers, time was stopped when nurses engaged in patient care. Second, the reasons for not conducting a bedside shift report were identified by asking nurses why they discussed a patient case in the corridor. These questions were asked directly after the handover.
Compliance with the structured content protocol was calculated by dividing the number of executed steps by the number of steps that had to be executed:

$$\text{compliance (\%)} = \frac{\text{(number of executed steps)}}{\text{(number of steps in protocol)}}$$

Next to descriptive statistics, a one-way ANOVA was used to determine whether there were differences between the types of wards concerning the reasons for not delivering a bedside shift report. A linear, mixed-model analysis, or multilevel analysis, was used to determine differences between wards. This method was preferred over one-way ANOVAs because it overcame possible difficulties for the multilevel data clustering (Jaeger, 2008). The ward (level 1) and hospital (level 2) were used as random effects to overcome problems with possible clustering (Heck et al., 2012). To enable post hoc analyses of the influence of contextual determinants (van Achterberg, 2013), several structure- and workforce-related variables were defined before data collection and registered per ward. The type of nursing care model on the ward was identified by the model of Johnson and Cowin (2013; devolved/two-tier/centralized) through individual interviews with nurses and head nurses. The type of ward (geriatric/surgical/medical rehabilitation) was

identified through the official governmental codes of the ward. The hours of training on the use of bedside shift reporting and ISBARR (>2 hours/≤2 hours) were registered by the researchers. The average handover time per patient (≤2 minutes/>2 minutes) was calculated per ward by use of the researchers' time calculations. The length of stay (<4 weeks/≥4 weeks) was identified, based on governmental indicators per ward. The nurse/patient rate (<1 on 10/≥1 on 10) was calculated by use of the working schedules during the observations. Analyses were performed by use of SPSS 24.0 (IBM, 2016).

3.5. Reliability of the data

To determine the quality and correctness of the observations the primary researcher made, 20% of all observations were performed concomitantly by a second researcher. This enabled the calculation of the inter-rater agreement (Cohen's kappa or Cohen's κ). According to Landis and Koch (1977), inter-rater agreement between 0.61 and 0.80 can be regarded as substantial. Inter-rater agreement higher than 0.810 indicates an almost perfect inter-rater agreement.

3.6. Ethical considerations

The study was approved by the central ethics committee of the Ghent University Hospital (B670201627044) and the local ethics committees of each hospital. Informed consent from both nurses and patients was obtained before the observations. All patients provided informed consent for receiving bedside shift reporting during their entire admission.

4. RESULTS

In total, 638 observations were performed in the 12 wards. On average, there were approximately 53 observations per ward (mean 53.17; SD=1.99). No ward had fewer than 50 observations.

4.1. Most omitted steps

When looking at the types of ward separately, five steps in the protocol were omitted most frequently. Although the ranking of these five steps differed, they were similar between the different types of wards. The most commonly omitted step was the hospitals' procedure for identifying the patient (i.e., asking the patient's name, noting the date of birth and checking the identification bracelet). The second most omitted step was that, at the beginning of the bedside shift report, the incoming nurse and patient were not introduced to each other. Following the hospital standards for hand hygiene was the third most omitted action on all wards. The fourth most omitted step was asking the patient whether (s)he had any more questions or things to add at the end of the

bedside shift report. The fifth most omitted step was that the nurses forgot the use of the call light to indicate they are in a room. An overview of the most omitted steps during the process of bedside shift reporting, and the compliance rates, is provided in Table 1. Per omitted step, the related phase of ISBARR was reported.

Table 1: Overview of the most frequently omitted steps during delivery of the bedside shift report and compliance percentages of the structured handover for each of the wards' specialties

Item in protocol	Phase in ISBARR	All wards	Geriatric wards	Surgical wards	Medical rehabilitation
Identification of the patient according to the procedure	Identification	***46.27% (1)***	***62.25% (1)***	***41.52% (1)***	***36.25% (1)***
Introduction of nurse to patient and vice versa	Identification	***36.51% (2)***	***54.97% (2)***	***30.99% (4)***	***25.00% (5)***
Hand hygiene	Basic nursing process	***35.89% (3)***	***45.70% (3)***	***36.26% (3)***	***26.25% (2/3)***
Asking the patient whether (s)he has anything to add or has questions	Basic nursing process	***34.44% (4)***	***36.42% (4)***	***40.94% (2)***	***25.63% (4)***
Using the call light	Basic nursing process	21.37% (5)	19.21% (5)	18.71% (5)	26.25% (2/3)
Closing the curtains (in semi-private rooms)	Basic nursing process	8.92%	10.60%	7.60%	8.75%
Medical history or relevant co-morbidity	Background	8.09%	7.28%	14.62%	1.88%
Latest test results (if already addressed by physician)	Background	7.05%	8.61%	10.53%	1.88%
Reason for admittance/ diagnoses	Situation	4.77%	10.60%	2.92%	1.25%
Proposed treatment and next step	Recommendations	3.94%	4.64%	5.85%	1.25%
Asking visitors to leave the room	Basic nursing process	3.94%	1.99%	7.02%	2.50%
Date of discharge	Situation	3.94%	0.66%	10.53%	0.00%
Providing information on fluid policy	Assessment	2.90%	0.00%	6.43%	1.88%
Clinical situation	Assessment	2.28%	3.97%	2.92%	0.00%
Wound care and bandages	Recommendations	1.87%	0.00%	4.09%	1.25%
Medication policy	Assessment	1.45%	1.32%	2.92%	0.00%
Mean compliance to the structured content		**83.63% (SD:11.44%)**	**79.38% (SD:11.84%)**	**85.34% (SD:9.19%)**	**85.90% (SD:12.08%)**

4.2. Compliance with the structured content and the influence of contextual factors

Overall, compliance with the structured content was 83.63% on average (SD:11.44%). Only geriatric wards had an average compliance lower than 80%. Based on the mean and standard deviation, it can be concluded that overall, 84% of the bedside shift reports complied with the structured handover with a minimum of 70%.
The linear mixed-model analysis showed several significant differences between groups concerning compliance with the structured content. First, surgical nursing wards had a slightly higher compliance rate throughout the observations. Second, wards with a two-tier nursing care model had lower compliance rates. Third, wards with an average patient's length of stay over four weeks had a lower rate of compliance with the structured content protocol. The hours of training, provided time for the shift report and nurse-patient rate showed no differences in the compliance rates. Table 2 provides an overview of the results of the linear mixed-model analysis to determine differences in compliance rates.

Table 2: Result from the linear mixed-model analysis to determine differences in compliance rate

Variable	Coefficient	Std. error	t	p	95% confidence interval	
					Lower	Upper
Type of ward						
Geriatric	-0.041	0.023	-1.750	0.081	-0.087	0.005
Surgical	0.031	0.013	2.386	0.017*	0.005	0.056
Medical rehabilitation	Reference category					
Care model						
Centralised	-0.080	0.044	-1.823	0.069	-0.166	0.006
Two-tier	-0.034	0.015	-2.314	0.021*	-0.062	-0.005
Decentralised	Reference category					
Training						
≤2 hours	-0.016	0.048	-0.341	0.733	-0.111	0.078
>2 hours	Reference category					
Average time per patient						
≤2 minutes	0.007	0.068	0.100	0.921	-0.127	0.141
>2 minutes	Reference category					
Length of stay						
<4 weeks	0.041	0.011	3.716	<0.001*	0.020	0.063
≥4 weeks	Reference category					
Nurse-patient rate						
<10 patients	0.010	0.021	0.496	0.620	-0.030	0.051
≥10 patients	Reference category					

Model fit: Akaike corrected = -795,534

4.3 Reasons for not conducting bedside shift report

In 28.53% of the observations, the bedside shift report was not delivered. This rate was not different between the types of ward (df=2; F=0.594; p=0.572). Surgical wards failed in delivering bedside shift reports in 35.21% of the observations. Geriatric wards failed in 25.00% of the cases and medical rehabilitation wards in 22.75%. Overall, the most reported reasons for failure to deliver a bedside shift report were patients not being present on the ward (e.g., external consult), staffing issues (e.g., being short-staffed due to illness), and patients sleeping. Although there was variation in the reasons for not conducting a bedside shift report between type of ward, these variations were not statically significant (p=0.054-0.876).
Furthermore, it became apparent from the observations that (1) not a single patient refused to receive a bedside shift report, and (2) nurses decided on their own whether a bedside shift report would be performed. Table 3 provides an overview of the reasons the bedside handover was not delivered.

Table 3: Reasons for not conducting bedside shift report, as reported by nurses

Reason	% (overall)	% (geriatric wards)	% (medical rehabilitation wards)	% (surgical wards)
Patient not on ward	27.23%	7.50%	14.58%	44.68%
Staffing issues	26.70%	45.00%	31.25%	19.15%
Patient sleeping	11.52%	12.50%	27.08%	4.26%
Patient will be discharged today	10.47%	12.50%	4.17%	13.83%
Infectious disease	8.38%	12.50%	16.67%	3.19%
Cognitive/psychiatric disorder	3.66%	5.00%	0.00%	5.32%
Other (e.g., palliative care)	3.14%	0.00%	2.08%	5.32%
Toilet	2.09%	5.00%	4.17%	0.00%
Language issue	2.09%	0.00%	0.00%	4.26%

4.4. Average duration per patient

Overall, the median time needed for a bedside shift report for one patient was 146 seconds. On surgical wards, the median time was similar. Medical rehabilitation wards had a higher median time use, but the range was smaller. Geriatric wards had a lower median time use but a higher variation. Figure 1 provides an overview of the handover time per patient.

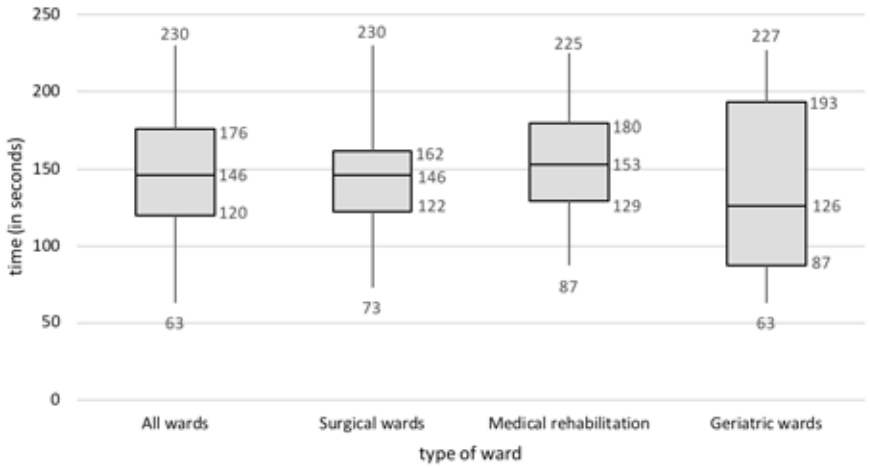

Figure 1: Median handover time per patient, including minimum, Q1, Q3 and maximum

4.5. Cohen's kappa: Reliability of the data

In total, 145 of the 638 observations (22.73%) were performed by two researchers simultaneously. There was high agreement between two observers, with a kappa of 0.81 ($p<0.001$).

5. DISCUSSION

This observational study had two aims: (1) to determine whether staff presented information during the bedside shift report in accordance with a structured content approach following ISBARR and (2) to determine whether there were differences between wards regarding the compliance to this content approach. Based on the results of this study, three important insights about the bedside shift report can be made and added to the current body of knowledge.

First, the overall compliance rates when performing the bedside shift report can be regarded as high, in line with previous reports on intervention compliance (Van Os-Medendorp et al., 2008). This indicates that, with minimal training (max. six hours), a bedside shift report can be executed with an appropriate level of quality and compliance with the structured content. Seemingly, performing a bedside shift report is a feasible process for nurses. Only three influencing contextual factors for the rate of compliance with the structured content protocol are identified in our study, but based on the coefficients, their impact can be regarded as low. Although contextual factors should be taken into account when planning an implementation process (van Achterberg, 2013), in this study

their influence seemed to be limited. This could mean that the implementation of a structured content protocol alongside the bedside shift report should not be limited to certain types of ward. The results also show that the clinical aspects (e.g., wound care and medication) are rarely forgotten throughout the bedside shift report, which has been reported before in qualitative studies (Gregory et al., 2014). In contrast, two groups of steps were often forgotten across wards. The first group was linked to personal interaction with patients: the incoming nurse did not introduce himself or herself to the patient, and the patient was not actively involved. One possible explanation is the avoidance of personal contact to maintain power and control in the patient–nurse relationship (Longtin et al., 2010) and is linked to participation-avoiding behavior. The second group of omitted steps concerns regular and standard hospital procedures such as identifying the patient or adhering to hand hygiene rules. This demonstrates that executing these patient safety–related actions is still not fully embedded in daily practice (Tromp et al., 2012; Westbrook et al., 2011). Training should address these issues, because it would be an adverse effect of bedside shift reporting if suddenly infection rates on wards started rising.

Second, in almost 30% of the observed cases, a bedside shift report was not delivered. Although this is logical in the case of a patient not being present due to surgery or an examination, in other cases the explanation for the unilateral decision by the nurses is more doubtful. The reluctance to use the bedside shift report has been reported before, and is grounded in reasons such as increased accountability and confidentiality concerns (Anderson et al., 2015; Gregory et al., 2014; Mardis et al., 2016). This reluctance can be seen as avoidance behavior by nurses (Tabiano et al.; 2017), which resonates with the fact that in all decisions not to execute a bedside shift report, the opinions of their patients were not taken into account. Such behavior, in combination with the fact that patients were deprived of receiving a bedside shift report and information, can be regarded as participation-avoiding behavior (Longtin et al., 2010). This explanation is strengthened by the fact that in one-third of all observed cases, nurses did not actively ask the patients whether they had any further questions or had something to add. This talking over the patients was seen in other studies (Bruton et al., 2016) and contrasts with enhancing patient participation. It seems that most of the reasons for the failure to deliver a bedside shift report was less founded in logical reasoning than in excusing by 'any reason seems a good reason' for not performing a bedside shift report.

Third, to the best of our knowledge and based on recent systematic reviews on bedside shift reporting (Anderson et al., 2015; Gregory et al., 2014; Mardis et al., 2016), only one study has reported on time-use before (Johnson et al., 2016). Moreover, this study also identifies the range in time-use when performing a bedside shift report, measured over several wards. In doing so, this study enables nursing managers to make a more adequate estimate of the impact of bedside shift reporting on time-use. Because time pressure and overtime could lead to decreased job satisfaction, increased absenteeism and overall burnout (Bae & Fabry, 2014), making a fairly adequate estimation of the effects of implementing bedside shift reports on working hours is important. Unexpected time constraints could result in a more difficult implementation process or even a rejection of the method (Ploeg et al., 2007).

5.1. Limitations of the study

A first and major limitation of this study is the determination of compliance with the structured content protocol only one month after implementation. As shown in other studies concerning compliance (Gould et al., 2017), longer follow-up is needed to avoid secular or seasonal trends. As pointed out (van Achterberg, 2013), follow-up in the long term is an essential next step. In our overall research protocol, this is taken into account to determine the sustainability of the intervention over a longer period (Malfait et al., 2017). Second, the presence of the observer possibly created a Hawthorne effect, leading to socially desirable behavior and increased performance. In defence, the results of this study are similar to previous, qualitative findings, indicating that nurses did not adapt their behavior due to the researcher's presence. Third, digitally recording would have been a more precise methodology to manage the data collection (Johnson et al., 2016), possibly preventing a Hawthorne effect and enhancing reliability of the data. Permission of the ethical boards for this methodology could not be obtained. Therefore, performing the observations with the calculations of Cohen's kappa was chosen as the second best option. Fourth, the study was conducted in a single country, possibly affecting transfer to other countries. The RN4cast, a European study of the nursing workforce, has shown that there are substantial differences in the nursing workforce between countries in terms of education and nurse-patient rates (Aiken et al., 2014). Both education and staffing had a significant impact on patient participation behavior, which is essential during bedside shift reporting (Malfait et al., 2017). The results presented here (i.e., not executing a bedside shift report due to staffing shortage) support this claim. Fifth, by adapting the protocols to the specificity of a ward, generalizability could be endangered; but by adapting and tailoring the intervention to a ward's needs, a greater chance of success was to be expected (Kerr et al., 2014). In reality, differences between protocols were minimal to non-existent.

5.2. Future research

Five elements for future research were identified. Multilevel analyses have shown that there are differences between wards that should be looked at more closely. Increasing insight in the type of ward, care model, and average length of stay could inform practice and provide additional information in adapting bedside shift report practice to the specific aspects of individual wards. Time-use during the bedside shift report should also be looked into further, taking into account possible determinants and explanations for why time-use differs between settings (Gregory et al., 2014). Next, follow-up is needed to determine the sustainability of the intervention and whether compliance remains high. Following up after initial implementation is an important challenge for nursing science (Wiltsey Stirman et al., 2012). The high number of cases in this study when the bedside shift report was not delivered adds quantitative support to previous claims that nurses are reluctant to use the bedside shift report and actively try to avoid patient participation during handovers (Chaboyer et al., 2017). Some of the reasons for not delivering the bedside shift report given by nurses in this study can be seen as examples of such avoidance behavior. For instance, when patients are to be discharged, delivering

a bedside shift report to patients could help prevent post-discharge issues and optimise care transition (Allen et al., 2017). Bedside shift reporting could be beneficial, but it is often not performed for reasons that remain unclear. The reasons for this reluctance should be further investigated. The data from this study show that no patient refused to participate in a bedside shift report. This could indicate that the infringement of privacy is perhaps not such an acute problem as reported by nurses (Anderson et al., 2015; Gregory et al., 2014; Mardis et al., 2016).

6. CONCLUSION

Due to the observational and multicentre character of this study, five contributions to the body of knowledge concerning bedside shift reporting are made. First, high compliance rates after minimal training demonstrates that the nurses have the necessary competence to execute a bedside shift report with the help of a structured content protocol. Second, three influencing contextual factors of the compliance rate could be identified: type of ward, nursing care model, and patient's length of stay. Their impact is limited, which indicates that bedside shift reporting is suitable for most nursing wards. Third, when training nurses in bedside shift reporting, special attention should be given to incorporating standard hospital procedures and involving the patient. Fourth, whereas there might be legitimate reasons for not delivering a bedside shift report, high rates of failure to deliver could indicate a hesitation in practice to use bedside shift reports. Fifth, the needed time per patient for delivering a bedside handover was 146 seconds and could range from 63 to 230 seconds.

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Chapter 7

DOES BEDSIDE SHIFT REPORT REDUCES HANDOVER TIME-USE: AN OBSERVATIONAL STUDY [6]

6 Chapter based on: Malfait S, Van Hecke A, Van Biesen W, Eeckloo K (2017). Does bedside shift report reduces handover time-use? An observational study. Worldviews on Evidence-Based Nursing, minor revisions.

Aim: To clarify the impact of bedside shift reports on the time-use during the shift handover.

Background: Bedside shift report is increasingly used and studied in nursing. Still, unclarities exist about the impact on handover time-use. Revealing the time-use of bedside shift report is important as increased time-use could lead to overtime, lower job satisfaction, and failure in implementation.

Method: As part of a multi-centered longitudinal study, observations with time-measurement were performed. These time-measurements were compared to the time-use before the implementation of bedside shift report.

Results: On average, a bedside shift report takes 2min26sec for one patient. Depending on the previous handover system, the number of patients allocated to each nurse, and the use of a structured handover, time gain or loss can be expected.

Conclusions: Implementing a bedside shift report in nursing practice does not always lead to time gain for nurses but almost always leads to an increase in time-use per individual patient.

Implications for Nursing Management: Before implementing bedside shift report, time-use during the current handover should be measured and placed in perspective to the presence of a decentralized handover system and the use of SBAR. This enables an estimation on time-use after implementation.

1. INTRODUCTION

Bedside shift report is a method in which the shift handover is performed at the patient's bedside (Anderson & Mangino, 2006). The goal of the method is to improve both communication between nurses and communication between nurses and patients (Gregory et al., 2014). As a result of this improved communication, safety incidents (Evans et al., 2011) and re-admissions (Gregory et al., 2014) decrease, and patient satisfaction and participation increase (Gregory et al., 2014). Moreover, there are also some organizational benefits reported like enhanced handover efficiency due to decrease of irrelevant or non-patient related information and the immediate start of direct patient care (Evans et al., 2011), both resulting in better time-use by nurses.

Due to the increased emphasis on socio-economical sustainability, nurses' time-use is increasingly important to healthcare systems. Several studies have identified bedside shift report as an element of significant importance in reducing overtime and financial savings when it comes to shift handovers (Gregory et al., 2014). Combined with the benefits in clinical, nurse-related and patient-related outcomes, this makes bedside shift report a topic of interest for nursing managers.

Still, unclarities and contradicting results about the impact of bedside shift report on time-use remain as some studies show no changes in time-use or even an increase in duration of handover (Gregory et al., 2014, Anderson et al., 2014; Mardis et al., 2016). This might be due to the absence of multicenter and longitudinal studies on bedside shift report (Gregory et al., 2014; Malfait et al., 2017), making it impossible to make comparisons between contexts. Clarifying this issue is essential for nursing managers in view of the overtime and additional costs associated with extensive and inefficient handovers (Tobiano et al., 2017). In addition, overtime leads to increased job dissatisfaction, absenteeism, burnout (Bae & Fabry, 2014), and could result in additional costs in the nursing workforce of a hospital. Moreover, time-constraints increase the chances that the implementation of the method will fail (Ploeg et al., 2007).

2. BACKGROUND

This study is part of a longitudinal study on the feasibility, appropriateness, meaningfulness and effectiveness of bedside shift report, which is conducted in multiple hospitals (Malfait et al., 2017). In a previous stage of the study, observations were conducted to determine compliance the intervention (Malfait et al., under revision). On top of the observations, time-use was also mapped. Due to the importance of time-use in nursing practice (Bae & Fabry, 2014), a more comprehensive and specific study on the data concerning the time-use is needed (Malfait et al., under revision). To enhance insight in implementation processes and the impact of bedside shift report on nursing practice, different settings should be compared (van de Glind et al., 2012; Achterberg, 2013). Previous qualitative research (Johnson & Cowin, 2013) has identified patient caseload and the nursing service system as important elements for bedside shift report, but their impact on time-use during bedside shift report has not been determined.

3. AIM

The aim of this study is to provide insights about the impact of bedside shift reports on the time-use during the shift handover. In order to achieve this goal, the nursing care system and handover model, and the use of ISBARR (introduction-situation-background-assessment-recommendations-readback) will be taken into account as possible influencing factors.

4. METHODS

4.1. Sample

Twelve nursing wards in the Dutch-speaking region in Belgium (i.e. Flanders), divided over six general and one university hospital were included in the study. Participation in the study was based on the ward's own willingness to participate.

4.2. The intervention

Based on a draft intervention of bedside shift report, a tailored intervention for each ward was composed by use of an adapted version of accelerated co-design (Locock et al., 2014). This method places patients and nurses in the position of an active partner. Although differences in the intervention could exist between wards, two essential elements had to be present after implementation. First, essential to the optimal execution of the bedside shift report is having a predefined and structured handover (Novak & Fairchild, 2012), for instance by using ISBARR. The ISBARR-structure was chosen as this structure provides a preparatory (i.e. Introduction) and a summarizing step (i.e. Readback), is commonly known in Belgian healthcare, and is relatively easy to learn (Randmaa et al., 2014). Second, previous research has shown that a decentralized or devolved nursing model is preferable for implementing bedside shift report (Johnson & Cowin, 2013). In a devolved model, patients are allocated to a nurse responsible for all patient care. In practice, the nurse from the early shift and the nurse from the afternoon shift only discuss the patients assigned to them during the handover (i.e. decentralized handover). Such model is opposite to more centralized approaches in which nurses work under supervision of a team-leader and workload of all patients is shared between nurses (Adams et al., 1998; i.e. centralized handover). In such a system, all nurses from the early shift and all nurses from the afternoon shift discuss all patients admitted on a ward. The need to transition to a decentralized nursing system is logical as the bedside shift report is not performed on a central place like the nursing station, but takes place in the patient's room. To ensure optimal patient comfort, the bedside shift report was only performed from the morning to the afternoon shift, to avoid waking up the patient unnecessary in the early morning or evening. Each intervention was formalized in a procedure.

4.3. Data collection and analysis

Before implementation, time-use during the shift handover was mapped by self-reporting. In interviews with nurses and nursing supervisors, their experiences concerning the handover process and duration over the last year was captured. This information was cross-checked against the time-stamps of the working schedules. The interviews were also used to explore whether the two essential elements of a bedside shift report, decentralized handovers and the use of ISBARR, were already present at the start of the study. Additionally, two to five observations on the ward without structured registrations were executed to confirm the information from the interviews and the working schedules. Earliest one month after implementation, a minimum of 50 observations was performed on each ward. In total, 638 individual patient observations were conducted. During the observations, **the total handover time was** timed by the observer, and afterwards divided by the number of discussed patients. All used time, including walking time between rooms and any social activities, were included to provide similarity with the time determination before implementation.
Data was analyzed using descriptive statistics. In order to calculate the differences between the situation before and after the implementation of bedside shift report, a factor was calculated for the overall time-use in the handover and the time per patient. This factor was calculated by dividing the situation before with the situation after implementation. A factor lower than 1 indicates a decrease in time, a factor of 1 indicates no changes, and a factor higher than 1 indicates an increase in time.

4.4. Ethical considerations

The study got ethical approval of the central ethics committee of the Ghent University Hospital (B670201627044) and the local ethics committees of each participating hospital.

5. RESULTS

5.1. Time-use before bedside shift report

In Table 1 an overview of the time-use before the implementation of bedside shift report can be found in combination with the organizational elements that were taken into account. There were differences between the participating wards. Seven out of 12 wards had overtime due to too extensive handovers on a structural base, ranging from 6 to 15 minutes per handover. Fifty percent of the wards (n=6) had a structured handover and used ISBARR. On eight of the 12 participating wards all nurses were present during the handover, in which all patients were discussed. On these wards the amount of discussed patients was logically higher than on the wards with a decentralized system (e.g. handover from nurse to nurse for their designated patients). Time per patient varied between 80 seconds and 180 seconds per patient.

Table 1: overview of the time-use before implementation of bedside shift report

#	Specialty	Time provided for handover	Average time used for handover	Overtime due to handover	Patients discussed during handover per nurse	Handover model	SBAR used	Time/ patient
1	Geriatric	30 m	45 m	yes	30	centralized	no	90 s
2	Geriatric	30 m	36 m	yes	24	centralized	no	90 s
3	Geriatric	45 m	60 m	yes	30	centralized	no	120 s
4	Medical rehab.	30 m	30 m	no	24	centralized	yes	75 s
5	Medical rehab.	30 m	30 m.	no	10	decentralized	no	180 s
6	Medical rehab.	45 m	60 m	yes	30	centralized	no	120 s
7	Medical rehab.	30 m	35 m	yes	20	centralized	yes	105 s
8	Surgical	45 m	60 m	yes	30	centralized	no	120 s
9	Surgical	30 m	40 m	Yes	30	centralized	yes	80 s
10	Surgical	30 m	20 m.	no	8	decentralized	yes	150 s
11	Surgical	30 m	20 m	no	8	decentralized	yes	150 s
12	Surgical	30 m	16 m	no	8	decentralized	yes	120 s

5.2. Time-use after bedside shift report

In Table 2 an overview of the time-use after the implementation of bedside shift report can be found, again in combination with the organizational elements that were taken into account in the study. In comparison with the situation before (Table 1), the differences between the wards are reduced. Due to the implementation of the bedside shift report, all wards have a decentralized handover model and use a structured handover (i.e. SBAR). It should be emphasized that the use of ISBARR was not successful on one ward. Except for one ward, no overtime was made. The number of patients discussed during the handover is reduced on wards that changed to a decentralized handover model. Time per patient varies between 83 seconds and 204 seconds. After handover, nurses almost always immediately engaged in direct or indirect patient care.

Table 2: overview of the time-use after implementation of bedside shift report

#	Specialty	Time provided for handover	Average time used for handover	Overtime due to handover	Patients discussed during handover per nurse	handover model	SBAR used	Time/ patient
1	geriatric	30 m	34 m	Yes	10	decentralized	no	204 s
2	Geriatric	30 m	16,60 m	no	12	decentralized	yes	83 s
3	Geriatric	45 m	26,00 m	no	10	decentralized	yes	156 s
4	Medical rehab	30 m	18.93 m	no	8	decentralized	yes	142 s
5	Medical rehab	30 m	21,83m	no	10	decentralized	yes	131 s
6	Medical rehab	45 m	26.5 m	no	10	decentralized	yes	159 s
7	Medical rehab	30 m	29,67 m	no	10	decentralized	yes	178 s
8	Surgical	45 m	19,00 m	no	10	decentralized	yes	114 s
9	Surgical	30 m.	22,17 m	no	10	decentralized	yes	133 s
10	Surgical	30 m	23.73 m	no	8	decentralized	yes	178 s
11	Surgical	30 m	19.20 m	no	8	decentralized	yes	144 s
12	Surgical	30 m	20,13 m	no	8	decentralized	yes	151 s

5.3. Comparison

In Table 3 a comparison is made between the situation before and after the implementation of bedside shift report per participating ward. Wards were classified based on the change in their handover model and whether they used ISBARR before implementation. Five classifications of wards can be identified. The first classification includes one ward. On this ward, the implementation of SBAR, and thus the intervention was not successful. Although the time for the shift report was reduced with 24%, overtime was still registered because the time per patient more than doubled. In a second group of wards, the handover became decentralized and ISBARR was introduced. The time for the shift report decreased more than half (range: 54% to 68%) and the time per patient slightly increased or remained stable. A third group of wards already had a structured handover with SBAR, but implemented a decentralized handover. Overall time of the handover was reduced by 15 to 45% and time per patient increased by more than 60% (range: 66% to 89%). A fourth group containing one ward, had a decentralized handover, but implemented SBAR. A reduction in both the time for the handover as the time per patient of 27% can be seen. A fifth group of wards, in which both a decentralized handover and ISBARR were already present, showed status quo or increase in time use for the shift report as time per patient (range: -4% to 26%).

Table 3: evolution of the wards concerning time for the shift report and time per patient

#	Specialty	handover model (pre)	handover model (post)	SBAR used (pre)	SBAR used (post)	time shift report*	time per patient*
1	Geriatric	centralized	decentralized	no	no	0,76	2,27
8	Surgical	centralized	decentralized	no	yes	0,32	0,95
3	Geriatric	centralized	decentralized	no	yes	0,43	1,30
6	Medical rehabilitation	centralized	decentralized	no	yes	0,44	1,33
2	Geriatric	centralized	decentralized	no	yes	0,46	0,92
4	Medical rehabilitation	centralized	decentralized	yes	yes	0,63	1,89
7	Medical rehabilitation	centralized	decentralized	yes	yes	0,85	1,70
9	Surgical	centralized	decentralized	yes	yes	0,55	1,66
5	Medical rehabilitation	decentralized	decentralized	no	yes	0,73	0,73
11	Surgical	decentralized	decentralized	yes	yes	0,96	0,96
10	Surgical	decentralized	decentralized	yes	yes	1,19	1,19
12	Surgical	decentralized	decentralized	Yes	yes	1,26	1,26

* A factor that is lower than 1 indicates a decrease in time, a factor which equals 1 indicates no changes, and a factor that is higher than 1 indicates an increase in time.

6. DISCUSSION

This study makes two contributions to the current knowledge of implementing bedside shift report and the needed time to execute a bedside shift report.
First, the results of this study offer a fairly reliable explanation for the current contradiction in scientific evidence concerning the time-use in bedside shift report. By looking at the presence of the two essential elements of a good bedside shift report before and after implementation (i.e. decentralized handover and presence of SBAR), the ambivalent results in literature can be explained (Gregory et al., 2014; Anderson et al., 2014; Mardis et al., 2016).
Second, this study shows the importance of determining the nursing care system beforehand, as has been suggested before (Johnson & Cowin, 2013). As pointed out by Sjetne et al. (2010) determining the nursing care system, and thus the handover model, on a ward by self-identification is often not consistent with the reality. Similar findings of incorrect self-identification were also observed in our study. To determine the correct care system, a classification with detailed descriptions and objective observations of the factual ward organization is needed. Such classification could enable internal and external informants, for example patients, to help determining the care system.
Two remarks should be added to these results. First, economic considerations such as a direct decreased time utilization should not be the main goal of implementing bedside shift report. Our results show that implementing bedside shift report increases direct patient contact on all wards. As shown in the recent study of Lavander et al. (2016), nurses spent 40% or less of their time on direct patient care. Any increase in these num-

bers could lead to both increased patient and nurse satisfaction. By bringing the handover to the patient's bedside, direct patient contact could be increased with six percent (Furåker, 2009) during the entire shift. Second, when implementing a bedside handover and possibly also of evolving toward a decentralized handover model, some essential functions of the handover will get lost. Most importantly, as nurses will not have a shared moment anymore, team cohesion could decrease and values relating to good nursing practice in a team could get lost (Lally, 1198; Kitson et al., 2014). Nursing managers should be aware of this and provide sufficient moments in which nurses can bound (Happell et al., 2013).

6.1. Implications for nursing management

The aim of this study was to clarify contradicting results in current literature concerning the time-use in bedside shift report. Doing so, a reference framework for nursing managers is developed. These insights can assist nursing managers in making fairly adequate estimates on the impact of bedside shift report implementation on the time-use of the shift handover.

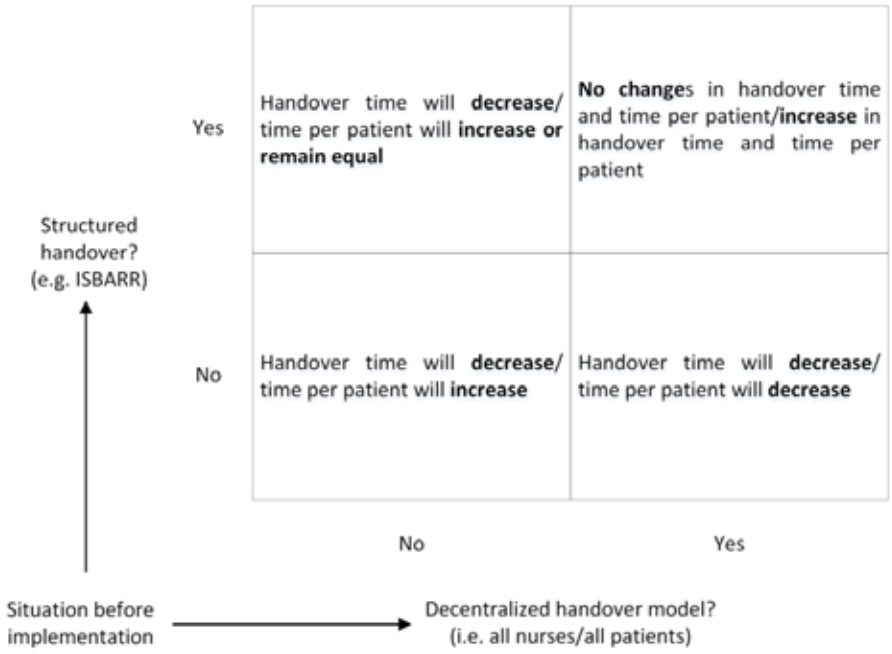

Figure 1: estimation of time use after implementation, based on the situation before implementation

As explained before, by predicting the impact of implementation beforehand, some negative consequences can be avoided. As shown in the results, and explored in the discussion, several elements should be taken into account when predicting the impact of a bedside shift report. Figure 1 shows how, based on our findings, this estimate can be made. It is important to emphasize that when both elements, a structured and decentralized handover, are not implemented, a beside shift handover will not reduce time-use.

6.2. Limitations

A first limitation of this study is the national character of the study. Based on the results of the RN4cast (Aiken et al., 2014), it can be concluded that the context and workforce of nursing practice between countries show significant differences. As a consequence, nursing care system and patient case load per nurse can differentiate between countries. This implies that the results of this study can vary between countries.
Second, the time-use of the handover before implementation was based on interviews and some observations, but was not exactly measured. This contrasts with the exact time-measurement after implementation. This influences the results of this study as this study does not exactly pinpoints time gain or loss. In defense, the estimations of time-use were based on an extensive number of interviews, including the head nurses. As the shift report is a long-lasting practice in nursing which is performed daily (Sexton et al., 2004), it can be argued that the answers from the interviews, on which the data is based, are fairly adequate. Future studies should take this in account by exactly pinpointing time-use before implementation.

7. CONCLUSION

The effect of implementing bedside shift report on the time-use during the handover is dependent on the presence of a decentralized handover and SBAR-structure during the handover before implementation. The handover time and time per patient on nursing wards with both elements present before implementation will remain the same or even increase. On wards were the handover was centralized, time gain can be expected. Dependent on whether ISBARR was present before implementation, the effect can be magnified. Before implementation, both elements should be comprehensively explored in order to make accurate estimates on whether bedside shift report will lead to time gain or loss.

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Chapter 8

THE CHALLENGES OF PATIENT PARTICIPATION FOR THE NURSING PROFESSION: ISSUES EMERGING DURING A MIXED METHODS STUDY ON BEDSIDE SHIFT REPORT [7]

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7 Chapter based on: Malfait S, Van Hecke A, Van Biesen W, Eeckloo K (2018). The challenges of patient participation for the nursing profession: issues emerging during a mixed methods study on bedside shift report. Nursing Ethics, under revision.

Aims: A discussion of the concept of privacy during bedside shift report.

Background: Bedside shift report, when the nurse-to-nurse handover is performed at the patient's bedside, is increasingly used in nursing. However, nurses report many barriers for performing the bedside shift report. Amongst these barriers are the concepts of privacy and confidentiality. By referring to these concept, nurses add a legal and ethical dimension to executing a bedside shift report, making implementation difficult or even impossible.

Design: Discussion paper

Data Sources: Observations, interviews with nurses, and interviews with patients from an ongoing multicentred and longitudinal mixed method study on bedside shift report, in combination with a narrative review of international literature.

Implications for Nursing: Two mutually exclusive possibilities are discussed. If bedside handover does pose problems concerning privacy, this situation is not unique in healthcare and measures should be taken to safeguard the patient. If bedside shift report does not pose problems concerning privacy, privacy as a reason for not conducting the bedside shift report is misused and a fallacy for reluctance amongst nurses for using the bedside shift report. The latter indicates that there are problems with the codes of conduct for nursing and these should be revised in order to make patient participation possible.

Conclusion: A possible breach of privacy -whether justified or not- is not a reason for not executing the bedside shift report.

1. INTRODUCTION AND BACKGROUND

Over the last years, patient participation has become an important paradigm in healthcare, supported by academic societies and policy makers such as BMJ (2014) and WHO (2013). Patient participation is presented as a positive factor for patient safety (Longtin et al., 2010), quality of care (Castro et al., 2016), and is even believed to be an essential aspect of cost-containment and sustainability of healthcare systems (Mockford et al., 2011). It is even defined as 'the blockbuster drug' of healthcare in the 21st century' (Dentzer, 2013). According to Castro et al. (2016), patient participation can be seen as the strategy to evolve towards a more patient-centered organization in which patient empowerment is a central topic. As a consequence, an increasing number of methods and initiatives are taken to involve patients. After the excitement in the 21st century's first decade, questions and concerns start to arise about conflicting interests of the involved stakeholders when these new "patient-centered" initiatives are being introduced (Williamson, 2014; McCormack & Watson, 2017).

An example subject to these evolutions is the rise in the use of bedside shift reports (Gregory et al., 2014). Bedside shift reports consist of the delivery of the nurses' shift-to-shift report at the patient's bedside (Anderson & Mangino, 2006). Bedside shift reports seem a logical and efficient method as it combines the nurse-to-nurse handover with the nurse-to-patient information provision. This process could improve communication and sharing of information amongst nurses and between patient and nurse (Gregory et al., 2014). This exchange of information is said to lead to increased patient participation, improved patient-centeredness, enhanced patient empowerment, and augmented patient autonomy as the nurse shares his or her expertise and knowledge base with the patient (Arnstein, 1969; Longtin et al., 2010; Wakefield et al., 2012; Castro et al., 2016). In addition, bedside shift reports result in improved bilateral awareness of the current situation (Gregory et al., 2014) and a reduction of safety incidents (Evans et al., 2011). Because of these alleged advantages, there is increasing interest in this method. However, several systematic reviews have consistently identified nurse-reported barriers during bedside briefings (Gregory et al., 2014; Anderson et al., 2014; Mardis et al., 2016), leading to deceleration or even discontinuation of implementation. While most of these barriers are of a more practical nature (e.g. time-consumption or organization), one barrier relates to the possibility of breaching patient privacy and confidentiality while practicing the patient's right on information in a semi-private room. Although privacy and confidentiality are not similar in meaning (Pinch, 2000), both terms are used interchangeable in nursing literature (Leino-Kilpi et al., 2001) and in literature concerning the bedside shift report (Anderson et al., 2014). According to Pinch (2000), privacy is the global term that suggests protection of the physical, dispositional and informational dimension of an individual. Confidentiality only refers to the protection of the informational -written or verbal- dimension. Despite the nuance in difference, when nurses report this barrier, they nurses add an ethical and legal question to the use of bedside shift reports, making implementation difficult or impossible (Anderson et al., 2014; Milholland, 1994). This contrasts to barriers of a more practical nature, which are resolvable by making changes in the organization or by providing training and education.

In this discussion paper, the term privacy will be -although not theoretically sound- maintained because patients almost always refer to this issue as privacy (Lu et al., 2014)
In our ongoing study, we found similar findings and identified the possible infringement of privacy as the nurses' most persistent and most difficult to refute argument against the use of bedside shift reports. Puzzled by this question, we purposefully explored the data from our ongoing study on bedside shift report (Malfait et al., 2017) to further explore different perspectives and contexts (van Achterberg, 2013) and elaborate on this apparent conundrum. Although not the primary aim of our study, the mixed method data from different settings and stakeholders enabled us to analyze the problems with the patient's privacy during a bedside briefing and formulate possible solutions.

2. METHODOLOGY

A controlled, multicenter, and longitudinal study on feasibility, appropriateness, meaningfulness and effectiveness of bedside briefing is currently ongoing (Malfait et al., 2017). The study design was based on the Medical Research Council-framework for complex interventions (MRC, 2000; 2008; 2015) and was initiated to investigate the use of bedside shift report in multiple settings. Literature (Gregory et al., 2014; Smeulers et al., 2014) indicated that such research was needed to provide stronger evidence on the process of bedside shift report in the nursing profession. Overall, twelve nursing wards (five surgical, three medical rehabilitation and three geriatric nursing wards), located in seven different hospitals in the Flemish region of Belgium were included.
A combination of research methods was used in the study and allowed to capture additional information on privacy issues from different perspectives: interviews with patients (n=48) interviews with nurses (n=106) and non-participant observations of bedside shift reports (n=638). Next to the analysis of our own data, a narrative review of international literature on the topic was performed to enrich the discussion and reflections on the topic.
Patients were interviewed during the development phase of the study in order to identify their preferences about the bedside shift report. During the interviews, patients were actively questioned about their opinion concerning the privacy issue. The interviews were recorded, transcribed trans verbatim and analyzed thematically. To enhance trustworthiness, researcher (n=3) triangulation was used.
Nurses were interviewed before the implementation of bedside shift report in order to identify and eventually correct possible barriers and facilitators for using bedside shift report on their ward. An interview guide was used and was based on the 'Contingency model' (Van Linge, 1998) and the 'National Health Service sustainability model to healthcare improvement' (Doyle et al., 2013). On each ward a minimum of five interviews was conducted and interviews were continued until data saturation was achieved. Direct content analysis and researchers triangulation was used to analyze the data (n=4).
A minimum of 50 individual bedside handovers (n= 638 observations) was observed on each ward by use of a checklist to determine compliance to the intervention. Reasons

for not conducting bedside shift report were recorded. On each ward, at least 20% of the observations were conducted by two researchers and Cohen's kappa was calculated (k=0.85). Quantitative, descriptive methods were used to analyze the observations (Malfait et al., 2018).
The study received approval from the Central Ethics committee of the Ghent University Hospital (B670201627044) and the local ethics committees of the participating hospitals. In each of the study phases an informed consent from each single participant was collected.

3. RESULTS

Based on the different sources of data from our study we can describe privacy during bedside shift report from three perspectives: the patient's perspective (interviews), the nurse's perspective (interviews) and the researcher's perspective (observations).

3.1. The patient's perspective

The majority of the interviewed patients expressed a clear need for more information. Depending on their type of room (i.e. private or semi-private), patient attitude towards bedside briefing differed. Our results indicated that patients in private rooms were more concerned with their privacy, considered bedside briefing as a possible privacy-infringing method in semi-private rooms, and indicated that such infringements were amongst the reasons why they insist on having a private room and were willing to pay extra for it. In contrast, patients in semi-private rooms reported that they have less expectations towards privacy. They reported that their privacy is often already substantially infringed on many occasions during their admission. They indicate that information is, mostly unaware, often shared in semi-private rooms by different types of healthcare workers. For instance, patients report that physicians already reveal private information in the room while providing updates on the diagnoses. Patients also report that by receiving wound or post-operative care, the neighboring patient can also become aware of the patient's health status. In contrast to other health professions, patients point out that the information shared by nurses is often less sensitive. Patients are convinced that nurses have the empathic skills to judge which information can be shared at the bedside. Finally, patients report that they often spontaneously share information with their neighbor, given that they do not have personal ties to their neighbor (e.g. same community or common friends). No international in-depth research could be found in which the opinion of patients concerning privacy issues is comprehensively discussed (Anderson et al., 2014). Tobiano et al. (2013) mention that study findings seem to indicate that concerns regarding privacy are more of a problem for nurses than patients or their family members.

3.2. The nurses' perspective

About 60% of the nurses reported the possible infringement of privacy as an important barrier for not delivering a bedside shift report and used the privacy-argument to support their reluctance towards the implementation of bedside shift report. There were no differences between wards. Overall, our findings seem to correspond with the international literature which reports privacy as one of the main barriers for implementing bedside shift report (Gregory et al., 2014; Anderson et al., 2014; Mardis et al., 2016).
Nurses in our study also linked privacy to being uncertain on which information can be disclosed to the patient. This uncertainty originated from the fact that nurses did not know to which extent the physician already has provided information to the patient. Nurses fear to be 'unprofessional' and contemplate on whether or not this task should be exclusively performed by the physician. Moreover, most nurses felt uncomfortable to systematically reveal diagnoses. This indicates that the construct of privacy was interpreted in a broader sense by nurses and includes legal and hierarchical aspects and ideas about retaining professionalism. From literature we know that 'privacy' is actually a vague concept, capturing many meanings and is used interchangeable with confidentiality, although they have different meaning (Leino-Kilpi et al., 2000; Solove, 2006; Murray et al., 2011).

3.3. The researcher's perspective

With compliance rates to the protocol of around 80%, our study demonstrated that delivering bedside shift report was easy for most nurses. The preliminary results from the longitudinal follow-up of these compliance rates indicate that through time, the rates do not decrease. Basic nursing activities (e.g. hand hygiene), privacy and stimulating patient participation are points of attention during the bedside shift report. Whereas transmission of complete clinical information was hardly ever forgotten, items related to aspects of privacy and patient participation were frequently neglected: 'using the call light to indicate a care process is ongoing' (21.37%), 'closing the curtains and door' (8.92%), 'asking visitors to leave the room' (3.94%), 'asking the patient if (s)he had any further questions or something to add' (34.44%) and 'introducing themselves to patients' (36.51%) were among the top forgotten items. In 30% of the cases, the nurses decided not to deliver the bedside shift report based on a unilateral decision by nurses. Patients were not asked if they agreed with this decision. Not a single patient in a semi-private room refused to undergo a bedside shift report due to a possible infringement of privacy.
In the literature, similar observations in which nurses avoided patient participation during the bedside shift report could be identified (Chaboyer et al., 2010; Tobiano et al., 2017). Although these studies do not report items relating to privacy, they note that less than half of the patients are actually involved in the bedside handover by nurses.

4. REFLECTION ON THE RESULTS

We started this discussion paper with signaling that the possible breach of privacy is often reported by the nurses as one of the major reasons not to perform a bedside shift report. We continued by briefly describing what the results of our study were in order to provide different perspectives on the possible infringement of privacy during bedside shift report rounds. Before reflecting on these results, we would like to remark that this specific exploration of the study results was not pre-specified and resulted from a perceived contradiction in practice. Despite possible methodological limitations and strain on the research design, we regarded it as our responsibility to discuss these findings as they are relevant for practice. After all, putting everyday issues under the attention of the nursing society is one of the keys to deliver quality patient care and retention of a qualitative nursing workforce (Ulrich et al., 2010).

First, the interviews with patients indicate that a number of other activities than bedside shift report lead to a situation in which privacy and providing information are conflicting. For instance, when possible treatment options are discussed with the patient in a semi-private room by physicians or a nurse is delivering wound care and training a nurse student at the same time. This assessment shows that bedside shift report does not lead to a unique situation in which privacy and providing information are conflicting. In the reality of practice, many privacy infringements are made because of practical circumstances, and privacy does not seem to be as sacred as claimed by the nurses in this study. Whereas the multitude on infringements made in other circumstances is no excuse to justify a potential breach of privacy during bedside shift reports, it indicates that privacy is sometimes used in practice as an excuse to not perform bedside shift report, whereas it is tolerated in other settings for reasons of practicality.

Second, based on the observations and the patient interviews, patients seem to accept as a given fact that in certain situations a breach in privacy is difficult to be avoided. Two possible explanations for this behavior can be given. On the one hand, it can be that patients do not mind any infringement of their privacy as long as they receive more information concerning their health. Our review of the literature made clear that the patient's perspective on this issue is understudied and only one confirming studies could be found (Lu et al., 2014). This is remarkable, as privacy is considered so important for the implementation of bedside shift report as a potential pitfall, and therefore knowledge on the patient's perspective is highly relevant. Data from our observations seem to suggest that the nurses' point of view is paramount in deciding if, how and how much information will be provided to the patient (Whitty et al., 2016). In many cases, the patient was even not asked whether or not he preferred to receive information or not, nor whether or not he would consider it a breach of privacy if this information was provided at the bedside (Malfait et al., 2018). On the other hand, it cannot be excluded that patients are scared to report infringements. Angel & Frederiksen (2015) discuss that nurses have a strong professional dominance as patients have limited acquaintance with the situation in general and with nurses' practices, expertise and knowledge in particular. Because of their dependence, patients often opt for a passive and accepting role to avoid being labeled as inflexible or troublesome patients, and thus putting them at risk for receiving

substandard care (Joseph-Williams et al., 2014). We cannot exclude to what extent this aspect could have played a role in the patient's behavior. Nonetheless, in both cases there is a dominance of the nurses' perspective on the privacy issue, whether or not actively induced by nurses.

So far, we have argued that the bedside briefing is not the only situation creating an infringement of privacy and is therefore not unique, and that the nurses' point of view on the matter is paramount while no indications were given by patients that they would be harmed by providing bedside shift report in semi-private rooms. It leaves us with the question why privacy remains such an important barrier. Based on our results and discussion above, we have indications that privacy is also an excuse for not performing bedside shift report. Taking into account the many alleged and proven patient-related, nurse-related and clinical advantages of bedside briefing (Gregory et al., 2014; Anderson et al., 2015; Mardis et al., 2016), it is remarkable that the method is not widespread in nursing practice, and that many initiatives are reported being delayed or failing (Tobiano et al., 2017). There are studies identifying nurses' behavior to discourage patient participation in bedside shift report (Anderson et al., 2014), and in our interviews, nurses also expressed the will to protect their professionalism by avoiding mistakes at the bedside and being corrected by patients. Such behavior is perhaps not surprising as patient participation is not as easy as it looks, and nurses need additional skills and characteristics (Vaismoradi et al., 2015; Malfait et al., 2017). Person-centeredness comprises far more than just acknowledging the patient's values within a context of compassionate care. It also means providing a meaningful and authentic response to the uniqueness of patient's preferences and values (Dewing & McCormack, 2016). Of course, next to avoiding patient participation, other reasons like the will to stay in control (Aasen et al., 2012) and structural barriers (Larrson et al., 2011) also prevent nursing from using bedside shift reports. It is thus possible that nurses use the "privacy is more important than information" paradigm as a uniform, default and false pretense coping strategy to deal with and avoid the complex issues that the bedside shift handover creates. Due to its legal foundation and repercussions, it is very difficult to force nurses to actively breach privacy. Therefore, the argument seems paramount and fits the nurses' (sub)conscious strategy to avoid bedside shift report perfectly, whatever the underlying reason may be. In case of such underlying issues, it should be considered as a fallacy and false pretense. Simply accepting these excuses due to their roots in legal obligations, creates habits that drive nurses away from the bedside shift report (Anderson et al., 2014).

5. IMPLICATIONS FOR NURSING

As pointed out by Castro et al. (2016) patient participation is an important factor to facilitate patient-centeredness and patient empowerment, both key concepts for the future of healthcare. In its essence, patient participation can only start when nurses regard patients as their equal partners, expressed by the willingness to share their knowledge and power, and receive a patient's feedback (Longtin et al., 2010). Throughout this dis-

cussion paper, bedside shift report is proposed as a method to provide the patient with this necessary information, but the implementation is hindered by the fact that it possibly endangers patient's privacy and confidentiality. Although bedside shift report is not the only way to provide information to a patient, bedside shift report is unique because it combines two processes, the handover and providing information to the patient, and is consequentially very efficient. In times of economic pressure on healthcare systems and a high workload for nurses, an intervention like bedside shift report is an opportunity that should be preferred above adding a new task to the nurses' job description, especially taking into account that it also improves patient participation. Therefore, it is important to explore the possible solutions to overcome the issue of privacy during the bedside shift report. To do this, we start from two different and mutually exclusive possibilities: First, there is a problem with privacy during bedside shift report, and second privacy is not a problem during the bedside shift report. In reality, both are possible and depending on the situation, both can be applicable.

If there is an actual conflict between privacy and providing information in a semi-private room, this should not be the reason to terminate the use of bedside shift reports. After all, this would mean that both patients and nurses are denied the possibility of receiving or providing better and more qualitative care. Instead, solutions should be sought to preserve the patient's privacy as much as possible. In contrast with most other situations where information is shared, the bedside shift report is a conscious choice of sharing information in a possible privacy infringing situation. This enables the provision of active steps and measures to protect the patient. First, informed consent can be obtained from both patients in the room in order to inform patients about what is going to happen and receive explicit consent. Second, actions can be taken to prevent spreading sensitive information: closing the door and curtains, asking visitors to leave, discussing sensitive information elsewhere or using notes, using a muted voice, and agreements with the physician. Third, nurses can be trained or should have the professional expertise and sensitivity to identify and avoid mentioning sensitive information.

If there is no actual conflict between privacy and information, it means that privacy is used as a fallacy to avoid bedside shift reports. Although we fail to provide a definite answer on why, the avoidance does indicate that the equality of the patient's perspective, which is the basis for patient participation, is currently still underrepresented in the nursing profession. The basis of the nursing profession is created by professional ethics and codes (Kangasniemi et al., 2015), possibly implying that these codes do not provide guidance for patient participation. When looking at two guiding documents for nursing ethics and deontology worldwide, the ICN's (2012) and ANA's code of ethics (2015), it can be concluded that both have no reference to patient participation, involvement or -centeredness or to any other synonyms thereof, with exception of the reference to shared-decision making. As we know (Castro et al., 2016), patient participation has many other degrees and forms. No advice on these other methods, degrees or forms of patient participation or how to overcome any issues or problems in practice when using these methods are provided. For us, these are indications that we should critically look at our current guiding frameworks if we are sincere in our intention to make patient involvement truly happen in practice, education and research. It seems that during the

current nursing profession's search for and emphasis on self-realization and professional identity, which emphasizes the nurse-oriented idea instead of the patient-oriented idea (Kristoffersen & Friberg, 2014), we have forgotten about the essence of our professional existence: the patient (MCCormack & Watson, 2017). The paternalistic approach of our professional codes with emphasis on protecting patients and avoiding faults (Kangasniemi et al., 2015) are defensive of nature, overlook individual preferences of our patients, and restrict the courage, creativity and critical reflection that nurses need to overcome issues in practice (Lindh et al., 2009; Dierckx de Casterlé et al., 2008). In the end, this leads to nurses denying a patient more information because of fear, either the fear of being unprofessional or the fear of repercussions (Milholland, 1994; Pinch, 2000). In order to fix the issues with bedside shift report, and by extension other patient participation initiatives that may challenge our guiding frameworks and code of ethics, it will be key to (re)form the frameworks currently guiding nursing staff in their daily behavior.

Although the issue concerning the guiding framework is possibly applicable to healthcare in general, nurses should take point in this discussion. As nurses we have the historical legacy and obligation to be the patient's advocate (Hewitt, 2002) and we regard ourselves as crucial for promoting patient participation (Tobiano et al., 2015). It would therefore be a paradox for us not to explore how we can make our guiding frameworks patient-centered. In the spirit of true patient participation, we claim that patients should be involved in this process. Taking into account the fast evolutions and disruptive changes in healthcare, it is impossible to answer such questions only amongst the nursing community. One could claim that patient involvement threatens our unique professional identity, but we refute this point of view. In fact, we are convinced that by sharing the power with our patients on these critical issues, we truly live up to our historical legacy and obligation to be the patient's advocate (Hewitt, 2002).

6. CONCLUSION

Taking into account the limitations in our research design, our reflections should be considered as eye-openers and an indication that there is an urgent need for further exploration and clarification. By reflecting on and discussing the privacy issue in bedside shift report from different perspectives, we have discussed whether or not privacy is a problem during bedside shift report. Although we do not provide a definite answer, we address both the possibilities. Overall, we see not reasons not to perform the bedside shift report whether or not bedside shift report creates a problem for privacy. If bedside shift report does breach privacy, we argue that potential confidentiality issues should not be a reason to postpone the implementation of bedside shift reports. In our opinion, the use of bedside shift reports does not inflict issues with confidentiality of such gravity and uniqueness that the method cannot be used safely in practice, as long as steps are taken to safeguard the patient's privacy as much as possible. In cases where it does not infringe privacy, any arguments claiming otherwise are perhaps used under the false

pretense to cover up nurses' less grounded reasons to not perform the bedside shift report. In order to fix the latter, nursing guiding frameworks should be subject to revision. As the nursing profession is moving in the 21st century, the emphasis on the individual patients' perspectives in daily practice will only cause new questions to arise, challenging the sustainability and validity of our current guiding frameworks. Patients should be involved in defining our moral compass and ethical guidelines. By sharing such power with our patients on these critical issues, we truly live up to our historical legacy and obligation to be the patient's advocate.

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Chapter 9

THE EFFECTIVENESS OF BEDSIDE SHIFT REPORTS: A MULTILEVEL, LONGITUDINAL STUDY ON NURSES AND PATIENTS [8]

8 Chapter based on: Malfait S, Eeckloo K, Colman R, Van Biesen W, Van Hecke A (2018). The effectiveness of bedside shift reports: A multilevel, longitudinal study on nurses and patients. Submitted.

Aims: To investigate the longitudinal effects of bedside shift report for nurses and patients.

Background: For nurses, nurse-patient communication, individualized care, coordination of the care process, job satisfaction, intention to leave, patient participation and work interruptions is expected to change. For patients, patient activation, individualized care and quality of care is expected to change.

Design: A longitudinal, controlled, multicentred study on 13 nursing wards in 5 hospitals.

Methods: Data was collected with a self-assessment questionnaire for patients and nurses in May-June 2016 (baseline), July-August 2017 (3 months after implementation), and December 2017-January 2018 (9 months after implementation). The questionnaire was completed by 809 patients (T0=276;T1=271;T2=262) and 165 nurses. Per protocol analysis was used in combination with linear mixed models.

Results: For nurses, patient participation increased and work interruptions decreased in the intervention group over time. Individualized care remained stable in the intervention group, whereas it decreased over time in the control group. Results of patients in the intervention and control group did not differ on any of the items. The difference between nurses and patients concerning individualized care did not change over time.

Conclusion: With exception for work interruptions and patient participation for nurses, no generic effects could be found. Our study found bedside shift report positioning itself as a method to put patient-centeredness central and to safeguard a high standard of individualized care, even in times of organizational change. Therefore, bedside shift report should not be considered as a goal, but as a mean towards more patient-centered care.

1. INTRODUCTION

Bedside shift report, in which the nurse-to-nurse handover or shift report is performed at the patient's bedside, is an upcoming method in nursing due to the many advantages it is expected to offer. Still, the body of knowledge on this topic is limited because of the lack of longitudinal multicenter studies. Most likely, many failed initiatives remain unreported, resulting in a distorted perception on the effects of bedside shift report, and a lack of knowledge on the implementation process of the method. Therefore, a more firm body of knowledge is needed.

1.1. Background

The assumption about the positive effects of bedside shift report is grounded in the consequences of performing the nursing handover or shift report at the patient's bedside (Gregory et al., 2014). First, the information transfer between nurses is improved as irrelevant information is avoided and information provided is more accurate. This leads to a decrease in information errors, preventing the occurrence of adverse events or medical errors (Novak & Fairchild, 2012). Second, there is a simultaneous information transfer between the nurses and the patient. The latter enables patients to ask questions (McMurray et al., 2011), and provide additional information (Kerr et al., 2014) and feedback (Anderson & Mangino, 2006). Patients are also more able to indicate their preferences and expectations about care (McMurray et al., 2014). This process increases the likelihood that the patient is more involved in the decision-making process on his/her health, that more patient-centered care can be obtained and that there is enhanced individualization of the provided care.

These assumptions are based on the results of several systematic reviews that collected the results of small-scale, short-term studies (Anderson et al., 2015; Gregory et al., 2014; Mardis et al., 2016). Looking at the results of these reviews, the acclaimed effects of bedside shift report on nurses, patients and clinical indicators are almost limitless. Due to this positivity in international nursing literature, the method is vastly spreading across the Anglo-Saxon countries and the European continent (Ferguson & Howell, 2016). But, although this assumption appears sound, no longitudinal study on the effects of this type of handover is performed to confirm these and other assumptions about the bedside shift report (Smeulers et al., 2014). Such longitudinal research in different contexts and including multiple centers is necessary before statements can be made about possible generic effects of an intervention (Hallberg, 2009). Therefore, we have set up a multicentred, longitudinal study on the effects of bedside shift report. Individualized care was the main outcome measure for both nurses and patients (Malfait et al., 2017)

2. THE STUDY

2.1. Aims

The aim of this study is to investigate the longitudinal effects of bedside shift report for nurses and patients. In order to investigate these effects, three research questions are addressed:
Q1: Are there longitudinal effects for patients receiving bedside shift reports in comparison to patients receiving no bedside shift reports concerning individualized care, quality of care and patient activation?
Q2: Are there longitudinal effects for nurses delivering bedside shift reports in comparison to nurses not delivering bedside shift reports concerning individualized care, coordination of the care process, communication, intention to leave, job satisfaction, patient participation and work interruptions?
Q3: Are there longitudinal effects on the differences in the perceptions between nurses delivering the bedside shift report and patients receiving the bedside shift report concerning individualized care?

2.2. Design

A multicenter, controlled, longitudinal design was used. The experimental groups used a fixed intervention protocol for implementing and using bedside shift reports. The control group applied care as usual, which is defined as a traditional shift report, without the presence of the patient (Wakefield et al., 2012). To take into account potential hospital-wide influencing factors, each participating hospital had at least one ward in the intervention and one in the control group (Malfait et al., 2017). Per protocol analysis was used to analyze the data (Polit & Gillespie, 2010), meaning that wards where the intervention was not implemented successfully are deleted from the dataset.

2.3. Sample and participants

The required number of patients on each ward was determined by use of a sample size calculation for continuous outcome superiority, taking into account intracluster correlation (Julious, 2004). A previous study on patient activation (Solomon et al., 2012) provided the data. Based on a mean difference of 5.03, a standard deviation of 13.74, a significance level (α) of 5% and a power (1-b) of 80%, including five experimental wards would make a sample of 35 patients sufficient. For each of the control wards, a similar sample was targeted. To be included in the experimental group (BSR), patients need to be admitted in a ward and to have participated in at least three bedside shift reports; conscious; and speak Dutch. To be included in the control group, patients had to be admitted for at least three days and be conscious.
All nurses that were active in clinical care, including the head nurse, on an included intervention or control ward at the start of the study were included in the sample. At each data collection point, all nurses still active on the ward received a questionnaire. Nurses who were not active on the ward any longer, were excluded from that data collection

point onwards. Nurses included in the experimental group had to be involved in clinical care; had participated in ≥10 BSR sessions; and had at least 6 months of experience on that ward. For the control group, participating nurses had to be involved in clinical care and have at least 6 months of experience on that ward.

2.4. Data collection

Data was collected at three points during the study on 13 nursing wards in five hospitals (control n=6; intervention n=7). The first data collection (T0 – May-June 2016) was held before any activities concerning the study took place. The second data collection (T1 – July-August 2017) was held three months after implementation. Between the first and second data collection a tailor-made intervention for each ward was developed by use of co-design (Locock et al., 2014), which was based on diagnostic interviews with nurses, tested for feasibility, trained and implemented as specified in the research protocol (Malfait et al., 2017). The third data collection (T3 – December 2017, January 2018) was held six months after T1.

Data was collected using a self-assessment questionnaire for both nurses and patients. If patients were in the impossibility of filling in the questionnaire themselves, for example due to motoric difficulties, a study nurse with no affiliation to the research team of this study assisted the patient by filling in his answers. Nurses received two reminders for completing the questionnaire. One reminder after two weeks, one reminder after one month. On each nursing ward, a gift card was allotted when response rates were over 70%. On four geriatric wards (i.e. 2 intervention and 2 control), it was impossible to question the patients. Therefore, no questionnaires were obtained on these wards for patients.

2.5. Ethical considerations

This study was approved by both the central ethics committee of the Ghent University Hospital in March 2016 (B670201627044) and from the local ethics committee of each participating hospital. Each participant was informed about the goals of the study and the process of data collection prior to data collection. A written informed consent was obtained from each respondent. Patients had the right to refuse the BSR-intervention during their care. The study is funded by a grant of the Clinical Research Fund of Ghent University Hospital (HA/RP/2015/086/EC) in Belgium and is registered as a clinical trial (NCT02714582) on ClinicalTrials.gov.

2.6. Data analysis

All analyses were conducted using SPSS 25.0 (IBM, 2017). To determine the response rates and the distribution of the demographic characteristics of the participants, descriptive statistics and frequencies were used. For all analyses, a significance level of 0.05 was used. When analyzing subscales, means were used. Per protocol analysis was used.

The differences over time between nurses were calculated using a linear mixed model with repeated measures, as data could be paired. Such an approach is preferred over the classic repeated measure ANOVA as it overcomes the difficulties of multilevel data clustering (Jaeger, 2008) and it has the ability to overcome the problem with missing data points, which is often encountered in longitudinal studies (Krueger & Tian, 2004). The levels that were taken into account were the individual nurse, the ward and the hospital. The hospital and ward were taken into account as random factors throughout the analyses to minimize the influence of possible clustering (Heck et al., 2012).
The difference over time between patients were calculated using a linear mixed model without repeated measures (Heck et al., 2012), as data could not be paired. As mentioned before, using this method overcomes any problems with multilevel data clustering (Jaeger, 2008). The levels of possible clustering were the ward and the hospital, and were taken into account as random factors throughout the analyses to minimize the influence of possible clustering (Heck et al., 2012).
To calculate the differences in perspective on individualized care between patient and nurses, the mean-scores of the ICS and all its subscales were calculated and compared with a linear mixed model for each of the time-points (T0-T1-T2; Heck et al., 2012). Ward and hospital were taken into account as random factors to minimize possible multilevel data clustering (Jaeger, 2008).
When comparing the differences over time for nurses and patients, the groups were compared for homogeneity over time by analyzing if there are any differences between demographic variables in order to exclude any attrition bias on the individual level (Borglin & Richards, 2010). For nurses, following demographic characteristics were taken into account: age, gender, education, job time, years of experience in nursing/on the ward/in the hospital. Also, previous studies (Malfait, under review) showed that nursing care system and type of ward could be of importance. Therefore, the intervention wards will also be analyzed for these parameters, separate from the control wards as the nursing care system on the control wards was not determined in the study. For patients, following demographic variables were analyzed: age, gender, education, profession, number of days admitted on the ward, health literacy (Chew et al., 2004), health status, living situation, reason for admission (chronic disease/acute problem).
For all the multilevel analyses, Bonferonni-correction was applied when posthoc-analyses were performed.

2.7. Validity, reliability and rigor

Several actions have been taken to safeguard the quality of the study. A multi-centered design is used to enhance the generalizability of the findings. The questionnaire for patient and nurses consisted of several validated self-assessment tools, which were assessed for reliability and internal validity (Malfait et al., 2017).
The questionnaire for patients aimed to measure patient empowerment, quality of care and individualized care. Patient empowerment was measured by the Dutch version of the 13-item patient activation measurement (PAM13; Hibbard et al., 2005; Rademakers et al., 2012; internal consistency[α]=0.88). The quality of care on the ward was measured

by the 24-item version of the Quality from the Patient's Perspective questionnaire (QPP; Larsson & Larsson 2002; α=0.67-0.91). The QPP consists of four subscales: medical technical competence (QPP-MT), physical technical conditions (QPP-PT), identity-oriented approach (QPP-IO), and socio-cultural atmosphere (QPP-SC). Individualized care was measured by the individualized care scale for patients (ICS-Patient; Suhonen et al., 2000, 2005, 2006; α=0.84**)**. The ICS consist of two parts with 17 items (ICS-A/ICS-B), each containing three subscales: clinical situation (CS; seven items), personal life situation (PLS; four items) and decisional control over care (DC; six items). The ICS-A-Patient explores the patient's perceptions on how nurses should support patient's individuality through nursing activities. The ICS-B-Patient explores the degree to which the patient perceives his/her care as individual.

The questionnaire for nurses explored seven aspects: job satisfaction, turnover intention, coordination of the care process, communication with patients and family, work interruptions, individualized care and degree of patient participation. Both job satisfaction (JSS) and turnover intention (TIS) are measured by a subscale of the Michigan Organizational Assessment Questionnaire (MOAQ; Cammann et al., 1983; α=0.83). Coordination of the care process (COR) and communication with patient and family (COM) are measured by a subscale of the Care Process Evaluation Tool (CPSET; Vanhaecht et al., 2007; α=0.90). Nurse's perceptions of work interruptions were explored using a self-developed 10-point Likert scale as no tool was available (Malfait et al., 2017). The degree of individualized care is measured by the individualized care scale for nurses (ICS-Nurse; Suhonen et al., 2000, 2005, 2006; α=0.73). Three questions about patient participation were added, based on the participation ladder of Arnstein (1969). These questions were used during a previous, currently unpublished study by the researchers (α=0.75). The ICS-Nurse and ICS-patient are mirrored questionnaires and can be linked to each other on ward level.

Additionally, in order to retain a high standard of rigor in the study and the reporting of the results, several recommendations by Gray et al., (2016) were followed. First, the trial was registered (clinicaltrials.gov/ct2/show/NCT02714582). Second, a full and accessible protocol was published prior to the study (Malfait et al., 2017). Third, amendments that were made to the protocol during the study are comprehensively elaborated in the limitations section. Fourth, the study was closely monitored by the researchers and the involved ethics committees to detect adverse events. Fifth, the authors explicitly assured that there were no competing interests.

3. RESULTS

3.1. Demographics, response rates and drop-out rates

Table 1 describes the demographic characteristics for the sample of nurses and patients, on each of the three data collection points. Also, by providing the number of distributed questionnaires and the number of questionnaires returned, response rates were calculated. Seven hundred and ninety-nine patients completed the questionnaire, divided

over the three data collection points. One hundred and sixty-five nurses completed the questionnaire on two or more data collection point (i.e. T0/T1/T2). From the group of paired nurses, 110 nurses could be included in the comparative analysis with patients concerning individualized care. A total of 55 nurses had to be excluded from these analysis a no patient data was collected on these geriatric wards.
For patients, age, gender, living situation, education, profession and reason of admission (e.g. chronic/acute problem) were not significantly different over time in the control or intervention group. Only health literacy was significantly different over time in the intervention group (p=0.043), post-hoc analyses could not identify between which time points. Therefore, health literacy was included as covariate in the analyses. For nurses, gender, education, and work status were non-significant. Age, employment in the hospital, employment in nursing or employment on the ward showed logical significant differences over time. An overview of the results of the comparative analysis of the respondents' characteristics can be found in Appendix 8.
Amongst nurses, there was a drop-out rate of 27.8 % during the study. The main reasons for this dropout rate were mutation to another ward in the same hospital (35.8%), retirement (23.88%), resignation (14.9%), long-term illness (13.4%), and pregnancy (7.5%). Over the entire period of the study, 67.3% of the nurses included at the start of the study (n=245) completed two questionnaires or more. An overview of the response rates for each participating ward can be found in Appendix 9.

Table 1: demographic characteristics for patients and nurses

Patients		T0	T1	T2	Intervention (T0-T1-T2)	Control (T0-T1-T2)
Age	(mean)	64.6	63.4	66.3	p=0.429	p=0.067
Gender	Male	41.5%	49.4%	42.7%	p=0.180	p=0.656
	Female	58.5%	50.6%	57.3%		
Living situation	Alone	36.5%	33.0%	33.0%	p=0.830	p=0.353
	Together with family/partner	60.6%	64.0%	63.9%		
	Residential care	3.8%	3.0%	3.1%		
Education	Lower than bachelor	74.5%	74.8%	68.7%	p=0.160	p=0.225
	Bachelor	21.6%	19.8%	24.0%		
	Master or higher	3.9%	5.3%	7.3%		
Profession	Unemployed	1.2%	1.9%	0.4%	p=0.278	p=0.401
	Employed	19.8%	26.3%	25.8%		
	Student	1.6%	1.5%	0.9%		
	Disabled	14.4%	10.3%	10.9%		
	Retirement	61.1%	57.6%	59.8%		
	Other	1.9%	2.3%	2.2%		
Reason of admission	New problem	64.8%	67.4%	59.8%	p=0.654	p=0.130
Health literacy	(mean)	2.6	2.5	2.4	p=0.043*	p=0.527

	Chronic problem	35.2%	32.6%	40.2%		
Health status	Bad	10.3%	7.0%	7.3%	p=0.716	p=0.230
	Reasonable	40.5%	46.9%	40.1%		
	Good	44.7%	38.4%	46.6%		
	Very good	4.6%	7.8%	6.0%		
Distributed	Questionnaires	401	346	330		
Returned	Questionnaires	276	271	252		
Response rate	Patients	68.8%	78.3%	79.5%		
Nurses		T0	T1	T2	Intervention	Control
Age	(mean)	40.4	41.0	42.3	p=<0.001*	p=<0.001*
Gender	Male	9.0%	9.2%	12.9%	p=0.994	p=0.394
	Female	91.0%	90.8%	87.1%		
Education	Graduate	52.2%	48.3%	49.5%	p=0.051	p=0.160
	Bachelor	43.9%	46.3%	44.1%		
	Master	3.9%	5.4%	6.3%		
Job time	<100%	50.2%	50.3%	51.3%	p=0.510	p=0.193
	100%	49.8%	49.7%	48.7%		
Employment hospital	<1 year	6.5%	27.2%	26.3%	p=0.027*	p=0.004*
	1-5 years	27.6%	19.8%	18.6%		
	6-10 years	17.1%	12.3%	0.0%		
	11-15 years	11.6%	0.0%	13.6%		
	16-20 years	4.0%	6.8%	6.8%		
	> 20 years	33.2%	34.0%	34.7%		
Employment nurse	<1 year	5.5%	23.3%	0.0%	p=0.133	p=0.003*
	1-5 years	23.5%	14.5%	23.9%		
	6-10 years	14.0%	10.1%	13.7%		
	11-15 years	11.0%	0.0%	9.4%		
	16-20 years	5.5%	8.2%	11.1%		
	> 20 years	40.5%	44.0%	41.9%		

*significant at the 0.05-level

Nurses		T0	T1	T2	Intervention	Control
Employment ward	<1 year	15.1%	0.6%	0.0%	p<0.001*	p<0.001*
	1-5 years	31.2%	39.6%	34.2%		
	6-10 years	20.6%	19.5%	24.8%		
	11-15 years	13.6%	15.1%	12.0%		
	16-20 years	4.0%	5.0%	6.8%		
	> 20 years	15.6%	20.1%	22.2%		
Distributed	Questionnaires	245	225	177		
Returned	Questionnaires	201	167	120		
Response rate	Nurses	82.0%	74.7%	67.8%		

*significant at the 0.05-level

3.2. Longitudinal differences between patients

Table 2 provides an overview of the outcome variables for patients. The analyses showed that there were no statistical differences between the intervention and control group in the evolution over time, with exception for the QPP-PT. For post-hoc analysis, a Bonferroni-correction was applied which decreased the significance level to 0.017.

Table 2: differences between patients from the control and intervention wards over time

Outcome variable	Repeated measures (unpaired data)		Mean (±SE)		
	p interaction time*intervention	Type ward	T0	T1	T2
PAM13	0.054	Intervention	3.094 (±0.038)	3.101 (±0.038)	3.210 (±0.039)
	(Akaike Information Criterion=910.042)	Control	3.011 (±0.052)	3.030 (±0.048)	3.314 (±0.058)
ICS-Patient	0.541	Intervention	3.826 (±0.063)	3.787 (±0.064)	3.910 (±0.064)
	(Akaike Information Criterion=1734.552)	Control	3.599 (±0.088)	3.724 (±0.082)	3.791 (±0.089)
ICS-A-Patient	0.427	Intervention	3.690 (±0.074)	3.612 (±0.075)	3.767 (±0.077)
	(Akaike Information Criterion=1852.718)	Control	3.448 (±0.103)	3.582 (±0.096)	3.609 (±0.114)
ICS-A-Patient-CS	0.330	Intervention	3.964 (±0.092)	3.940 (±0.092)	4.028 (±0.093)
	(Akaike Information Criterion=1871.444)	Control	3.615 (±0.119)	3.835 (±0.114)	3.857 (±0.122)
ICS-A-Patient-PLS	0.349	Intervention	3.381 (±0.091)	3.100 (±0.091)	3.292 (±0.093)
	(Akaike Information Criterion=2215.549)	Control	3.174 (±0.126)	3.207 (±0.119)	3.260 (±0.130)

ICS-A-Patient-DC	0.778	Intervention	3.623 (±0.080)	3.572 (±0.081)	3.781 (±0.083)
	(Akaike Information Criterion=1953.199)	Control	3.411 (±0.112)	3.487 (±0.103)	3.603 (±0.124)
ICS-B-Patient	0.710	Intervention	3.964 (±0.066)	3.969 (±0.067)	4.069 (±0.069)
	(Akaike Information Criterion=1752.912)	Control	3.753 (±0.092)	3.857 (±0.085)	3.976 (±0.101)
ICS-B-Patient-CS	0.570	Intervention	4.018 (±0.070)	4.058 (±0.071)	4.116 (±0.072)
	(Akaike Information Criterion=1870.959)	Control	3.860 (±0.099)	3.985 (±0.091)	4.142 (±0.101)
ICS-B-Patient-PLS	0.627	Intervention	3.750 (±0.085)	3.652 (±0.086)	3.863 (±0.087)
	(Akaike Information Criterion=2069.431)	Control	3.522 (±0.116)	3.493 (±0.109)	3.823 (±0.118)
ICS-B-Patient-DC	0.450	Intervention	4.040 (±0.047)	4.059 (±0.047)	4.169 (±0.048)
	(Akaike Information Criterion=1746.540)	Control	3.721 (±0.063)	3.930 (±0.059)	3.904 (±0.068)
QPP	0.103	Intervention	3.634 (±0.047)	3.704 (±0.048)	3.682 (±0.048)
	(Akaike Information Criterion=1102.823)	Control	3.466 (±0.063)	3.536 (±0.059)	3.695 (±0.064)
QPP-MT	0.560	Intervention	3.690 (±0.053)	3.854 (±0.053)	3.748 (±0.053)
	(Akaike Information Criterion=1220.077)	Control	3.716 (±0.068)	3.779 (±0.064)	3.768 (±0.070)
QPP-PT	0.001*	Intervention	3.571 (±0.099)	3.564 (±0.099)	3.603 (±0.099)
	(Akaike Information Criterion=1674.557)	Control	3.217 (±0.120)	3.397 (±0.115)	3.811 (±0.122)
QPP-IO	0.151	Intervention	3.644 (±0.045)	3.687 (±0.046)	3.657 (±0.046)
	(Akaike Information Criterion=1156.830)	Control	3.458 (±0.061)	3.493 (±0.057)	3.638 (±0.067)
QPP-SC	0.375	Intervention	3.608 (±0.062)	3.706 (±0.062)	3.751 (±0.062)
	(Akaike Information Criterion=1447.952)	Control	3.449 (±0.082)	3.505 (±0.078)	3.718 (±0.084)

*significant at the 0.05-level

Post-hoc analysis of the QPP-PT showed that within the intervention group, no significant changes could be found over time. Within the control group, the physical-technical conditions increased between T1 and T2 ($p=0.001$) and between T0 and T2 ($p<0.001$). Based on the results above, it can be concluded that the bedside shift report intervention had no longitudinal effects on patients in the intervention group for patient activation (PAM13), individualized care (ICS and subscales), and quality of care (QPP and subscales).

No differences were identified over time in the control or in the intervention group, or between the intervention and control group.

3.3. Longitudinal differences between nurses

In table 3, the results are given for the statistical analyses concerning the differences between the nurses in the control and intervention group over time. The analyses showed that there were statistical differences between the intervention and control group in the evolution over time for the ICS-Nurse, five of its subscales, work interruptions and patient participation. For post-hoc analysis, a Bonferroni-correction was applied which decreased the significance level to 0.017.

Table 3: differences between nurses from the control and intervention ward over time

	Repeated measures (paired data)		Mean (±SE)		
Outcome variable	**p interaction time*intervention**	**Type ward**	**T0**	**T1**	**T2**
ICS-Nurse	0.026*	Intervention	4.088 (±0.058)	4.089 (±0.058)	4.170 (±0.073)
	(Akaike Information Criterion=773.913)	Control	4.220 (±0.064)	4.159 (±0.063)	4.000 (±0.077)
ICS-A-Nurse	0.064	Intervention	4.139 (±0.068)	4.149 (±0.066)	4.200 (±0.083)
	(Akaike Information Criterion=841.697)	Control	4.256 (±0.074)	4.194 (±0.071)	4.027 (±0.086)
ICS-A-Nurse-CS	0.628	Intervention	4.292 (±0.067)	4.246 (±0.066)	4.265 (±0.086)
	(Akaike Information Criterion=919.331)	Control	4.382 (±0.074)	4.332 (±0.072)	4.232 (±0.090)
ICS-A-Nurse-PLS	0.023*	Intervention	3.842 (±0.070)	3.820 (±0.078)	3.953 (±0.093)
	(Akaike Information Criterion=1053.785)	Control	3.965 (±0.078)	3.874 (±0.085)	3.689 (±0.098)
ICS-A-Nurse-DC	0.025*	Intervention	4.161 (±0.062)	4.241 (±0.063)	4.297 (±0.081)
	(Akaike Information Criterion=912.318)	Control	4.296 (±0.069)	4.257 (±0.069)	4.059 (±0.085)
ICS-B-Nurse	0.018*	Intervention	4.037 (±0.099)	4.032 (±0.101)	4.149 (±0.108)
	(Akaike Information Criterion=805.298)	Control	4.180 (±0.103)	4.124 (±0.105)	3.981 (±0.111)
ICS-B-Nurse-CS	0.319	Intervention	4.296 (±0.067)	4.273 (±0.070)	4.325 (±0.083)
	(Akaike Information Criterion=898.915)	Control	4.419 (±0.074)	4.401 (±0.077)	4.277 (±0.088)
ICS-B-Nurse-PLS	0.007*	Intervention	3.728 (±0.065)	3.693 (±0.072)	3.919 (±0.084)
	(Akaike Information Criterion=977.109)	Control	3.938 (±0.073)	3.857 (±0.079)	3.732 (±0.089)

ICS-B-Nurse-DC	0.004*	Intervention	3.943 (±0.067)	3.984 (±0.070)	4.107 (±0.081)
	(Akaike Information Criterion=902.440)	Control	4.047 (±0.074)	3.964 (±0.076)	3.797 (±0.085)
MOAQ-ITL	0.690	Intervention	1.503 (±0.117)	1.600 (±0.121)	1.602 (±0.130)
	(Akaike Information Criterion=1149.158)	Control	1.661 (±0.128)	1.633 (±0.131)	1.688 (±0.136)
MOAQ-TIS	0.497	Intervention	4.499 (±0.073)	4.498 (±0.075)	4.545 (±0.082)
	(Akaike Information Criterion=702.564)	Control	4.524 (±0.080)	4.471 (±0.082)	4.455 (±0.087)
CPSET-COR	0.655	Intervention	7.525 (±0.221)	7.537 (±0.227)	7.596 (±0.242)
	(Akaike Information Criterion=1469.956)	Control	7.397 (±0.239)	7.433 (±0.246)	7.291 (±0.258)
CPSET-COM	0.281	Intervention	6.125 (±0.324)	5.901 (±0.331)	6.451 (±0.351)
	(Akaike Information Criterion=1795.907)	Control	6.087 (±0.342)	5.806 (±0.350)	5.911 (±0.367)
Work interruptions	0.043*	Intervention	2.929 (±0.599)	2.895 (±0.576)	2.236 (±0.523)
	(Akaike Information Criterion=1783.213)	Control	2.137 (±0.621)	2.072 (±0.592)	2.408 (±0.527)
Patient participation	0.048*	Intervention	2.798 (±0.071)	2.905 (±0.076)	2.987 (±0.080)
	(Akaike Information Criterion=550.703)	Control	2.741 (±0.074)	2.772 (±0.079)	2.721 (±0.083)

*Significant at the 0.05-level

The post-hoc analyses of the ICS-Nurse show that there are no significant differences over time for the intervention ward. Taking into account the Bonferroni-correction, there is also no significant decrease over time of individualized care between T0 and T2 (p=0.015), and T1 and T2 (p=0.032) in the control group.

Post-hoc analysis of the ICS-Nurse-A-PLS showed no significant differences in the intervention group over time. In the control group a significant decrease was noticed over time between T0 and T2 (p=0.014). The differences between T0 and T1 (p=0.378) and between T1 and T2 (p=0.068) were not significant.

Post-hoc analysis of the ICS-Nurse-A-DC showed no significant differences in the intervention group over time. Due to the Bonferroni-correction, also no significant changes can be seen in the control group between T0 and T1 (p=0.656), T1 and T2 (p=0.037), and between T0 and T2 (p=0.019).

The post-hoc analyses of the ICS-Nurse-B show that there are no significant differences over time for the intervention ward. For the control ward, results decrease over time but taking into account the Bonferroni-correction, there are also no significant changes between T0 and T1 (p=0.463), T1 and T2 (p=0.056), and T0 and T2 (p=0.027) in the control group.

Post-hoc analysis of the ICS-Nurse-B-PLS showed a significant increase in the intervention group between T1-T2 (p=0.011). Due to Bonferroni-correction the changes between T0-T1 (p=0.662) and T0-T2 (p=0.040) were not significant. There were no significant changes over time in the control group.
Post-hoc analysis of the ICS-B-DC showed no changes over time in the intervention group, whereas in the control group, a significant decrease can be seen between T0-T2 (p=0.008). The changes between T0-T1 (p=0.324) and T1-T2 (p=0.040) were not significant, partially due to the Bonferroni-correction.
The post-hoc analyses show that the number of work interruptions on the intervention wards decreased over time between T1 and T2 (p=0.016). Taking into account the Bonferroni-correction, no significant changes could be found between T0 and T1 (p=0.806) and T0 and T2 (p=0.032). On the control wards, no significant changes could be found over time. These results indicate that bedside shift report decreases the number of work interruptions.
The post-hoc analyses concerning patient participation showed that it did not change significantly over time in the control group. For the intervention group, patient participation did not change significantly between T0 and T1 (p=0.030) and between T1 and T2 (p=0.144), taking into account the Bonferroni-correction. There was a significant increase between T0 and T2 (p=0.001).
No effects of bedside shift report on intention to leave (MOAQ-ITL), job satisfaction (MOAQ-JS), coordination of the care process (CPSET-COR) and communication (CSET-COM) could be observed.
Based on the results above, it can be concluded that the bedside shift report intervention had a longitudinal effects on nurses in the intervention group for discussing patient participation on the ward and work interruptions. These variables did not change over time in the control group. In the control group, individualized care and some subscales decreased significantly over time, whereas in the intervention group these remained stable or increased.

3.4. Influence of the nursing care system and type of ward

Within the intervention wards, it was analyzed whether nursing care system and type of ward had any influence on the results. Multilevel analyses showed no significant changes over time in relation to the nursing care system and the type of ward. The results per scale can be found in Appendix 11.

3.5. Longitudinal differences between patients and nurses

Table 4 provides an overview of the multilevel analyses concerning the difference in perception between nurses and patients on individualized care for both intervention and control wards.

Table 4: differences between nurses and patient concerning individualized care over time

Outcome variable	Akaike information criterion	time*intervention*patient/nurse
ICS	2555.090	p=0.311
ICS-A	2702.805	p=0.344
ICS-A-CS	2843.915	p=0.434
ICS-A-PLS	3168.282	p=0.062
ICS-A-DC	2855.947	p=0.474
ICS-B	2641.259	p=0.538
ICS-BCS	2710.742	p=0.473
ICS-B-PLS	2967.383	p=0.340
ICS-B-DC	2577.609	p=0.123

Overall, no statistical results could be found that show that the bedside shift report has an effect on the differences in perceptions between patients and nurses on individualized care. The difference between patients and nurses did not change over time. The detailed analysis however showed that patients score significantly lower (i.e. had less expectations) than nurses on 'how individualized care should be provided' (ICS-A) in the intervention group. In the control wards, scores between nurses and patients differed less. Concerning 'how individualized care is provided in practice' (ICS-B) the views of patients and nurses did not differ significantly. The detailed results of the analyses, including the differences in mean between patients and nurses can be found in Appendix 11.

4. DISCUSSION

The aim of this study was to investigate whether bedside shift report had longitudinal effects for nurses and patients. In order to provide an answer, three research questions were addressed. The results suggest four important insights concerning the effects of bedside shift report.

First, with the exception of patient participation and work interruptions, no generic positive effects could be found although the selection of outcomes and hypotheses in this study was based on a multitude of results from previous studies (Anderson et al., 2015; Gregory et al., 2014; Mardis et al., 2016; Malfait et al., 2017). Although the possibility exists that the outcome measures in this study were perhaps inaccurate or a ceiling effect is at work (Press 2002), our results could also suggest that previously reported findings of small, single-centred studies were ward-dependent and could not be generalized. Once more, this underlines the importance of performing multi-centered and longitudinal studies before wider claims are made concerning the effects of a method. Only when valid claims are made on what can and cannot be expected as results of using the bedside shift report, can it be avoided that an intervention is pre-termly dropped

because of unfulfilled expectations. It is evident that when results remain absent after implementation, disappointment amongst the nursing staff will reduce their willingness to persist in using the method.
Second, no overall negative effects of using the bedside shift report were found (e.g., job satisfaction and intention to leave), meaning that using the method does not affect practice in a negative way. And although the acclaimed clinical and organizational benefits of bedside shift report (Anderson et al., 2015; Gregory et al., 2014; Mardis et al., 2016; Malfait et al., 2017) have not been proven yet trough a multicentred longitudinal study, bedside shift report could still be designated as a method superior to the traditional handover in the nursing station. In the end, by delivering the bedside shift report at the bedside, direct patient contact is always increased (Malfait et al., under review), and patients have reported to feel safer and to be treated more as an individual person (Anderson et al., 2015; Gregory et al., 2014; Mardis et al., 2016).
Third, type of ward and nursing system did not influence the results on the intervention wards. Although it has been suggested that these elements affect implementation on wards (Tobiano et al., 2017; Sjetne et al., 2010; Malfait et al., 2017), they apparently do not influence the effect of using bedside handovers. Based on these results, we see no indications that in practice the use of bedside handovers should be restricted to certain types of wards, to certain types of patients or wards with a certain nursing care system. These elements however could possibly influence and determine the degree of difficulty concerning implementation, which could differ between wards.
Fourth and in particular, this study proved that using bedside shift report places patient participation on the agenda on a nursing ward. As showed in the results, the topic of patient participation is discussed more comprehensive on nursing wards using bedside shift report. Moreover, our results showed that individualized care, although it did not increase, remained stable whereas it decreased on the control wards. In comparison to the results of patients, the results also indicate that nurses using the bedside shift report set priority to and maintain a higher standard for individualized care. When comparing the scores of the nurses in relation to the scores of patients, nurses on intervention wards kept providing in individualized care that exceeded the expectations of patients. This suggests that wards using the bedside shift report are more resistant to organizational changes that threaten individualized care. All these findings strongly suggest that implementation of the bedside shift report should not be considered from or focused on direct effects, but on the idea of using the method to put the patient more central on a ward and upholding this position. Perhaps bedside shift report should therefore not be considered as a goal on itself, but as a mean to work towards a more patient-centered care. As previous results indicated, implementing the bedside shift report requires organizational changes and changes in nursing skills and attitude (Malfait et al., under review).

4.1. Limitations

As pointed out by Grey and colleagues (2016), authors should provide detailed information on why adjustments were made in the original study protocol to ensure the quality of the study. In this study, two important adjustments took place. First, on two wards it turned out to be impossible to include patients. Therefore, not all analyses were per-

formed with the entire set of nurses. Second, on some wards the predetermined number of 35 patients was not achieved. On these wards, the patient turnover did not allow the recruitment of 35 patients. In defense, the high response rates for patients indicate that our data sample is most likely to be representative for the ward's total population. Moreover, data collection could not be continued until the needed number of respondents as data collection on the other ward already was completed. By continuing collection, the data would be at danger of measuring other elements than the impact of bedside shift report.

Next to the adjustments made, response rates should be addressed. After all, response rates provide indications possible forms of bias (Fitzpatrick, 2014). As the study progressed, the nurse's response rates decreased. Especially at T2, response rates were under 70%. Although such declines in response rates are usual for longitudinal studies (Udtha et al., 2015), they still affect the representativeness, and therefore generalizability and applicability, of the final sample (Badger & Werrett, 2005). Overall, the response rates for the questionnaire in this study can be regarded as good. While no nursing textbooks make overall recommendations about desirable rates (Badger & Werrett, 2005), other meta-analyses studies which included nurses (Cho et al., 2013) have reported an average longitudinal response rate of 51%. Moreover, by using mixed models instead of ANOVAs to calculate the repeated measures, list-wise deletion was avoided. This resulted in the fact that if one point of measurement is missing, the entire subject is not removed from analysis but only one time point. This enriches the data and avoids bias (Krueger & Tian, 2004).

Finally, the drop-out rates of the settings should be addressed. Initially, nurses from twelve nursing wards engaged in the study. On five wards, the study was halted around the second measurement (T1) because compliance rates in performing bedside shift report were too low in comparison to the other wards and nurses showed too high reluctance towards the intervention. In both cases, there was a substantial risk that patients would be negatively affected by substandard execution of the intervention. From a perspective of maintaining qualitative care, the intervention could thus ethically not be continued (Grey et al., 2016). This action however increased the risk of attrition bias on ward level, systematic differences in withdrawals from the different groups under comparison (Borglin & Richards, 2010). As a consequence, our results are only applicable to wards were compliance rates to the intervention are high (Malfait et al., under revision) and the intervention is well accepted by nurses. Making overall generic statements concerning the bedside shift report should be approached with caution.

4.2. Future research

Three recommendations for future research can be made. First, next to the reproduction of this study in order to achieve confirmation of our results, similar studies with other outcome variables should be considered in order to determine whether bedside shift report has generic effects on other outcomes, whether or not our outcome variables were representative, and if the claims made in this study are generalizable. Possible options for outcomes in future research are patient empowerment, the acceptance of bed-

side shift reports (i.e. moderating factor) and the patient safety culture on nursing wards. Innovative data collection methods like patient reported experiences (e.g. how many bedside shift reports were not delivered) measures can be used. Second, future studies should take into account the high drop-out rate of wards. Moreover, there is a need to determine which characteristics of nurses and wards prohibit or support the continued use of bedside shift report. Amongst other designs, a study on intention-to-treat (e.g. use bedside shift report) amongst nurses could be an added value. As a classic intention-to-treat analysis is not possible when data is not randomized, the added value of a modified intention-to-treat analysis should be explored (Polit & Gillespie, 2010). Fourth, it was impossible to include patients from geriatric wards in this study. Due to the increased complexity of care for this group of patients, their increasing number, and their inherent functional dependency, there is increased need for research in this population (Fougère et al., 2016).

5. CONCLUSION

This paper reports the results from a multi-centred, longitudinal study on the effects of bedside shift report on nurses and patients. For patients, no significant, generic changes over time could be found neither in the intervention or control group for individualized care, quality of care and patient activation. For nurses, discussing patient participation within the nursing team increased and work interruptions decreased significantly across the wards in the intervention group but not in the control group. Individualized care remained stable in the intervention wards but decreased over time on the control wards. This study also indicates that using the bedside shift report makes individualized care on wards more resistant for organizational changes, and that higher standards of individualized care are maintained on these wards. The results from the study indicate that generic effects due to the use of bedside shift report should not be expected and that bedside shift report should be considered as a mean to work towards a more patient-oriented organization instead of a goal or solution.

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Chapter 10

GENERAL DISCUSSION

Keep Ithaca always in your mind.
Arriving there is what you are destined for.
But do not hurry the journey at all.
[...] wealthy with all you have gained on the way,
not expecting Ithaca to make you rich.
- C.P. Cavafy -

1. INTRODUCTION TO THE GENERAL DISCUSSION

This dissertation discussed patient participation on nursing wards and looked at bedside shift report as a particular method for nurses to increase patient participation at the patient's bedside. In the introduction, the need for further exploration of the process of patient participation and the process of bedside shift report and their potential interaction was elaborated. Two areas of particular interest were identified. First, the importance was emphasized of providing more evidence related to the nurses' demographics that might influence their patient participation behavior, behavior of which the method of bedside shift report is an example that is increasingly used in nursing. Due to the increased use in practice of the bedside shift report, this dissertation intended to explore the feasibility, appropriateness, meaningfulness and effectiveness on a larger scale than in previous studies. In both cases, the goal of this dissertation was to strengthen the evidence-based knowledge for the nursing practice. Similar to the introduction, we will address patient participation first in this general discussion as it is the overarching concept in which bedside shift report can be framed. Second, we will address the method of bedside shift report concerning its feasibility, appropriateness, meaningfulness and effectiveness in order to determine the suitability of this method for the evolution in nursing towards more patient participation. For each topic, some overall reflections, the implications for nursing, future research, and the overall limitations of our studies will be discussed. At the end of this chapter, we provide an overall conclusion, linking the evidence of both topics together.

2. REFLECTIONS ON PATIENT PARTICIPATION CULTURE

As elaborated in the overall introduction (chapter one), patient participation is an increasingly important topic in healthcare, but the process is complex and still not fully understood (Tambuyzer et al., 2011). Although the establishment of a widely accepted definition (Castro et al., 2016) was an important first step, many more insights are needed. As the driving factors for initiating patient participation are the behavior and attitude of healthcare workers (Longtin et al., 2010), it is important to better understand which characteristics are influential. Until the PaCT-HCW, there was no validated tool to measure the patient participation culture amongst healthcare workers, and nurses in particular (Philips et al., 2015; Malfait et al., 2017). In order to overcome this issue, the PaCT-HCW was developed and is a first attempt to quantitatively measure the patient participation culture in general hospitals. The tool enables cross-sectional or longitudinal studies, making cross-sectional comparison and long-term follow-up possible. The eight components in the PaCT-HCW make it possible to specifically measure certain aspects of patient participation culture and offer the possibility to gain a differentiated perspective (Malfait et al., 2017). The use of the Pact-HCW on a large scale, similar to the study we performed in Flanders (Van Hecke et al., 2014), enables healthcare systems to easily obtain a cross-sectional situation of the current patient participation attitudes of

the local healthcare society. Based on these advantages, the PaCT-HCW has received attention. Currently, translations to French, Spanish, Korean, Farsi, Greek and Chinese are ongoing, indicating that the topic of patient participation is high on the priority list in several countries, and across cultures.
In chapter three, the PaCT-HCW was used to explore the influence of nurses' demographic characteristics on patient participation behavior. These demographic factors are often overlooked and understudied for nurses (Davis et al., 2007; Tay et al., 2011; Tobiano et al., 2015), but can have great significance when it comes to patient participation (Longtin et al., 2010). In our study (Malfait et al., 2017), age and education were identified as two characteristics that influence patient participation culture amongst nurses. Particularly, younger and lower educated nurses showed lower scores concerning accepting a new -more involved- role for patients and showed lower scores in coping with challenging, factual and notifying questions by patients. Also, supervising nurses showed overall higher scores concerning patient participation than their team members. Although cross-sectional research does not enable identifying causations, it is argued that the results in chapter three are one of the first to indicate that patient participation should be regarded as an advanced nursing skill (Benner, 1982) and a complex intervention (Campbell et al., 2000).

2.1. Implications for nursing

Benner's theory (1982), 'From novice to expert', argues that advanced nursing behavior is linked to more qualified nurses, by both education and/or experience. As both age and education seem decisive elements on nurses' patient participation behavior, reverse reasoning indicates that patient participation can be considered as an advanced nursing skill. Considering patient participation as an advanced nursing skill has two major implications for the nursing society.
First, additional skills and competences for nurses to engage in patient participation are needed.
It should be acknowledged that patient participation is not only accepting the patient's values from the perspective of compassionate care, but is also providing in appropriate, meaningful and adequate response to the patient (Dewing & McCormack, 2016). It is in providing these responses that the complexity of the patient participation process is revealed. Engaging in patient participation is not an action that all nurses will do spontaneously, and thus training should be provided. Nursing education in schools and hospitals should provide in sufficient opportunities for nurses to train, learn and engage in patient participation. One of the best methods to introduce these learning opportunities is by taking the patient to the classroom (Waldner & Olsen, 2007). Using patient experts in teaching and real-life patient simulation is shown to have medium to large effects on the behavior of nursing students, and is more effective than traditional learning methods (Shin et al., 2015). Also, reflective practices and exercises within nursing teams can make nurses more aware of the perspective of their patients (Dierckx de Casterlé, 2015). Such exercises could support nurses in understanding the process of patient participation from the patient's perspective, learning to act pro-actively in practice. Finally, such

methods could also be used when mentoring nursing students. More than ever, nurses need to learn their intrinsic strengths and are challenged to reflect on their position and responsibilities towards their patients (Dierckx de Casterlé, 2015).
Second, seeing patient participation as a complex and advanced nursing skill discourages overall and sector-wide implementation of patient participation initiatives. Because of a lack in practice concerning the essential skills and attitudes to engage in actual patient participation, initiatives are in danger of not actually involving the patient, but only resembling participation. Such shallow initiatives harm the patients rather than empowering them (Williamson, 2014). Therefore, patient participation should not be seen as a quick fix-solution, and the enormous increase in low quality patient participation initiatives throughout our healthcare system should be scrutinized.
Complex interventions are described as "those interventions made up from various interconnecting parts, making them more difficult to control" (Campbell et al., 2000). The literature review during the development of the questionnaire, the complexity and reciprocity of the models by Longtin et al. (2010) and Tambuyzer et al. (2011), and the results from our study on nurses (chapter three) made apparent that patient participation is a process with many moving parts, of which several are still unknown or not fully understood (e.g. the influence of training of leadership). This is a strong indication that patient participation is a complex intervention. Considering patient participation as a complex intervention has significant consequences for nursing practice, management and research. Labeling patient participation as complex and difficult to control, indicates that methods like the bedside shift report will be difficult to implement and firmly secure in nursing practice. Moreover, future studies on patient participation should try to take into account the many quantitative and qualitative elements that contribute to patient participation. Studies on patient participation should therefore be based on the MRC-framework for complex interventions, preferably be mixed-method, longitudinal and multicentred.

2.2. Limitations and methodological considerations

In chapter two, issues concerning the PaCT-HCW were already addressed (Malfait et al., 2016). Three additional limitations should be elaborated in the light of this general, overarching discussion due to their broader perspective. As discussed in the General Introduction (chapter one), patient participation is a process on many levels, has several degrees and is applicable in many healthcare settings (Castro et al., 2016). The major limitation of the PaCT-HCW is that the questionnaire is developed and validated in, and therefore limited to general hospital wards, is mainly organized around communication and dialogue between healthcare worker and patient, and focusses on the individual patient-healthcare worker relationship.
Concerning the focus on general hospital wards, the PaCT-HCW is already adapted to inpatient mental health settings (PaCT-PSY; Malfait et al., 2017) and used in a cross-sectional study (Vandewalle et al., 2017). The results from this cross-sectional study in mental health differed from the findings from the initial study as described in chapter three. For example, level of education was non-significant concerning patient participation for

nurses in the inpatient psychiatric care. Such differences between contexts show that there is need to adopt the PaCT-questionnaire when it is used in other settings. Of particular interest is outpatient care, both general and psychiatric. In Belgium, as in many western countries, healthcare has transferred from inpatient, hospital care to outpatient forms of service delivery (Gerkens & Merkur, 2010). In psychiatry, this transition is at full speed (Nicaise et al., 2014). As a consequence, outpatient healthcare services have become a substantial part of today's healthcare. In such outpatient settings, patients often have different expectations towards their involvement (Eldh et al., 2006) and power balances between patient and healthcare workers are different (Longtin et al., 2010). Therefore, especially a complementary outpatient version of the PaCT-HCW is needed. Concerning the current focus on communication and dialogue in the questionnaire, other degrees of patient involvement should be included. Although sharing information is the initial and necessary step in patient participation (Longtin et al., 2010), some healthcare organizations are evolving towards levels of patient participation beyond information sharing (Vandewalle et al., 2016). By incorporating the levels of patient participation beyond information sharing in the questionnaire, the healthcare workers of organizations that are continuously evolving concerning patient participation can keep on measuring their progress.

The focus of the PaCT-HCW is currently measuring the individual healthcare worker's attitude and reported behavior towards the individual patient. But, next to the behavior of individual healthcare workers, their work configuration factors and organizational context, groups of healthcare workers and patients are of importance too (Nembhard et al., 2015). The organizational factors and contexts are incorporated in the questionnaire, but the questionnaire does not measure group dynamics. Therefore, a checklist or questionnaire that assesses patient participation on the organizational level could be useful. It should be guarded that the items in this questionnaire are not limited to hotel facilities and services (e.g. food or access to internet; Douglas & Douglas, 2004), or measuring patient satisfaction (Larsson & Larsson, 2010), but include items on how patient participation is delivered.

2.3. Future research

The development and validation of the PaCT-HCW, as described in chapter two, was only the first step in providing a validated questionnaire to measure patient participation culture. Throughout the limitations, it was shown that the PaCT-HCW has shortcomings that should be addressed within a long-term perspective. Three actions concerning psychometric testing should be undertaken to further refine the Pact-HCW. First, a test-retest experiment has to be performed to assess the reliability (stability) of the questionnaire. Second, discriminative sensitivity of the PaCT-HCW has to be determined. This refers to how well a questionnaire discriminates between individual categories of respondents (cross-sectional discrimination) and assesses changes over time (longitudinal discrimination; Polit, 2017). As patient participation behavior is at risk of being biased by social desirability, the sensitivity of a questionnaire could be limited (Evans et al., 1977). This means that respondents answer in a manner that will be viewed favorably

by others, and not how the situation actually is. Consequentially, patient participation always has high scores because this is desired by society. Third, the PaCT-HCW has to be shortened to increase response rates in the future. Currently, the questionnaire contains 52 questions. In particular, the component 'communication and dialogue' (21 items) should be addressed due to its size.
Next to further psychometric development, national and international cross-sectional studies have to be performed to determine whether the findings in this study (chapter three) are generalizable and cross-cultural. As mentioned before, the PaCT-HCW is currently translated in several languages in order to be used in a variety of countries and cultures. As studies have shown that elements of patient participation are culture specific (Asmaningrum & Tsai, 2017), it currently remains a question whether or not the PaCT-HCW is suitable for other cultures. Also, next to the influence of demographic characteristics, also organizational characteristics like the nursing care organization should be explored. It has been proven that in two-tier or centralized nursing systems, where team-spirit is of significant importance to 'get the job done', nurses felt less responsible and accountable for patients (Fairbrother et al., 2010), and nurses show active behavior to exclude the patient from involvement in decisions concerning their healthcare process (Spinks et al., 2015; Tobiano et al., 2017).

3. REFLECTIONS ON BEDSIDE SHIFT REPORT[6]

During the bedside handover or bedside shift report, the clinical handover between nurses is given at the patient's bedside (Anderson & Mangino 2006). As described in the General Introduction (chapter one), the method has gained interest of the nursing community due to positive outcomes that can be expected of both increased patient-nurse and nurse-nurse communication (Gregory et al., 2014; Ferguson & Howell, 2015). Despite this increased use and the positive -assumed or proven- effects that are reported in the literature, a comprehensive scientific body of knowledge is lacking due to the absence of rigorous and large-scale studies (Smeulers et al., 2014). Questions regarding its implementation remain, leaving the process of bedside shift report covered in a haze of unclarity (Manias & Watson, 2014). These unclarities often resulted in uncertain, difficult to interpret, and/or contradictory study results. This leads to failed or hindered implementation, which deprives patients from the possible high standard care that bedside shift report can offer (Anderson et al., 2015; Gregory et al., 2014; Mardis et al., 2016).
As elaborated in chapter four, in the last three years we conducted a multi-centered, longitudinal, mixed methods study on bedside shift reports (Malfait et al., 2017), enabling us to clarify issues. The goal of this study was to evaluate the feasibility, appropriateness, meaningfulness and effectiveness of bedside shift reporting. The research proto-

6 Paragraphs based on: Malfait S, Eeckloo K, Van Biesen W, Van Hecke A (2018). Implementing bedside shift report: four lessons learned (Editorial). In progress.

col was therefore comprehensive, extensive and large-scale (Malfait et al., 2017). This approach has taught us many valuable lessons about the bedside shift report, and will probably keep on doing so in the near future. Several follow-up studies are being finalized, but could not yet be included in this dissertation. Five studies are still ongoing. There are two studies about the qualitative evaluation of bedside shift report, one study from the patient's perspective and one study from the nurse's perspective on bedside shift report. Also, the data concerning the longitudinal clinical outcomes are currently being collected and analyzed. Next, the comparative analysis of the content of handovers before and after implementation of bedside shift report is currently being finalized. Finally, the data collection on the long-term follow-up of intervention compliance has ended and analysis of this data is soon to begin. By combining the results from the studies in this dissertation, the preliminary results from the follow-up studies, and the international literature, conclusions can be drawn regarding the feasibility, appropriateness, meaningfulness and effectiveness of bedside shift reports.

Feasibility refers to 'the extent to which an activity is practical and practicable' (Pearson et al., 2005). When reflecting on the feasibility of bedside shift report, our observational studies (chapter six and seven) have shown that delivering bedside shift report was easy for most nurses, which was reflected in the high rates of compliance to the intervention. The preliminary results from the longitudinal follow-up of these compliance rates indicate that through time, the rates do not decrease. Basic nursing activities and stimulating patient participation remained a point of attention throughout the study. In relation to international literature, studies concerning compliance could not be identified. There are however qualitative studies confirming our findings about the nurses' behavior to avoid patient participation (Tobiano et al., 2017). Although there is the possibility that they are biased by the researcher's presence as described in chapter six, the stability of the findings over time reduces this possibility.

The appropriateness or applicability is 'the extent to which an intervention or activity fits with a situation' (Pearson et al, 2005). Concerning the appropriateness and applicability, it was identified in chapter five that due to the ward's, the hospital's and nursing care organization, difficulties were identified that hindered the applicability of bedside shift reports. Adjustments had to be made within the organization of care to enable the bedside shift report. Still, no specific types of wards could be identified were bedside shift report was overall not possible. During the observational studies, nurses did however identify several individual patient situations were bedside shift report could not be used. No international studies identifying similar findings or investigating the same topics could be found.

Meaningfulness is 'the extent to which an intervention or activity is positively experienced by the patient' (Pearson et al; 2005). Instead of solely focusing on the patients, the meaningfulness of bedside shift report for nurses is also discussed. Concerning nurses, a reluctance towards the bedside shift report was found on numerous occasions (chapter five, six, seven & eight). The origins of this reluctance were partially identified and included themes like control, professionalism, responsibility and accountability. In chapter eight we suggested that these themes are perhaps at the origin of why 'privacy' is such a common used counterargument for the use of bedside shift report. In the on-

going studies, these topics are further explored (Malfait et al., in progress). In relation to the meaningfulness for patients, results from the ongoing follow-up studies show that almost all patients had positive experiences about bedside shift report (Malfait et al., in progress). In literature, both the opinions of patients and nurses are confirmed (Anderson et al., 2015; Gregory et al., 2014; Mardis et al., 2016)

Effectiveness is 'the extent to which an intervention, when used appropriately, achieves the intended effect' (Pearson et al, 2005). Reflecting on the quantitative effects in this study (chapter nine), the conclusion is that, with the exception of an increase in discussing patient participation and a decrease in work interruptions, no overall or generic effects could be found for both patients and nurses. There were however strong indications that, despite of organizational changes, the wards that used bedside handovers maintained a high standard of individualized care. Therefore, four conclusions can be drawn concerning the effectiveness of bedside shift report.

First, these results contrast with the positive outcomes that were found in single-case or short-term studies (Anderson et al., 2015; Gregory et al., 2014; Mardis et al., 2016). This could possibly mean that generic or overall results of implementing bedside shift report should not be expected. Second, although there were no -or almost no- positive effects, no negative effects could be seen as well. As such, bedside shift report cannot be labelled as a 'good' or 'bad' intervention, based on the quantitative results. Taking into account the certain increase in direct patient contact that has been proven, bedside shift report should be preferred above a classical handover in the nursing station. Third, these quantitative results are in contrast to the overall positive feedback given by patients in the ongoing qualitative evaluation of the study (Malfait et al; in progress). Similar qualitative results were seen in other studies (Anderson et al., 2015; Gregory et al., 2014; Mardis et al., 2016). Fourth, there are quantitative indications that by using bedside shift report, patient participation becomes a more important topic on a nursing ward.

Finally, the FAME-framework also includes economic evidence: the costs and cost-benefit of the intervention (Pearson et al., 2005). Since this was not incorporated in the initial research protocol and was no explicit research goal, economic analyses were not performed (Malfait et al., 2017), some important remarks concerning the cost-benefits of bedside shift reports can be made. Implementing the bedside shift report as a mean to increase time-efficiency on the short-term, is shown not to be the best strategy (chapter seven). It does have a generic, positive effect in direct patient time as the handover is performed at the patient's bedside. Furthermore, it is proven that implementing the bedside handover does not increase costs for an organization as it only replaces one process with another, and does not negatively affect job satisfaction or the nurses' intention to leave. Moreover, there are studies indicating that the number of adverse events decline when using bedside shift report (Groves et al., 2016), which is suspected to decrease long-term healthcare costs for society. It seems that implementing bedside shift report is at its worst a cost-neutral intervention with a certain increase in direct patient contact, and at its best could turn out to be a cost-effective intervention as a results of possible benefits.

In conclusion, this study on the bedside shift report indicates that the intervention is suitable for the wards as included in this study. Nurses seem to deliver the bedside hand-

over with a relative ease. No indications were found that the bedside handover was not applicable, except in some very specific situations. Most problems decreasing the applicability were of a practical nature, had no origin in patient characteristics, and could be addressed by -sometime extensive- changes in the organization of a ward or hospital (Anderson et al., 2015; Gregory et al., 2014; Mardis et al., 2016). The bedside handover has been proven in international qualitative research to be a meaningful intervention for patients, and for some nurses. Results from our follow-up studies seem to confirm this (Malfait et al., in progress). Concerning the latter, there are indications from the literature and our ongoing studies that nurses who found the bedside shift report not meaningful, also labeled patient participation as negative. There were almost no quantifiable, overall effects, nor positive or negative. There was however a stabilizing effect. At worst, implementing bedside handover is a cost-neutral intervention while increasing direct patient care. Therefore, we state that implementing bedside shift report is a suitable intervention for nursing practice, but is above all a choice in benefit of the patient. Positive effects concerning patient-related, nurses-related, clinical and financial outcomes could occur, but are most likely ward dependent and not generic.

3.1. Implications for nursing practice

Overall, the study taught us five important lessons for practice. First, the literature on bedside handovers is subject to publication bias. The positivity of the published results is thus no adequate representation of the failed endeavors in practice (Tobiano et al., 2017). From the initial 14 participating wards in our study, only eight decided to use the bedside handover as the new standard. In contrast, observations one month after implementation showed compliance rates to the handover content above 80% and no significant problematic situations were reported (Malfait et al., 2018). This indicates that the bedside handover itself is not difficult to execute and that other factors influenced the drop-out rate. Qualitative data from nurses showed that the handover was closely intertwined with the ward's care organization, which was often a precarious balance. Changing the handover meant disturbing this balances, also changing the way how nursing care was delivered on the ward.

Second, questions are rising about the aspect of patient involvement in the process of bedside handover (Manias & Watson, 2014). In one-third of our observations, the patient was not consulted during the handover. When implementing the bedside handover, nurses should be continuously stimulated to involve patients and introducing themselves, as patient participation is an essential aspect of bedside handovers (Anderson & Mangino 2006; Malfait et al., 2018). These results indicate that nurses show a specific reluctance towards the patient participation aspect of bedside handover. This is of particular importance. If patient participation is not a central and important element of the bedside shift report, it ignores patient participation as one of the two key goals of bedside shift report. This would mean that the intervention has failed, and could lead to disempowered patients instead of empowered patients.

Third, confidentiality issues are frequently reported by nurses as a main barrier for the use of bedside handovers. However, no patients in our study refused the bedside hand-

over due to confidentiality issues. We argue that bedside handovers do not create a sole and unique situation in which privacy and providing information are conflicting. We furthermore argue that bedside handovers do not inflict confidentiality issues in such manner that the method cannot be used in practice, as long as sufficient steps are taken to protect patients (chapter eight). In contrast with what nurses perceive, we were unable to identify large groups of patients for who the bedside handover was impossible. There were some situations where the bedside shift report was perhaps not preferable, but such situations were rare. Most situations where the bedside handover was not delivered related more to the characteristics of nurses (e.g. lack of skills or negative conceptions about patient participation), than to the characteristics of patients. Bringing the handover to the bedside requires new skills and attitudes of nurses for interacting with their patients, more than it needs competent patients.

Fourth, we could not find any quantitative overall short-term or longitudinal effects of bedside handovers on the delivery of individualized care or the care process. However, qualitative studies on patients' experiences indicate that patients feel safer, more involved and treated like an individual when bedside shift report is used (Weemaes et al., in progress). Nurses who considered the bedside handover as no beneficial intervention for themselves tended to discontinue, whereas those perceiving the intervention as beneficial for their patient tended to continue (Malfait et al., in progress). This indicates that when considering the implementation of bedside handovers, the motivation for engaging in the bedside handover should be the interest of the patient, and not of the nurse. Next to current and predominant focus on self-realization and further development of the professional identify, this requires an equally important focus on qualitative patient-centred care in nursing.

Fifth, we found that a bedside handover for one patient, including the walking time between rooms, takes 146 seconds, decreasing to 123 seconds when the method was used over a longer period of time (Malfait et al., in progress). Overall, direct patient contact increased on all wards, but the changes in the overall time-use for the entire handover depended on the ward's organization.

To conclude, bringing the handover to the patient's bedside is not something you just do or impose. The handover is one of the most important moments during a shift, but is often subject to traditions and habits, social and operational activities (Riesenberg et al., 2009; Kitson et al., 2014), and strongly interconnected with many organization-related elements (Malfait et al; 2017). Therefore, it has lost its essence as moment of information transfer (Davis et al., 2007). Changing the handover back to this essence and involving the patient at the same time, often disturbs the precarious balance on a ward by challenging the day-to-day organization of a ward and the capabilities of the employed nurses. Facing these challenges, nurses remain with or return to known structures and fail to successfully implement bedside handovers. Therefore, the implementation of bedside handover should be a step-by-step, tailored approach, starting with an investment in sufficient preparation and exploration on how nursing care is currently delivered and be embedded in a multitude of other interventions. The bedside handover should not be seen as a 'quick fix'-method (McCormack & Watson, 2017) for increasing patient participation and enhancing communication between nurses with minimal investment.

Instead, the bedside handover with patient participation as a key element revealed itself as a method that forced a more patient-centered organization, requiring new skills and attitudes of nurses. We therefore support the idea of bedside handovers as the new standard, but also warn about superficial and fast implementation of the method, being fixated on measurable and short-term effects, influenced by the novelty of it. Choosing the fast track, ignoring the true meaning of patient-centeredness (Dewing & McCormack, 2017) and denying patients the added value of participating, will lead to inevitable failure and perhaps even negative outcomes for our patients like disempowerment.

3.2. Implications for nursing management

Based on the lessons above, nursing managers considering the implementation of bedside shift handovers should bear following advice into mind.

First, every ward should be approached separately and have a tailored implementation process. Throughout the study, it has become apparent that implementing the bedside handover causes a very dynamic change process on a ward, affecting both the individual nurse as the organization of the ward, and the hospital by extension as some of the ward's processes are determined by its operational, day-to-day organization. Every ward has specific needs that have to be addressed before bedside shift report can be successfully implemented. Based on the results in this dissertation, implementing one, standardized and overall hospital procedure concerning the bedside shift handover is no optimal strategy.

Second, on many occasions a reluctance amongst nurses to use the bedside shift report and involving the patient was reported or insinuated. Delivering a bedside shift report and positively involving patients throughout this process requires new skills and attitudes of nurses, requiring them to share their knowledge and expertise with the patient. If these are not mastered, forcing nurses to deliver a bedside shift report can cause stress and uncertainty. Therefore, making the delivery of a bedside shift report mandatory in such a setting could turn out negative for the quality of care.

Third, if bedside handover is to be the new standard of handover in a hospital, the hospital has to be willing to make changes to enable the implementation and protect patient participation as a key aspect of the process. As mentioned multiple times, bringing the shift report to the patient's bedside is more than changing the handover process. A new organization of nursing care is needed, which should be as close as possible to decentralized nursing. Therefore, in order to effectively implement a bedside shift handover that works, it is argued that changes should be made in the wards organization to fit in the bedside shift report in, and it should be avoided that changes are made in the bedside shift report to fit into the wards organization. By doing the latter, the bedside shift report will be affected negatively.

Fourth, confidentiality issues are often used by nurses to hinder the implementation of bedside shift report. These potential confidentiality issues should not be a reason to postpone the implementation of bedside shift reports, as they are often a sublimation of other reluctance-inducing issues related to nurses. Still, in order to avoid possible problems, the necessary steps and measures should be taken to protect the privacy of

patients as much as possible: ask consent from the patient every day, train nurses to be diligent and respectful, involve the patient in any decision, and ensure the patient's privacy as much as possible by closing the door and the curtains.
Fifth[7], in the design and development of the method, as well as during the implementation process, co-design was used to summarize and bring together the opinions of patients and nurses in a structural and systematic way. We found the co-design trajectory (Locock et al., 2014) very useful in supporting the needed changes on a ward for implementing bedside shift report. The use of the co-design method convinced us that it should be considered as the future method for quality improvement. The method's founding in multiple research methods and the systematic crossing of the perspectives of stakeholders can positively influence group dynamics on a ward, facilitating the implementation of complex interventions like bedside shift report. By bringing the perspective of patients and nurses together and step-by-step in a safe environment, made the nurses' change their perspective on certain issues. For example, the patient's perspective on privacy –a frequent reported major barrier during bedside shift report- helped some nurses to change their idea about the issue. When confronted with patients that minimalized the ethical gravity of bedside shift report in semi-private rooms, nurses automatically adjusted their opinions. Overall, it was a crucial factor in overcoming reluctance in practice and designing methods tailored to patients and health practitioners. Although co-design is time intensive and requires substantial investment in the short-term, it reduces the chance on difficult and hindered implementation. These findings are similar to studies in Flanders that are currently also using co-design as a mean to implement a patient participation method (Castro et al., 2018).

3.3. Implications for nursing education

The results from this dissertation also have an impact on nursing education. If bedside shift reports are to be the new standard, nursing curricula should prepare their students by actively training this handover process in school. As shown, the bedside shift report requires new skills and attitudes from nurses, but also getting acquainted with the process. Overall, more attention should be given at proper education of handovers due to their importance for qualitative and safe care. Until now, nurses continue to not acknowledge the evidence that the shift report is one of the most critical processes in patient concerning patient safety and the prevention of medical errors (Gregory et al., 2014). As a consequence they are often not open-minded towards more effective methods, like the bedside shift report (Gregory et al., 2014). Installing effective handover models should begin at school, before wrong dynamics are learned during internships or early practice (Kitson et al., 2014).
Moreover, throughout this dissertation is emphasized that patient participation is an

7 Paragraphs based on: Castro, E. M., Malfait, S., Van Regenmortel, T., Van Hecke, A., Sermeus, W., & Vanhaecht, K. (2018). Co-design for implementing patient participation in hospital services: A discussion paper. Patient education and counseling.

important key element in bedside shift reports, which requires additional skills and a change in attitude from nurses. In order to make the bedside shift report work optimal, effective communication and patient participation behavior should both be present (Anderson & Mangino, 2006). Therefore, next to focusing on learning and training the technique of bedside shift report, students should also be prepared on accepting this new role for the patient and involving the patient in the handover. The culture change that is needed in nursing to make patient participation possible should start in nursing education.

3.4. Limitations and methodological considerations

Although the structure of the research protocol was rigorous, the studies had several limitations. In the chapters of this dissertation, many specific limitations were already discussed. Still, there are some generic limitations which are applicable for the entire study, and which could provide possibilities for optimization in future studies on bedside shift report.

First, the national character of the study could endanger the study's generalizability to other contexts. As the RN4Cast has shown, nursing care, its organization and staffing differ between countries (Aiken et al., 2014). Currently, only in Australia comprehensive research on the bedside shift report could be identified. In order to form a stronger body of knowledge, similar studies should be performed in more countries.

Second, in our study the content of the bedside shift report was structured using the ISBARR-technique. The ISBARR-structure was chosen due to its common use in Belgium and the incorporation of a phase of introduction and read back, which fitted well with the concept of patient participation during the bedside shift report. But as research has shown, there are many other mnemonics, each with its own advantages and contextual adaptations (Riesenberg et al., 2009), and even unstructured bedside handovers have been reported (Laws & Amato, 2010). Alternative structures, or the absence of them, could affect the outcomes. Future studies could therefor consider comparing multiple structures/mnemonics during bedside handover in order to determine which structure is preferred, is most facilitating towards patient involvement, and whether there are any differences in outcome depending on the structure.

Third, 14 wards started with the intervention. In the end, only eight wards completed the study until the end. Although the adequate numbers for maintaining the power of the study were achieved, such drop-out rates do limit the study. It is possible that the nursing wards were the intervention was ceased possess certain characteristics of features, which made the implementation of bedside shift report impossible. This could lead to selection bias. Therefore, there is a need of research determining whether or not there are different characteristics between wards that use the bedside shift report, and wards that rejected the method, and wards that did not use the method at all. Also, this drop-out rate is perhaps a reflection of the difficulties of implementing bedside shift report and confirms a publication bias in the overall positive effects that are reported about bedside shift report (Tobiano et al., 2017). In future studies, a sufficient number of wards should be included in order to counter the threads of drop-out rates.

Fourth, there was a drop-out rate of 27.8% across the wards for the participating nurses. These drop-out rates were caused by transfers, retirement or sickness. These turnover rates do differ from other countries, as they are about 8% higher (Duffield et al., 2014). In defense, 67.3% of the nurses could be paired throughout the study, and longitudinal response rates were high in comparison to other longitudinal studies on nurses (Cho et al., 2013). Moreover, the use of multilevel analyses enabled us to also include nurses that completed at least two questionnaires (Krueger & Tian, 2004). This results in stronger models than the models in ANOVAs where only nurses that completed all three questionnaires can be included.

3.5. Future Research and dissemination

By elaborating on our findings, some important research topics for future research are identified. First, nurses' reluctance towards bedside shift reports should be closer looked into. Future studies should further explore in-depth were the reluctance of some nurses towards bedside shift report originates from. Next to qualitative analyses, which is partially addressed in this dissertation, a quantitative 'intention to treat'-analysis on nurses could be very informative (Hollis & Campbell, 1999). The reluctance is one of the most important reasons, next to organization and feasibility, why the implementation of bedside shift report fails. More insight in how to predict and overcome this reluctance will be very useful for nursing practice.

Second, it should be further investigated how many initiated projects resulted in failed implementation, and the main reasons why. This is currently understudied (Tobiano et al., 2018). Mapping the quality improvement initiatives on bedside shift report that fail, and the reasons why, could provide more adequate and appropriate expectations on success when implementing bedside shift report.

Third, by addressing and elaborating the privacy issue, we argue that the nursing profession's ethical frameworks and codes of conduct should be revised and put into perspective of patient participation and patient-centeredness. Methods like the bedside shift report will increase in use over time, and their implementation will need adequate guidance in order to be successful. There should be comprehensive discussion on whether our codes of ethics and conduct are ready to cope with more patient participation.

Dissemination of these findings is important for two reasons. First, sufficient publicity reduces the chance that similar research will be -unnecessarily- repeated. Second and more important, these results could inform practice. But, the gap between research and practice is large. It was estimated in 2006 (Brownson et al.) that the dissemination gap in nursing and medicine was 17 years and that only 14% of the original research reached practice. Therefore, next to the more classic dissemination methods (e.g. publications, presentations and lectures), original methods adopted to the current Zeitgeist should be used. Amongst others, social media should receive more attention within the nursing profession (Ferguson, 2013). Possible disseminations methods could be creating a Wikipedia®-page about bedside shift report, writing non-peer reviewed articles for popular nursing media, a (digital) handbook and accompanying website, and a visual summary on YouTube®. Twitter® and Facebook® can be used to draw attention to the laymen in-

formation channels on bedside shift report.

Table 1: recommendation for policy

Level	Patient participation	Bedside shift report
Micro*	· Further development and refinement of outcome measures for measuring patient participation within different healthcare settings.	· Finding practical solutions for the privacy issue. · Attention for patient participation and standard hospital procedures when executing the bedside handover. · Letting the patient decide on whether or not the bedside handover will be performed.
Meso**	· Continuous training of nurses concerning patient participation on ward and hospital level. These trainings should address young nurses with lower educational levels, and nurses on geriatric wards in particular. · The implementation of patient participation initiatives has to be approached well-thought-out, carefully, supported and stepwise.	· Consider the implementation of bedside shift reports very carefully, in particular taking into account nursing care organization on the ward. · Providing in sufficient organizational support when wards start implementing bedside shift report. · Providing a tailored intervention for each ward, possibly by using co-design.
Macro***	· Incorporating the topic of patient participation in nursing curricula and other healthcare professions. · Introducing patient experts in healthcare workers' education and training. · Reviewing nursing ethics and codes within the perspective of patient participation. · Restraining sector-wide implementation of patient participation initiatives due to the difficulties and threads for patients if not well executed.	· Bedside shift report as new standard for nursing handovers if patient participation is a key element. · Incorporate handover models in nursing curricula. · More attention for bedside shift report within the population of elderly. · More research confirming previous study results.

* level of the individual healthcare worker

**level of ward/hospital

*** level of policy/healthcare system

4. OVERALL CONCLUSION

We conclude by summing up the main implications of this dissertation and the related studies on nursing in particular and healthcare in general. Table 1 provides an additional overview of policy recommendations. An obvious truth is that patient participation has become an important issue in healthcare today and is believed to be even more important in the near future. Based on the results from a questionnaire developed to measure patient participation culture amongst nurses, it is argued that patient participation should be regarded as an advanced skill that needs sufficient training and perhaps a change in attitude. These could be considered as challenges for the nursing curricula. Due to the complexity of patient participation, the process of implementing and using patient participation can also be labelled as a complex intervention. Therefore, overall implementation of patient participation initiatives should be closely monitored and not

be seen as a quick fix solution. If not, patients are at risk. Consequentially, the bedside shift report, in which patient participation is an essential key element in order for the method to be effective, should also be regarded a complex intervention. The process of implementation should be well-prepared and stepwise, taking into account the fact that bringing the handover to the bedside also needs additional skills of nurses and adjustments to the organization of a hospital and a ward. Additional (organizational) interventions might be needed to effectively implement the bedside shift report. Only targeting the skills and attitudes of nurses as main strategy will be insufficient. Due to the complexity, meaning that many elements are intertwined, generic results cannot be expected. But apart from quantitative effects, the bedside shift report is superior in comparison to the more classic handover model if patient participation is a key element. Moreover, the bedside shift report provides more direct patient contact and enhances the patient's feeling of safety and individuality. The bedside shift report profiles itself as a suitable intervention, superior to the currently used methods for handover without patient participation, for those deliberately choosing for more patient participation and for those willing to make the organizational transition to more patient-centeredness. The bedside shift report furthermore revealed itself as a method that forced a more patient-centered organization of nursing care, forced nurses to require new skills and attitudes and forced the organization to make changes for the benefit of the patient. Overall, the method has many advantages in comparison to the currently used handover methods without patient involvement (e.g. more direct patient contact, less work interruptions), whitout additional costs or negative effects. This makes the method preferable. But a warning should be issued as well. Without the motivation of nurses and organizations towards more patient-centredness, the method of bedside shift report could be considered a threat to patient participation. Therefore, hospitals should be careful in considering bedside shift report as their new standard while at the same time taking into account that patient participation methods like bedside briefings are likely to become standard in the future, as the change towards patient-centredness is inevitable.

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Summary

May there be many a summer morning when,
with what pleasure, what joy,
you come into harbors seen for the first time;
[...] to gather stores of knowledge from their scholars.
- C.P. Cavafy –

This dissertation discusses patient participation on nursing wards and looks at bedside shift report as a particular method for nurses to increase patient participation at the patient's bedside. Both topics are strongly interconnected as one of the main goals of bedside shift report is enhancing the communication between nurses and patients in order to facilitate patient participation. It was therefore necessary to first explore patient participation as the overarching concept in which bedside shift report should take place and to study patient participation amongst nurses before bedside shift report could be addressed in detail.

In order to measure patient participation culture amongst nurses in the Flemish-speaking region of Belgium, a four-phased validation study was performed to design a self-assessment measurement tool. This four phased-validation study resulted is the PaCT-HCW, the Patient Participation Culture Tool for Healthcare Workers (**chapter two**). This Dutch, self-assessment questionnaire measures the attitude and perceptions of healthcare workers concerning their competence, the perceived support, the perceived lack of time, information sharing and dialogue, coping with factual questions, coping with challenging questions, coping with notifying questions, and the acceptance of a new role from a healthcare worker's perspective on patient participation. The questionnaire showed strong psychometric values and internal consistency. The results from a cross-sectional study with this questionnaire showed that younger and lower educated nurses had lower scores concerning patient participation behavior, in particular communicating with patients and accepting a new role. Supervising nurses had overall higher scores (**chapter three**). Although the PaCT-HCW is a valuable tool, further refinement and adaption to other healthcare settings is needed.

Next, bedside shift report was addressed in particular by describing the results from a mixed method, multicentred and longitudinal study on bedside shift report (**chapter four**). In total, 14 nursing wards in eight Flemish hospitals participated in the study. In this dissertation, the interviews with nurses before implementation (**chapter five**), the observations after implementation (**chapter six and seven**) and repeated measures of nurses and patients are discussed (**chapter nine**). Also, the topic of breaching privacy while the bedside handover is performed in semi-private rooms is discussed due to the importance of this issue for successful implementation. Based on the overall results and by combining these results, four conclusions can be added to the body of knowledge related to the bedside shift report (**chapter 10**). In order to provide in well-founded conclusions, unpublished results and results from ongoing related studies were added during the discussion.

First, although the results indicate that bedside shift report is not difficult to deliver, many nursing wards fail to implement and consolidate the bedside handover as the new standard. This indicate that the overall positive image of bedside shift reports in literature should be put into perspective more. From this study, it became apparent that bringing the handover to the patient's bedside is more than just introducing a new handover process. Additional changes **and interventions** in nursing care are needed. Second, patient involvement is an important aspect of bedside shift report if one wishes to enhance both nurse-to-nurse communication and patient-nurse communication. In practice, nurses seem to be reluctant to actively involve patients during the bedside shift report.

Moreover, there are some indications that nurses actively avoid situations in which the patient could speak out. In a particular part of this dissertation, it is discusses that this avoiding behavior could be one of the reasons why the possibly breach of patient's confidentiality is so often used as a reason for not executing the bedside shift report. When implementing the bedside shift report, nurses should possess the skills and attitude towards patients to actively involve them. Third, the overall effects on quantitative nurse-related and patient are limited. Although differences on individual ward level can be noticed, the implementation of bedside shift report has almost no fixed, generalizable effects, positive nor negative. In still ongoing studies, we did find subjective effects for both nurses and patients. This shows that the bedside handover should be mainly a choice for more participation. Fourth, when it comes to time-use, implementing the bedside handover had mixed effects. For some wards, time-use during the handover increased while on other wards, time-use decreased. In the study it is shown that the effects on time-use are dependent of ward characteristics and that direct patient contact increased on all wards. Implementing bedside shift report as a mean to increase time-efficiency during the bedside handover is not a good choice.
Overall, starting with the bedside handover on a nursing ward is not something 'you just do' or quickly implement. The bedside handover should **not be seen as a 'quick fix'-method** for increasing patient participation and enhancing communication between nurses with minimal investment. Instead, the bedside handover **revealed itself as a method that forced** a more patient-centered organization of nursing care, requiring new skills and attitudes of nurses and needs the necessary organizational changes **and interventions**. At worst, implementing bedside handover is a **cost-neutral intervention while increasing direct patient care**. Therefore, we state that implementing bedside shift report is a suitable intervention for nursing practice, but is above all a choice in **benefit of the patient**. **Positive effects** concerning patient-related, nurses-related, clinical and financial outcomes could occur, but can be **very ward dependent.** We therefore support the idea of bedside handovers as **the new standard if patient participation is a key element of the process**, but also warn about superficial and fast implementation of the method, being fixated on measurable and short-term effects, influenced by the novelty of it. Choosing **the fast tra**ck, ignoring the true meaning of patient-centeredness and denying patients the added value **(i.e. patient participation)**, will lead to **inevitable failure and possible negative outcomes for our patients (e.g. disempowerment)**. Therefore, implementation should be **well-prepared and stepwise.** The bedside shift report is a suitable intervention for those choosing deliberately for more patient participation and for those willing to make the organizational transition to more patient-centeredness.

Samenvatting

Dit proefschrift bespreekt de patiëntenparticipatie op verpleegafdelingen in Vlaanderen en bestudeert de overdracht aan bed (*'bedside shift report')* als specifieke methode voor verpleegkundigen om de patiëntenparticipatie aan het bed van de patiënt te verbeteren. Beide onderwerpen zijn sterk met elkaar verbonden. Eén van de hoofddoelen van de overdracht aan bed is immers het verbeteren van de communicatie tussen verpleegkundigen en patiënten, en zo patiëntenparticipatie te faciliteren. Het was daarom noodzakelijk om eerst patiëntenparticipatie te onderzoeken als het overkoepelende concept waarin de overdracht aan bed zou plaatsvinden en om de patiëntenparticipatie bij verpleegkundigen te bestuderen vooraleer de overdracht aan bed behandeld kan worden.

Om de cultuur van patiëntenparticipatie bij Vlaamse verpleegkundigen te meten, werd een valideringsonderzoek in vier fases uitgevoerd om zodoende tot een meetinstrument voor zelfevaluatie te komen. Deze validatie-studie resulteerde in de PaCT-HCW (**hoofdstuk twee**). Deze Nederlandse zelfevaluatievragenlijst meet de houding en percepties van gezondheidswerkers met betrekking tot hun competenties, de gepercipieerde ondersteuning, het gebrek aan tijd, het delen van informatie en de dialoog, het omgaan met feitelijke vragen, het omgaan met uitdagende vragen, het omgaan met kennisgevingsvragen, en de acceptatie van een nieuwe rol, telkens vanuit het perspectief van een zorgverlener op de patiëntenparticipatie. De vragenlijst toonde sterke psychometrische waarden en interne consistentie. Uit de resultaten van een cross-sectionele studie met deze vragenlijst bleek dat jongere en lager opgeleide verpleegkundigen vaak lagere scores hadden met betrekking tot gedrag voor patiëntenparticipatie, in het bijzonder de communicatie met patiënten en het accepteren van een nieuwe rol. hoofdverpleegkundigen hadden in het algemeen hogere scores (**hoofdstuk drie**). Hoewel de PaCT-HCW een waardevol hulpmiddel is, is verdere verfijning en aanpassing noodzakelijk.

Vervolgens wordt de overdracht aan bed besproken. Om tot deze resultaten te komen werd een *'mixed method'*, *'multicentred'*, longitudinaal onderzoek naar de overdracht aan bed opgezet (**hoofdstuk vier**). In totaal namen 14 verpleegafdelingen in acht Vlaamse ziekenhuizen deel aan het onderzoek. In dit proefschrift worden de interviews met verpleegkundigen vóór implementatie (**hoofdstuk vijf**), de observaties na implementatie (**hoofdstuk zes en zeven**) en de metingen van verpleegkundigen en patiënten besproken (**hoofdstuk negen**). Ook wordt het onderwerp de mogelijke schending van privacy tijdens de overdracht aan bed besproken. Dit vanwege het belang van dit probleem voor een geslaagde implementatie. Op basis van de algemene resultaten en door deze resultaten te combineren, kunnen vier conclusies worden toegevoegd aan het geheel van kennis met betrekking tot het nachtverslagrapport (**hoofdstuk 10**). Om meer gefundeerde uitspraken te kunnen doen in de conclusies, werden ook lopende studies en nog niet gepubliceerde resultaten meegenomen in de conclusie.

Ten eerste, hoewel de resultaten aangeven dat de overdracht aan bed niet moeilijk uit te voeren is, slagen veel verpleegafdelingen er niet in om de overhandiging aan het bed als de nieuwe standaard te implementeren en te borgen. Dit geeft aan dat het algehele positieve beeld van de overdracht aan bed in de literatuur meer in perspectief moet worden geplaatst. Uit deze studie bleek dat de overdracht aan het bed van de patiënt meer is dan enkel het introduceren van een nieuw overdrachtsproces, en dat bijkomende

veranderingen **en interventies** nodig zijn. Ten tweede is de betrokkenheid van patiënten een belangrijk aspect van de overdracht aan bed als men de communicatie tussen verpleegkundige en verpleger en de communicatie tussen patiënt en verpleegkundige wil verbeteren. In de praktijk lijken verpleegkundigen terughoudend te zijn om patiënten actief te betrekken tijdens de overdracht aan bed. Bovendien zijn er enkele aanwijzingen dat verpleegkundigen zelfs actief situaties vermijden waarin de patiënt zich zou kunnen uitspreken. In een specifiek deel van dit proefschrift wordt besproken dat dit ontwijkgedrag een van de redenen zou kunnen zijn waarom de mogelijke schending van de vertrouwelijkheid van de patiënt zo vaak wordt gebruikt als reden om het bed-shift-rapport niet uit te voeren. Bij het implementeren van de overdracht aan bed is het belangrijk dat verpleegkundigen beschikken over de juiste vaardigheden en houding ten opzichte van patiënten, met als doel de patiënt te betrekken. Ten derde zijn er bijna geen te veralgemenen effecten voor verpleegkundigen en patiënten. Hoewel er verschillen op het niveau van de individuele afdeling werden bemerkt, heeft de implementatie van de overdracht aan bed geen positieve noch negatieve effecten over alle afdelingen heen. In nog lopende onderzoeken vonden we echter wel subjectieve effecten voor zowel verpleegkundigen als patiënten. Dit toont aan dat de overdracht aan bed voornamelijk een keuze moet zijn voor de patiënt en voor meer participatie. Ten vierde, als het gaat om gebruik van de tijd, had de uitvoering van de overdracht aan bed gemengde effecten. Voor sommige afdelingen nam het tijdgebruik tijdens de overdracht toe, terwijl op andere afdelingen het tijdgebruik afnam. In het onderzoek is aangetoond dat de effecten op het tijdsgebruik afhankelijk zijn van kenmerken van de afdeling en dat direct contact met de patiënt op alle afdelingen is toegenomen. Het implementeren van de overdracht aan bed als een middel om de tijdwinst tijdens de overdracht te verhogen, blijkt dus geen goede keuze.

Ter conclusie, beginnen met de overdracht aan bed op een verpleegafdeling is **niet iets wat zomaar snel ingevoerd wordt**. De overdracht aan bed moet dus niet worden gezien als een *'quick fix'* voor het verhogen van patiëntenparticipatie en het verbeteren van de communicatie tussen verpleegkundigen waarvoor een minimale investering nodig is. In plaats daarvan bleek **de overdracht aan het bed een methode die een meer patiëntgerichte organisatie afdwong**, nieuwe vaardigheden en attitudes van verpleegkundigen vereiste en de nodige organisatorische veranderingen **en interventies** nodig had. In het slechtste geval is het implementeren van de overdracht aan bed **een kostenneutrale interventie terwijl steeds de directe patiëntenzorg wordt verhoogd**. Daarom stellen we dat het implementeren van de overdracht aan bed een geschikte interventie is voor de verpleegkundige praktijk, maar vooral **een keuze is voor patiëntgerichtheid**. Positieve effecten met betrekking tot patiënten, verpleegkundigen, of klinische en financiële uitkomsten kunnen optreden, maar zullen **afdelingsgebonden** zijn. We ondersteunen daarom het idee van overhandigingen aan het bed als **de nieuwe standaard zolang het betrekken van de patiënt een essentieel onderdeel is van de methode**, maar waarschuwen tegelijkertijd ook voor een oppervlakkige en snelle implementatie van de methode, gefixeerd op meetbare en korte termijneffecten, beïnvloed door de nieuwheid van de methode. Het kiezen voor **snelheid**, waarbij de ware betekenis van patiëntgerichtheid genegeerd wordt en de toegevoegde waarde voor patiënten dus ontbreekt **(d.i. patiën-**

tenparticipatie), zal onvermijdelijk leiden tot mislukkingen en mogelijks negatieve uitkomsten voor de patiënten (o.a. disempowerment). Daarom moet de implementatie goed voorbereid zijn en stapsgewijs gebeuren. De overdracht aan bed is een geschikte interventie voor diegenen die bewust kiezen voor meer patiëntenparticipatie en voor diegenen die bereid zijn om de organisatorische overgang naar meer patiëntgerichtheid te maken.

Dankwoord

Ithaca gave you the marvelous journey.
Without her you would not have set out.
She has nothing left to give you now.
And if you find her poor, Ithaca won't have fooled you.
Wise as you will have become, so full of experience,
you will have understood by then what these Ithaca's mean.
- C.P. Cavafy -

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About the author

ABOUT THE AUTHOR

Simon Malfait was born on January the 4th 1986 in Blankenberge, Belgium. He finished his secondary school in 2004 at Sint-Pieterscollege in Blankenberge and started his nursing studies at Ghent University College (HoGent) the same year. He became a registered nurse in 2007, with a specialty in Mental Health Nursing. In 2007, he started the Master in Nursing and Midwifery at Ghent University, and graduated in 2009. In 2013, he also successfully finished his Master in Healthcare Management, also at Ghent University.

After graduating as a Nurse in 2007, he started working as a Mental Health Nurse at the Psychiatric Center of Ghent-Sleidinge. In 2009, he took a gap year and travelled in New Zealand, Australia and South-East Asia. When returning in 2010, he took up the position as nursing manager and board member at the Psychiatric Center of Ghent-Sleidinge. In 2014, he transferred to the Ghent University Hospital to work as a researcher for the strategic unit. In 2016, he received a grant from the Ghent University Hospital in order to obtain his PhD-degree.

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Contributions of the doctoral student

THE PATIENT PARTICIPATION CULTURE TOOL FOR HEALTHCARE WORKERS (PACT-HCW) ON GENERAL HOSPITAL WARDS: A DEVELOPMENT AND PSYCHOMETRIC VALIDATION STUDY

Description of the study

A four-phased validation study in order to develop a self-assessment questionnaire for healthcare workers to measure patient participation culture.

Contribution of the doctoral student

Ann Van Hecke, Kristof Eeckloo and Johan Van Daele contributed equally to the design of the study protocol and the study. Simon Malfait was responsible for the organization of the study (including contacting the hospitals and the ethics committees) and the data collection. Data analysis was performed by Simon Malfait, and the writing of the first draft of the manuscript. The manuscript was adapted, based on the remarks by Ann Van Hecke, Kristof Eeckloo and Johan Van Daele. This was followed by an iterative process in which all authors contributed equally, aiming to finalize the manuscript. Simon Malfait was responsible for the subsequent steps to publish the manuscript (including revisions). Ann Van Hecke supervised the entire process.

THE INFLUENCE OF NURSES' DEMOGRAPHICS ON PATIENT PARTICIPATION IN HOSPITALS: A CROSS-SECTIONAL STUDY

Description of the study

A cross-sectional study that studied the influence of nurses' characteristics on the patient participation behavior by use of the PaCT-HCW.

Contribution of the doctoral student

Simon Malfait, Ann Van Hecke and Kristof Eeckloo equally contributed to the design of the study.
Simon Malfait was responsible for the organization of the study (including contacting the hospitals and ethics committees) and the data collection. Data analysis was performed by Simon Malfait, together with the writing of the first draft of the manuscript. The manuscript was revised by Ann Van Hecke and Kristof Eeckloo. This was followed by an iterative process in which all authors were equally involved, and the manuscript was finalized. Malfait Simon was responsible for the further steps to publish the manuscript (including revision). Ann Van Hecke supervised the entire process.

FEASIBILITY, APPROPRIATENESS, MEANINGFULNESS AND EFFECTIVENESS OF PATIENT PARTICIPATION AT BEDSIDE SHIFT REPORTING: MIXED-METHOD RESEARCH PROTOCOL

Description of the study

A research protocol for a matched-controlled, multicentred, longitudinal, mixed-method study on the feasibility, appropriateness, meaningfulness and effectiveness of bedside shift report.

Contribution of the doctoral student

Simon Malfait, Kristof Eeckloo, Elisa Lust, Wim Van Biesen and Ann Van Hecke contributed to the design for the study protocol. Simon Malfait wrote a first draft for this manuscript. Adaptations of the manuscript were made, based on the feedback of Kristof Eeckloo, Elisa Lust, Wim Van Biesen and Ann Van Hecke. This was followed by an iterative process in which all authors were equally involved, with the aim of finalizing the manuscript. Malfait Simon was responsible for the steps to publish the manuscript (including revision). Ann Van Hecke supervised the entire process.

'IT IS MORE THAN CHANGING THE HANDOVER': A STUDY ON NURSES' BELIEFS TOWARDS BARRIERS AND FACILITATORS FOR IMPLEMENTING BEDSIDE SHIFT REPORT ON HOSPITAL WARDS

Description of the study

A descriptive study with qualitative elements to explore the beliefs of nurses towards the barriers and facilitators for used bedside shift report before implementation.

Contribution of the doctoral student

Simon Malfait, Kristof Eeckloo, Elisa Lust, Wim Van Biesen and Ann Van Hecke contributed to the design of the study. Simon Malfait was responsible for the organization of the study (including the contact with and ethics committees) and the data collection. Data analysis was performed by Simon Malfait, as well as the writing of the first draft of the manuscript. Elisa Lust, Kristof Eeckloo, Wim Van Biesen and Ann Van Hecke formulated feedback on the manuscript. This was followed by an iterative process in which all authors were equally involved, aiming to finalize the manuscript. Malfait Simon was responsible for the subsequent steps to submit the manuscript. Ann Van Hecke supervised the entire process

CONDUCTING A BEDSIDE SHIFT REPORT: AN OBSERVATIONAL MULTI-CENTERED STUDY

Description of the study

An observational study to determine the compliance with a structured content during bedside shift report.

Contribution of the doctoral student

Simon Malfait, Kristof Eeckloo, Elisa Lust, Wim Van Biesen and Ann Van Hecke contributed to the design of the study. Simon Malfait was responsible for the organization of the study (including the contact with and ethics committees) and the data collection. During the data collection, Simon Malfait was assisted by Melanie Deryckere. Data analysis was performed by Simon Malfait, as well as the writing of the first draft of the manuscript. The manuscript was adapted on the basis of remarks by Ann Van Hecke, Wim Van Biesen, Elisa Lust and Kristof Eeckloo. This was followed by an iterative process in which all authors were equally involved, with the aim of finalizing the manuscript. Malfait Simon was responsible for the further steps to submit the manuscript (including revision). Ann Van Hecke supervised the entire process.

BEDSIDE SHIFT REPORT REDUCES HANDOVER TIME-USE? AN OBSERVATIONAL STUDY

Description of the study

An observational study with time registration to explore whether or not bedside shift report results in more effective time-use.

Contribution of the doctoral student

Simon Malfait, Ann Van Hecke, Wim Van Biesen, and Kristof Eeckloo contributed to the design of the study. Simon Malfait was responsible for the organization of the study (including the contact with hospitals and ethics committees) and the data collection. Data analysis was performed by Simon Malfait, as well as the writing of the first draft of the manuscript. The manuscript was fine-tuned by Ann Van Hecke, Wim Van Biesen and Kristof Eeckloo. This was followed by an iterative process in which all authors were equally involved, with the aim of finalizing the manuscript. Malfait Simon was responsible for the process of submitting the manuscript. Kristof Eeckloo supervised the entire process.

THE CHALLENGES OF PATIENT PARTICIPATION FOR THE NURSING PROFESSION: ISSUES EMERGING DURING A MIXED METHODS STUDY ON BEDSIDE SHIFT REPORT

Description of the study

A discussion paper on the ethical and legal issues during bedside shift report, more specifically confidentiality and privacy.

Contribution of the doctoral student

Simon Malfait wrote the first draft of this discussion paper on the basis of the data collected in the previous studies (see supra: 3, 4, 5, 6). The draft was reviewed by Kristof Eeckloo, Wim Van Biesen and Ann Van Hecke and was reworked based on their feedback. This was followed by an iterative process in which all authors were equally involved, with the aim of finalizing the manuscript. Malfait Simon was responsible for the steps to submit the manuscript. Kristof Eeckloo supervised the entire process.

THE EFFECTIVENESS OF BEDSIDE SHIFT REPORTS: A MULTILEVEL, LONGITUDINAL STUDY ON NURSES AND PATIENTS. SUBMITTED IN JOURNAL OF ADVANCED NURSING.

Description of the study

A longitudinal, multicentred study on the effects of bedside shift report on nurse- and patient-related outcomes.

Contribution of the doctoral student

Simon Malfait, Ann Van Hecke, Wim Van Biesen, and Kristof Eeckloo contributed to the design of the study. Simon Malfait was responsible for the organization of the study (including the contact with the hospitals and the ethics committees) and the data collection. Data analysis was performed by Simon Malfait and Roos Colman. Simon Malfait was responsible for the writing of the first draft of the manuscript. The manuscript was adapted, based on the remarks of Ann Van Hecke, Wim Van Biesen and Kristof Eeckloo. This was followed by an iterative process in which all authors were equally involved, with the aim of finalizing the manuscript. Malfait Simon was responsible for the further steps to submit the manuscript. Ann Van Hecke supervised the entire process.

IMPLEMENTING BEDSIDE SHIFT REPORT: FOUR LESSONS LEARNED.

Description of the manuscript

A guest editorial in which the results of the mixed-method longitudinal study are summarized with an emphasis on implications for practice.

Contribution of the doctoral student

Simon Malfait was responsible for a first draft of this editorial, which is based on the data from previous studies (supra: 3, 4, 5, 6, 7, 8). Ann Van Hecke, Wim Van Biesen and Kristof Eeckloo provided the necessary support and feedback to finalize the manuscript. Simon Malfait was responsible for the further steps to submit the manuscript. Ann Van Hecke supervised the entire process.

Addenda and appendices

ADDENDA AND APPENDICES

Appendix 1: Overview of the factor analysis of the PaCT-HCW (English)

Component: Competence	**eigenvalue: 1.893**
I feel competent to inform the patient	
I feel competent to ask advice from or consult the patient	
I feel competent to delegate power to the patient concerning several topics of the healthcare process	
Component: Support	**eigenvalue: 4.089**
The management of the hospital facilitates a working environment that supports patient participation	
The actions of the hospital management illustrate that patient participation is an important issue	
My supervisor has a positive attitude towards patient participation on the ward	
My supervisor shows appreciation when I let a patient participate	
My supervisor takes into account suggestions of employees to improve patient participation on the ward	
My supervisor shares the results we achieve concerning patient participation	
Colleagues support each other in letting patients participate in the healthcare process	
My supervisor is personally involved in shaping a mission/vision concerning patient participation	
Component: Perceived lack of time	**eigenvalue: 1.683**
Insufficient staffing reduces patient participation	
Pressure on the ward influences patient participation	
Patient participation leads to short term loss of time in the individualized care of the patient	
Component: Information sharing and dialogue	**eigenvalue: 7.761**
During the last week I introduced myself with name and function	
During the last week I informed patients about the causes of their disease	
During the last week I informed patients about the possible treatment options for their disease	
During the last week I informed patients about the results the hospital achieved concerning their illness	
During the last week I informed the patient about the possible consequences of their illness	
During the last week I informed patients about the results of their tests or treatments	
During the last week I told patients before a test, examination or treatment why it was needed	
During the last week I told patients before a test, examination or treatment what the possible consequences are	
During the last week I asked permission to a patient before I did a test, an examination or a treatment	
During the last week I explained to patients on which items they could decide.	
During the last week I stimulated patients to (co-) decide about the choices that had to be made in their tests, examinations or treatments	
During the last week patients could inspect their personal file	
During the last week I gave the patient information concerning the duration of his/her stay	
During the last week I tried to understand the patient's expectations concerning the daily living with the disease	
During the last week I informed patient concerning their treatment after their dismissal from the hospital	
During the last week I asked patients if they felt ready for dismissal	
During the last week I consulted patients concerning their opinions about the dismissal moment	
During the last week I stimulated patients to contact peers.	

* Fully disagree – Partially disagree – Partially agree – Fully Disagree

**Non-validated translation of the PaCT-HCW. The original Dutch version can be obtained on request.

				Factor							
Likert scale	**n**	**mean**	**SD**	1	2	3	4	5	6	7	8
4-point*	1329	3.49	0.581							0.622	
4-point	1329	3.43	0.568							0.826	
4-point	1329	3.25	0.617							0.709	
4-point	1329	2.72	0.588		0.570						
4-point	1329	2.55	0.673		0.608						
4-point	1329	2.98	0.633		0.791						
4-point	1329	2.96	0.652		0.817						
4-point	1329	2.92	0.642		0.771						
4-point	1329	2.41	0.770		0.657						
4-point	1329	2.85	0.622		0.566						
4-point	1329	2.87	1.128		0.711						
4-point	1329	3.12	0.778								0.777
4-point	1329	3.12	0.724								0.912
4-point	1329	2.31	0.716								0.389
4-point + N/A	1318	3.11	0.905	0.459							
4-point + N/A	960	2.98	0.889	0.790							
4-point + N/A	930	3.04	0.892	0.812							
4-point + N/A	918	2.30	0.973	0.637							
4-point + N/A	1003	2.84	0.882	0.803							
4-point + N/A	831	2.90	0.962	0.763							
4-point + N/A	1226	3.31	0.695	0.507							
4-point + N/A	1121	2.84	0.856	0.613							
4-point + N/A	1158	2.66	0.934	0.585							
4-point + N/A	1212	2.45	0.919	0.604							
4-point + N/A	1176	2.36	0.913	0.610							
4-point + N/A	1094	2.01	0.960	0.541							
4-point + N/A	1104	2.85	0.886	0.624							
4-point + N/A	1258	2.78	0.820	0.524							
4-point + N/A	1219	3.19	0.798	0.486							
4-point + N/A	1192	2.85	0.887	0.656							
4-point + N/A	901	2.52	0.924	0.402							
4-point + N/A	1209	1.77	0.882	0.418							

Component: Type of problem: Factual questions:	**eigenvalue: 3.766**
I am positive towards patient asking: "how long they have to stay in the hospital"	
I am positive towards patient asking: "how long their pain will last".	
I am positive towards patient asking: "which signals could mean they are not recovering as they should"	
I am positive towards patient asking: "when they can resume their normal activities"	
I am positive towards patient asking: "how a certain procedure is executed"	
Component: Type of problem: Challenging questions	**eigenvalue: 2.578**
I am positive towards patient asking: "whether the medication they receive is correct"	
I am positive towards patient asking: "what the name of the healthcare worker is and what they are about to do"	
I am positive towards patient asking: "why a healthcare worker removes an apparatus"	
I am positive towards patient asking: "if the healthcare worker has washed his or hers hands"	
Component: Type of problem: Notifying questions	**eigenvalue: 2.734**
I am positive towards patient saying: "if they think a fault has happened"	
I am positive towards patient saying: "they have not received the results of their tests yet"	
I am positive towards patient saying: "if they think their wound is infected"	
I am positive towards patient saying: "if their identification bracelet is lost or removed"	
Component: Acceptance of an new role	**eigenvalue: 2.152**
I Stimulate patient to ask questions concerning patient safety	
I regard it as important to inform patients about the results of the hospital regarding patient safety topics	
I think it is important to inform patients regarding a safety incident when they are a part of this incident	
Patients should be supported to make their own notes regarding patient safety	
I have the impression patients on our ward want to take responsibility regarding patient safety	
I am under the impression that patients dare to ask questions concerning patient safety	
A more important role for patients in patient safety issues could have negative effects on the healthcare worker-patient relationship (REVERSE)	

* Fully disagree – Partially disagree – Partially agree – Fully Disagree

				Factor							
Likert scale	**n**	**mean**	**SD**	1	2	3	4	5	6	7	8
4-point*	1329	3.34	0.542			0.796					
4-point	1329	3.33	0.583			0.819					
4-point	1329	3.26	0.609			0.761					
4-point	1329	3.39	0.558			0.838					
4-point	1329	3.44	0.523			0.797					
4-point	1329	3.38	0.661				0.715				
4-point	1329	3.35	0.693				0.781				
4-point	1329	3.41	0.586				0.762				
4-point	1329	3.22	0.764				0.725				
4-point	1329	3.50	0.566					0.735			
4-point	1329	3.37	0.583					0.616			
4-point	1329	3.51	0.550					0.784			
4-point	1329	3.61	0.519					0.626			
4-point	1329	2.83	0.697						0.544		
4-point	1329	2.61	0.757						0.620		
4-point	1329	3.08	0.661						0.468		
4-point	1329	2.82	0.741						0.580		
4-point	1329	2.37	0.729						0.674		
4-point	1329	2.64	0.691						0.536		
4-point	1329	2.73	0.698						0.372		

Appendix 2: Overview of the factor analysis of the PaCT-HCW (Dutch)

Component: Competentie	**eigenvalue: 1.893**
Ik voel me competent om patiënten te informeren	
Ik voel me competent om rekening te houden met de mening en de voorstellen van de patiënten	
Ik voel me competent om patiënten mee te laten beslissen over bepaalde aspecten van de zorgverlening	
Component: Ondersteuning	**eigenvalue: 4.089**
Het ziekenhuismanagement zorgt voor een werkklimaat dat patiëntenparticipatie bevordert	
De acties van het ziekenhuismanagement illustreren dat patiëntenparticipatie een topprioriteit is	
Mijn supervisor heeft een positieve houding ten opzichte van patiëntenparticipatie op de afdeling	
Mijn supervisor toont waardering wanneer we patiënten laten participeren in de zorg	
Mijn supervisor houdt rekening met suggesties van medewerkers/collega's om de mate van patiëntenparticipatie op de afdeling te verbeteren	
Mijn supervisor maakt resultaten van patiëntenparticipatie zichtbaar op de afdeling	
Medewerkers en collega's steunen elkaar / moedigen elkaar aan om patiënten te betrekken in de zorg	
Mijn supervisor is persoonlijk betrokken bij het uitwerken van een missie/visie rond patiëntenparticipatie	
Component: Ervaren tekort in tijd	**eigenvalue: 1.683**
Onvoldoende bestaffing remt patiëntenparticipatie af	
De drukte op de afdeling bepaalt de mate van patiëntenparticipatie	
Patiëntenparticipatie leidt op korte termijn tot tijdsverlies in de individuele zorg voor de patiënt	
Component: Delen van informatie en dialoog	**eigenvalue: 7.761**
Stelde ik mij aan de patiënten voor met naam en functie	
Informeerde ik de patiënten over de oorzaak van hun aandoening	
Informeerde ik de patiënten over de mogelijke behandelingswijzen voor hun aandoening	
Informeerde ik de patiënten over de algemene resultaten die we in het ziekenhuis behalen voor de behandeling van hun aandoening	
Informeerde ik de patiënten over de mogelijke gevolgen van hun aandoening	
Informeerde ik de patiënten over hun resultaten van onderzoeken/behandelingen	
Vertelde ik aan de patiënten voor een onderzoek, behandeling of verzorging waarom iets nodig was	
Vertelde ik aan de patiënten voor een onderzoek, behandeling of verzorging wat de mogelijke gevolgen konden zijn	
Werd goedkeuring aan de patiënten gevraagd voorafgaand aan het uitvoeren van onderzoeken, behandeling of verzorging	
Vertelde ik aan patiënten waarover ze mee konden beslissen	
Stimuleerde ik de patiënten om mee te beslissen over de keuzes van hun onderzoeken, behandeling of verzorging	
Kregen de patiënten inzage in hun behandelingsplan	
Gaf ik informatie over de vermoedelijke verblijfsduur aan de patiënten	
Probeerde ik de verwachtingen van de patiënten op vlak van hun dagelijks functioneren met de aandoening te achterhalen	
Informeerde ik de patiënten over de verdere behandeling na zijn / haar ontslag uit het ziekenhuis	
Vroeg ik aan de patiënten of zij vonden dat ze ontslagklaar waren	
Liet ik de patiënten mee beslissen over het moment van hun ontslag	
Stimuleerde ik de patiënten om contact op te nemen met lotgenoten	

* Helemaal akkoord – eerder akkoord – eerder niet akkoord – helemaal akkoord

				Factor							
Likert scale	**n**	**mean**	**SD**	1	2	3	4	5	6	7	8
4-punts *	1329	3.49	0.581							0.622	
4-punts	1329	3.43	0.568							0.826	
4-punts	1329	3.25	0.617							0.709	
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4-punts	1329	2.41	0.770		0.657						
4-punts	1329	2.85	0.622		0.566						
4-punts	1329	2.87	1.128		0.711						
4-punts											
4-punts	1329	3.12	0.778								0.777
4-punts	1329	3.12	0.724								0.912
4-punts	1329	2.31	0.716								0.389
4-punts + n.v.t.	1318	3.11	0.905	0.459							
4-punts + n.v.t.	960	2.98	0.889	0.790							
4-punts + n.v.t.	930	3.04	0.892	0.812							
4-punts + n.v.t.	918	2.30	0.973	0.637							
4-punts + n.v.t.	1003	2.84	0.882	0.803							
4-punts + n.v.t.	831	2.90	0.962	0.763							
4-punts + n.v.t.	1226	3.31	0.695	0.507							
4-punts + n.v.t.	1121	2.84	0.856	0.613							
4-punts + n.v.t.	1158	2.66	0.934	0.585							
4-punts + n.v.t.	1212	2.45	0.919	0.604							
4-punts + n.v.t.	1176	2.36	0.913	0.610							
4-punts + n.v.t.	1094	2.01	0.960	0.541							
4-punts + n.v.t.	1104	2.85	0.886	0.624							
4-punts + n.v.t.	1258	2.78	0.820	0.524							
4-punts + n.v.t.	1219	3.19	0.798	0.486							
4-punts + n.v.t.	1192	2.85	0.887	0.656							
4-punts + n.v.t	901	2.52	0.924	0.402							
4-punts + n.v.t.	1209	1.77	0.882	0.418							

Component: Type probleem: Feitelijke vragen	**eigenvalue: 3.766**
Ik ervaar het als positief als patiënten vragen: "hoe lang ze in het ziekenhuis moeten verblijven"	
Ik ervaar het als positief als patiënten vragen: "hoe lang hun pijn zal aanhouden"	
Ik ervaar het als positief als patiënten vragen: "welke signalen er kunnen op wijzen dat hun genezing niet verloopt zoals het zou moeten"	
Ik ervaar het als positief als patiënten vragen: Wanneer ze hun normale activiteiten kunnen hernemen.	
Ik ervaar het als positief als patiënten vragen: "hoe een bepaalde procedure (bv. onderzoek, behandeling, techniek) verloopt"	
Component: Type probleem: Uitdagende vragen	**eigenvalue: 2.578**
Ik ervaar het als positief als patiënten vragen: "of de medicatie die de zorgverlener aan hen geeft wel de juiste medicatie is"	
Ik ervaar het als positief als patiënten vragen: "wat de naam van de zorgverlener is en wat deze bij hen komt doen"	
Ik ervaar het als positief als patiënten vragen: "waarom een zorgverlener een apparaat (bv. monitoring toestel) wegneemt"	
Ik ervaar het als positief als patiënten vragen: "of de zorgverlener zijn/haar handen ontsmet/gewassen heeft"	
Component: Type probleem: Opmerkingen	**eigenvalue: 2.734**
Ik vind dat patiënten aangemoedigd moeten worden: "indien ze denken dat er een fout is gebeurd in de zorg die ze krijgen"	
Ik vind dat patiënten aangemoedigd moeten worden: "indien ze hun resultaten van hun onderzoek nog niet ontvangen hebben"	
Ik vind dat patiënten aangemoedigd moeten worden: "indien ze denken dat hun wonde geïnfecteerd is"	
Ik vind dat patiënten aangemoedigd moeten worden: "indien hun identificatiebandje werd verwijderd of ontbreekt"	
Component: Aanvaarding van een nieuwe rol	**eigenvalue: 2.152**
Ik stimuleer patiënten om vragen te stellen m.b.t. patiëntveiligheid	
Ik vind het belangrijk dat patiënten geïnformeerd worden over de algemene resultaten die we in het ziekenhuis behalen m.b.t. aspecten van patiëntveiligheid (bv. aantal medicatiefouten)	
Ik vind het belangrijk dat patiënten geïnformeerd worden over een patiëntveiligheidsincident, indien ze daarvan het onderwerp uitmaken	
Patiënten moeten aangemoedigd worden om eigen notities en aantekeningen in het kader van patiëntveiligheid bij te houden (bv. hun medicatieschema)	
Ik heb de indruk dat patiënten op onze afdeling (mede-) verantwoordelijkheid willen nemen m.b.t. patiëntveiligheid	
Ik heb de indruk dat patiënten durven vragen stellen m.b.t. patiëntveiligheid	
Een grotere rol geven aan de patiënt bij patiëntveiligheid kan een negatieve impact hebben op de relatie tussen de patiënt en de zorgverlener (REVERSE)	

* Helemaal akkoord – eerder akkoord – eerder niet akkoord – helemaal akkoord

				Factor							
Likert scale	**n**	**mean**	**SD**	1	2	3	4	5	6	7	8
4-point*	1329	3.34	0.542			0.796					
4-point	1329	3.33	0.583			0.819					
4-point	1329	3.26	0.609			0.761					
4-point	1329	3.39	0.558			0.838					
4-point	1329	3.44	0.523			0.797					
4-point	1329	3.38	0.661				0.715				
4-point	1329	3.35	0.693				0.781				
4-point	1329	3.41	0.586				0.762				
4-point	1329	3.22	0.764				0.725				
4-point	1329	3.50	0.566					0.735			
4-point	1329	3.37	0.583					0.616			
4-point	1329	3.51	0.550					0.784			
4-point	1329	3.61	0.519					0.626			
4-point	1329	2.83	0.697						0.544		
4-point	1329	2.61	0.757						0.620		
4-point	1329	3.08	0.661						0.468		
4-point	1329	2.82	0.741						0.580		
4-point	1329	2.37	0.729						0.674		
4-point	1329	2.64	0.691						0.536		
4-point	1329	2.73	0.698						0.372		

Appendix 3: Detailed results for each component of the PaCT-HCW

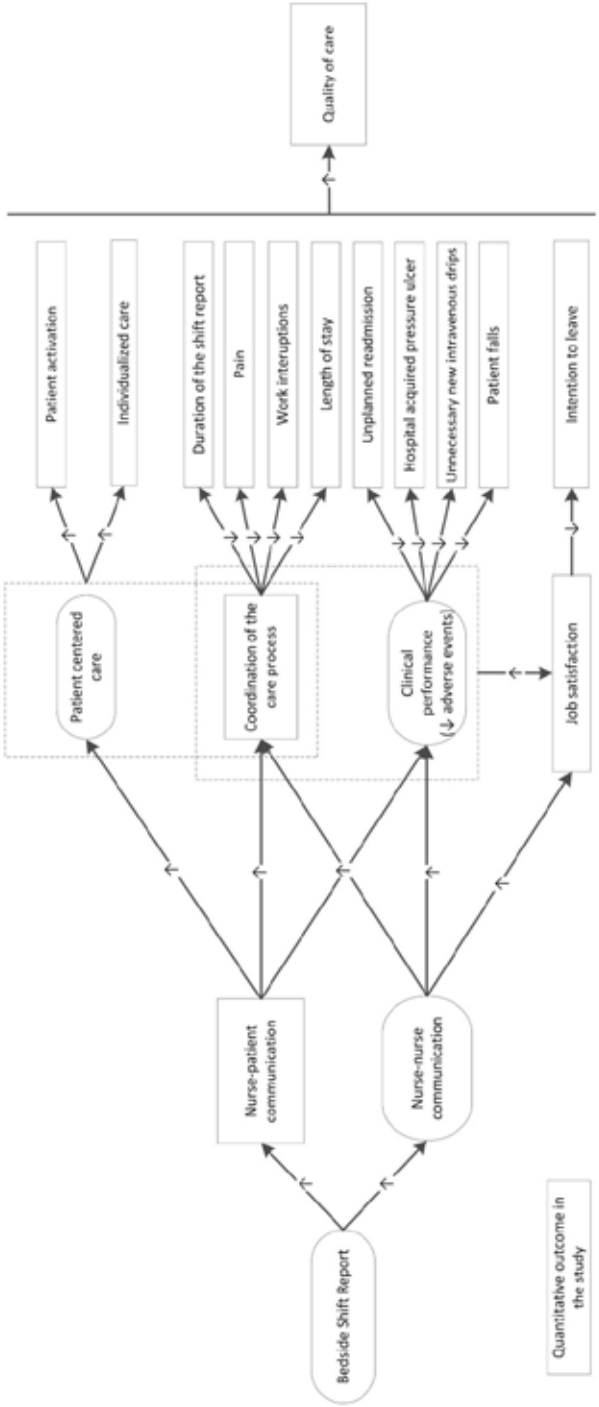
	Competence			Support			Perceived lack of time			Information sharing and dialogue		
	B	p	CI	B	p	B	B	p	CI	B	p	CI
Gender												
Male	0.143	.285	0.119; 0.405	-0.536	.144	-1.256; 0.184	0.200	.224	-0.123; 0.523	2.168	.028	0.230; 4.105
Female		0.000			0.000			0.000			0.000	
Age												
<25	0.029	.899	-0.419; 0.477	1.147	.067	-0.082; 2.376	0.676	.016	0.125; 1.228	-0.120	.943	-3.430; 3.191
25-34	0.211	.216	-0.123; 0.544	0.506	.279	-0.411; 1.423	0.619	.003	0.207; 1.030	0.217	.863	-2.252; 2.685
35-44	0.137	.418	-0.195; 0.470	0.232	.617	-0.678; 1.143	0.414	.047	0.005; 0.822	-0.024	.985	-2.478; 2.430
45-54	0.103	.543	-0.229; 0.434	0.151	.743	-0.754; 1.057	0.179	.388	-0.227; 0.585	1.128	.364	-1.312; 3.567
≥ 55		0.000			0.000			0.000			0.000	
Ward												
Surgery	0.330	.030	0.031; 0.628	-0.035	.946	-1.055; 0.984	0.038	.867	-0.411; 0.488	2.708	.044	0.073; 5.342
Internal medicine	0.124	.415	-0.174; 0.422	-0.453	.377	-1.459; 0.553	0.257	.255	-0.186; 0.700	0.109	.935	-2.497; 2.714
Medical rehabilitation	0.009	.957	-0.318; 0.336	-0.511	.374	-1.640; 0.617	0.338	.180	-0.157; 0.834	-4.125	.006	-7.040; -1.211
Geriatric ward		0.000			0.000			0.000			0.000	
Time in hospital												
≤ 1 year	-0.258	.470	-0.957; 0.422	0.285	.770	-1.626; 2.169	-0.467	.285	-1.325; 0.391	-2.473	.346	-7.623; 2.677
> 1 year		0.000			0.000			0.000			0.000	
Time on ward												
≤ 1 year	0.141	.622	-0.420; 0.701	0.158	.842	-1.394; 1.710	0.352	.322	-0.345; 1.048	3.844	.071	-0.330; 8.018
> 1 year		0.000			0.000			0.000			0.000	

Acceptance of a new role			Challenging questions			Notifying questions			Factual questions		
B	p	CI	B	p	CI	B	p	CI	B	p	CI
0.051	.793	-0.330; 0.432	0.110	.582	-0.283; 0.504	-0.089	.601	-0.421; 0.244	-0.012	.956	-0.457; 0.432
	0.000			0.000			0.000			0.000	
-0.753	.024	-1.405; -0.102	-0.722	.025	-1.445; -0.098	-0.372	.200	-0.941; 0.197	-0.951	.014	-1.711; -0.191
-0.804	.001	-1.290; -0.319	-0.535	.037	-1.037; -0.033	-0.367	.090	-0.790; 0.057	-0.626	.030	-1.192; -0.060
-0.534	.031	-1.017; -0.050	-0.215	.399	-0.714; 0.285	-0.285	.185	-0.707; 0.137	-0.497	.084	-1.062; 0.068
-0.179	.466	-0.660; 0.302	0.261	.303	-0.236; 0.759	0.043	.842	-0.377; 0.463	0.184	.521	-0.379; 0.747
	0.000			0.000			0.000			0.000	
-0.205	.386	-0.670; 0.259	-0.354	.148	-0.833; 0.126	-0.239	.214	-0.659; 0.181	0.089	.729	-0.414; 0.591
-0.369	.117	-0.830; 0.092	-0.430	.076	-0.905; 0.045	-0.201	.212	-0.617; 0.215	-0.296	.248	-0.797; 0.206
-0.789	.002	-1.298; -0.280	-0.351	.188	-0.873; 0.171	-0.255	.234	-0.715; 0.205	-0.429	.126	-0.980; 0.121
	0.000			0.000			0.000			0.000	
0.156	.762	-0.859; 1.172	0.612	.253	-0.438; 1.661	0.373	.409	-0.513; 1.258	0.282	.641	-0.905; 1.470
	0.000			0.000			0.000			0.000	
0.073	.860	-0.744; 0.891	-0.544	.198	-1.398; 0.291	-0.150	.681	-0.864; 0.565	-0.485	.317	-1.436; 0.466
	0.000			0.000			0.000			0.000	

	Competence			Support			Perceived lack of time			Information sharing and dialogue		
	B	p	CI	B	p	CI	B	p	CI	B	p	CI
Work status												
< 50 %	-0.102	.604	-0.489; 0.284	-1.350	.013	-2.411; -0.290	0.275	.257	-0.201; 0.750	-1.799	.217	-4.656; 1.057
50-99%	-0.083	.450	-0.300; 0.133	-0.065	.830	-0.660; 0.529	0.233	.087	-0.034; 0.500	-0.561	.492	-2.164; 1.042
100%		0.000			0.000			0.000			0.000	
Level of education												
Graduate	-0.328	.089	-0.705; 0.050	1.699	.001	0.653; 2.744	0.242	.313	-0.228; 0.712	1.187	.407	-1.623; 3.997
Bachelor	0.121	.503	-0.232; 0.474	1.276	.010	0.304; 2.248	0.141	.526	-0.296; 0.578	2.916	.029	0.300; 5.531
Master		0.000			0.000			0.000			0.000	
Super-vising role												
Yes	0.670	.000	0.392; 0.947	0.485	.028	0.090; 1.600	-0.396	.022	-0.735; -0.057	4.841	.000	2.799; 6.883
No		0.000			0.000			0.000			0.000	

	Acceptance of a new role			Challenging questions			Notifying questions			Factual questions		
	B	p	CI	B	p	CI	B	p	CI	B	p	CI
Work status												
< 50 %	-0.200	.485	-0.762; 0.362	-0.316	.286	-0.896; 0.264	-0.018	.944	-0.508; 0.472	0.357	.286	-0.300; 1.104
50-99%	-0.009	.955	-0.324; 0.306	0.037	.823	-0.289; 0.364	0.099	.482	-0.177; 0.374	0.0444	.814	-0.323;
100%		0.000			0.000			0.000			0.000	
Level of education												
Graduate	-1.108	.000	-1.160; -0.556	-0.486	.110	-1041; 0.105	-0.657	.008	-1.141; -0.174	-1.213	.000	-1.854; -0.572
Bachelor	-0.747	.005	-1.261; -0.232	-0.392	.150	-0.925; 0.142	-0.404	.078	-0.854; 0.046	-0.640	.036	-1.240; -0.041
Master		0.000			0.000			0.000			0.000	
Super-vising role												
Yes	0.753	.000	0.350; 1.155	0.970	.000	0.553; -1.386	0.705	.000	0.354; 1.056	0.863	.000	0.392; 1.335
No		0.000			0.000			0.000			0.000	

Appendix 4: Hypothetical relationship between the quantitative variables.



APPENDIX 5: INTERVIEW GUIDE FROM CHAPTER FIVE

Structure

Is there enough time on your ward for a handover from the morning to the afternoon shift?
Is the handover organized according to a certain structure?
Is the handover of information structured?
What is the profile of the patients on your ward?
Are the patients able to participate in BSR?
Do patient have the necessary information regarding their illness and treatment to participate in the handover?

Human resources

What is the current training policy regarding effective communication and handover in the organization or on your ward?
What is the current training regarding effective communication towards patients in the organization or on your ward?
How experienced are the nurses with regard to communication and patient participation?
How are your communicative skills to your colleagues?
How are your communicative skills to your patients?
Do the members of the nursing staff understand the meaning of patient participation?

Culture

Does the team value patient participation?
Does the team acknowledge the possible added value of BSR?
How are organizational changes on the ward dealt with?
Is it easy to maintain organizational changes on the ward?
Does the team have an open mind with regard to the implementation of Bedside Shift Reporting?
Is the team ready for a more active role for the patient?

Power relations

Do nurses respect the role and expertise of each other?
Are nurses capable and ready to take on new tasks in their job content like:

- Enhanced responsibility?
- Confrontation with difficult questions?
- Expressing yourself to the patient?
- Taking into account the limitations of the patient?
- Taking into account the needs of the patient?

Is the organization focused on implementing BSR?

Other

Has the team or you already had previous experiences with BSR? How did this go? Can you give reasons for this?
What would you describe as strengths of your team or institution (if not discussed above).
Which opportunities in the (near) future do you see that might possibly support this process.
What would you describe as thresholds/barriers of the team (if they have not yet been discussed)?

Appendix 6: Overview of the studies from chapter six

Ward	Hospital	Specialty	Number of beds on the ward	Average nurse/ patient ratio	Nursing care model	SBAR	Hours of training	Time for shift report per patient	Length of stay
1	1 (general)	Geriatric	30	1/10	Centralized	No	> 2 hours	< 2 minutes	> 4 weeks
2	2 (general)	Medical rehabilitation	20	1/10	Two-tier	No	> 2 hours	< 2 minutes	> 4 weeks
3	3 (general)	Surgical	30	1/7	Two-tier	Yes	< 2 hours	> 2 minutes	< 4 weeks
4	3 (general)	Medical rehabilitation	20	1/10	Two-tier	Yes	< 2 hours	> 2 minutes	> 4 weeks
5	4 (general)	Geriatric	30	1/8	Two-tier	No	> 2 hours	< 2 minutes	> 4 weeks
6	5 (university)	Surgical	20	1/7	Devolved	Yes	< 2 hours	> 2 minutes	< 4 weeks
7	5 (university)	Surgical	20	1/7	Devolved	Yes	< 2 hours	> 2 minutes	< 4 weeks
8	5 (university)	Medical rehabilitation	20	1/8	Two-tier	No	> 2 hours	> 2 minutes	> 4 weeks
9	6 (general)	Surgical	20	1/10	Centralized	No	> 2 hours	< 2 minutes	< 4 weeks
10	6 (general)	Geriatric	20	1/10	Centralized	No	> 2 hours	< 2 minutes	> 4 weeks
11	7 (general)	Medical rehabilitation	30	1/10	Centralized	No	< 2 hours	< 2 minutes	> 4 weeks
12	7 (general)	Surgical	30	1/10	Centralized	No	< 2 hours	< 2 minutes	< 4 weeks

APPENDIX 7: EXAMPLE OF A CHECKLIST FROM CHAPTER SEVEN

Action	Performed	Not-performed	Unnecessary 1
Before the handover			
Call-light			
Hand hygiene			
Visitors leave the room			
Closing curtains			
Closing door			
Introduction			
Nurses introduce themselves			
Patient is introduced			
Identification of the patient is checked			
Situation			
Reason why the patient is admitted			
Diagnoses			
Last results from tests			
Next step in treatment			
Planned discharge or transfer			
Background			
Co-morbidity			
Relevant medical history			
Other points of attention			
Assessment			
Parameters			
Pain			
Fluid policy (probes, infusion, micturition and fluid intake)			
Wound care			
Other points of attention			
Recommendations			
Fall prevention			
Incontinence			
Prevention of flebilits			
Diet / lifestyle			
Fixation			
Self-management			
Prevention of decubitus			
Planned tests			
After the handover			
Ask the patient if they have something to add or have questions			
Position the patient			
Check the room			

APPENDIX 8: DIFFERENCES IN DEMOGRAPHIC CHARACTERISTICS BETWEEN T0, T1 AND T2 FOR BOTH PATIENTS AND NURSES.

	Intervention group			Control group		
Patients	**T0-T1**	**T1-T2**	**T0-T2**	**T0-T1**	**T1-T2**	**T0-T2**
Age	0.828	0.225	0.312	0.291	0.020	0.291
Gender	0.079	0.164	0.715	0.361	0.613	0.710
Living situation	0.628	0.571	0.933	0.884	0.228	0.187
Education	0.531	0.155	0.039	0.890	0.112	0.154
Profession	0.354	0.500	0.111	0.328	0.202	0.751
Reason of admission	0.759	0.365	0.550	0.070	0.927	0.099
Health literacy	0.628	0.417	0.739	0.651	0.095	0.222
Health status	0.928	0.027	0.033	0.268	0.755	0.447
	Intervention group			**Control group**		
Nurses	**T0-T1**	**T1-T2**	**T0-T2**	**T0-T1**	**T1-T2**	**T0-T2**
Age	0.620	<0.001	0.005	0.763	0.010	<0.001
Gender	0.991	0.912	0.991	0.644	0.208	0.516
Education	0.083	0.437	0.016	0.424	0.061	0.174
Work status	0.829	0.346	0.326	0.270	0.100	0.673
Employment hospital	0.008	0.497	0.329	0.032	0.330	0.001
Employment nurse	0.110	0.278	0.045	0.126	0.016	0.003
Employment ward	0.010	0.055	<0.001	0.004	0.026	<0.001

Appendix 9: Response rates for each participating ward

			T0						T1						T2					
			Nurses			Patients			Nurses			patients			Nurses			patients		
Hospital	Type	ward	Distributed	Returned	RR	Distributed	Returned	RR	Distributed	Returned	RR	Distributed	Returned	RR	Distributed	Returned	RR	Distributed	Returned	RR
1	Intervention	1	16	13	81,25%	51	36	70,59%	16	14	87,50%	40	35	87,50%	13	10	76,92%	42	37	88,10%
1	control	2	21	17	80,95%	34	22	64,71%	19	11	57,89%	26	22	84,62%	17	14	82,35%	18	15	83,33%
2	intervention	3	12	10	83,33%	38	37	97,37%	10	8	80,00%	36	35	97,22%	6	6	100,00%	39	38	97,44%
2	Control	4	17	12	70,59%	52	20	38,46%	17	13	76,47%	33	28	84,85%	10	9	90,00%	24	21	87,50%
2	Intervention	5	15	13	86,67%	/	/	/	15	12	80,00%	/	/	/	12	10	83,33%	/	/	/
2	Control	6	19	14	73,68%	/	/	/	17	11	64,71%	/	/	/	11	9	81,82%	/	/	/
3	Intervention	7	26	25	96,15%	55	36	65,45%	21	15	71,43%	40	37	92,50%	19	10	52,63%	38	35	92,11%
3	Control	8	22	15	68,18%	36	36	100,00%	21	16	76,19%	40	37	92,50%	17	8	47,06%	39	36	92,31%
4	Intervention	9	15	12	80,00%	50	35	70,00%	14	12	85,71%	60	28	46,67%	11	5	45,45%	68	33	48,53%
4	intervention	10	18	17	94,44%	46	37	80,43%	16	13	81,25%	43	36	83,72%	16	9	56,25%	43	36	83,72%
4	Control	11	15	13	86,67%	39	17	43,59%	13	8	61,54%	28	13	46,43%	11	7	63,64%	19	11	57,89%
5	Intervention	12	26	21	80,77%	/	/	/	23	17	73,91%	/	/	/	16	11	68,75%	/	/	/
5	Control	13	23	19	82,61%	/	/	/	23	17	73,91%	/	/	/	18	14	77,78%	/	/	/

APPENDIX 10: MULTILEVEL ANALYSIS CONCERNING THE INFLUENCE OF NURSING SYSTEM AND AN TYPE OF WARD ON THE EFFECTS OF BEDSIDE SHIFT REPORT FOR NURSES OF THE INTERVENTION WARDS.

Outcome variable	Akaike information criterion	p time*nursing sytem	p time*type of ward
ICS-Nurse	416.023	0.874	0.297
ICS-A-Nurse	460.698	0.938	0.498
ICS-A-Nurse-CS	492.114	0.844	0.446
ICS-A-Nurse-PLS	587.908	0.596	0.384
ICS-A-Nurse-DC	482.272	0.770	0.216
ICS-B-Nurse	409.054	0.622	0.132
ICS-B-Nurse-CS	455.554	0.763	0.129
ICS-B-Nurse-PLS	530.028	0.303	0.051
ICS-B-Nurse-DC	457.789	0.635	0.639
MOAQ-J	395.587	0.778	0.281
MOAQ-ITL	592.607	0.952	0.081
CPSET-COR	798.467	0.931	0.213
CPSET-COM	982.073	0.507	0.655
Work interruptions	1047.145	0.068	0.995
Patient participation	315.335	0.127	0.492

Appendix 11: Mean differences between patients and nurses concerning individualized care for each data collection point

Outcome	Type of ward	Time	Mean difference (patient-nurse)	SE	p
ICS	Intervention	T0	-0.278	±0.121	0.013*
(Akaike Information Criterion=2555.090)		T1	-0.369	±0.103	<0.001*
		T2	-0.347	±0.126	0.006*
	Control	T0	-0.587	±0.146	<0.001*
		T1	-0.311	±0.136	0.023
		T2	-0.210	±0.162	0.196
ICS-A	Intervention	T0	-0.456	±0.120	<0.001*
(Akaike Information Criterion=2702.805)		T1	-0.590	±0.113	<0.001*
		T2	-0.509	±0.136	<0.001*
	Control	T0	-0.787	±0.157	<0.001*
		T1	-0.506	±0.150	0.001*
		T2	-0.450	±0.175	0.011*
ICS-A-CS	Intervention	T0	-0.375	±0.123	0.002*
(Akaike Information Criterion=2843.915)		T1	-0.378	±0.119	0.002*
		T2	-0.308	±0.151	0.042
	Control	T0	-0.807	±0.163	<0.001*
		T1	-0.442	±0.160	0.006*
		T2	-0.415	±0.200	0.038
ICS-A-PLS	Intervention	T0	-0.441	±0.140	0.002*
(Akaike Information Criterion=3168.282)		T1	-0.690	±0.157	<0.001*
		T2	-0.714	±0.178	<0.001*
	Control	T0	-0.688	±0.188	<0.001*
		T1	-0.507	±0.207	0.015*
		T2	-0.379	±0.234	0.107
ICS-A-DC	Intervention	T0	-0.527	±0.130	<0.001*
(Akaike Information Criterion=2855.947)		T1	-0.753	±0.128	<0.001*
		T2	-0.588	±0.150	<0.001*
	Control	T0	-0.876	±0.172	<0.001*
		T1	-0.615	±0.172	<0.001*
		T2	-0.314	±0.201	0.120
ICS-B	Intervention	T0	-0.091	±0.110	0.410
(Akaike Information Criterion=2641.259)		T1	-0.129	±0.104	0.217
		T2	-0.161	±0.128	0.210
	Control	T0	-0.417	±0.145	0.004*
		T1	-0.158	±0.137	0.252
		T2	0.050	±0.170	0.770

Outcome	Type of ward	Time	Mean difference (patient-nurse)	SE	p
ICS-B-CS	Intervention	T0	-0.289	±0.115	0.013*
(Akaike Information Criterion=2710.742)		T1	-0.317	±0.117	0.007*
		T2	-0.279	±0.142	0.050
	Control	T0	-0.559	±0.152	<0.001*
		T1	-0.284	±0.153	0.064
		T2	-0.105	±0.187	0.575
ICS-B-PLS	Intervention	T0	0.072	±0.126	0.572
(Akaike Information Criterion=2967.383)		T1	-0.039	±0.142	0.783
		T2	-0.109	±0.146	0.456
	Control	T0	-0.255	±0.166	0.127
		T1	-0.205	±0.186	0.273
		T2	0.140	±0.195	0.474
ICS-B-DC	Intervention	T0	0.092	±0.114	0.418
(akaike Information Criterion=2577.609)		T1	0.023	±0.106	0.832
		T2	-0.021	±0.136	0.875
	Control	T0	-0.365	±0.151	0.016
		T1	0.028	±0.142	0.846
		T2	0.171	±0.181	0.346