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Seeing beyond monitors—Critical care nurses' multiple skills in patient observation: Descriptive qualitative study

Abstract

Objectives

The aim of this study was to provide a comprehensive description of multiple skills in patient observation in critical care nursing.

Research methodology

Data from semi-structured interviews were analysed using thematic analysis.

Setting

Experienced critical care nurses (n = 20) from three intensive care units in two university hospitals in Finland.

Findings

Patient observation skills consist of: information gaining skills, information processing skills, decision-making skills and co-operation skills. The first three skills are integrated in the patient observation process, in which gaining information is a prerequisite for processing information that precedes making decisions. Co-operation has a special role as it occurs throughout the process.

Conclusion

This study provided a comprehensive description of patient observation skills related to the three-phased patient observation process. The findings contribute to clarifying this part of the competence. The description of patient observation skills may be applied in both clinical practice and education as it may serve as a framework for orientation, ensuring clinical skills and designing learning environments. Based on this study, patient observation skills can be recommended to be included in critical care nursing education, orientation and as a part of critical care nurses' competence evaluation.

Keywords

- Clinical skills;
- Critical care nursing;
- Patient observation;
- Qualitative descriptive study;
- Thematic analysis

Implications for clinical practice

- Patient observation skills can be grouped into four themes: 1. Information gaining skills 2. Information processing skills, 3. Decision-making skills and 4. Co-operation skills
- Patient observation requires multiple skills in using various observation methods and integrating information gained with different methods.
- Critical care nurses skills in observing the right factors with the right methods, evaluating the reliability of observation, making conclusions, reacting and anticipating based on the observation have importance in terms of patient safety.
- Co-operation is important in patient observation, which is why critical care nurses need good communication skills including skills in listening to patients and involving them in observation

Introduction

In this study, patient observation in critical care nursing is defined as all the activities performed by critical care nurses (CCN) in order to gather and utilise information about the clinical condition of a critically ill patient. Patient observation includes both monitoring and patient assessment ([The Critical Care National Network Nurse Leads Forum, 2015](#)) focusing on different systems of the human body ([European federation of Critical Care Nursing associations, 2013](#)). Patient observation is a foundational element of modern critical care ([Marshall et al., 2016](#)) and forms a considerable proportion of CCNs' activities ([Kaya et al., 2011](#) ; [Stafseth et al., 2011](#)).

Patient observation has an important role in terms of patient safety as careful observation enables CCNs to detect early signs of clinical deterioration ([Jones and Johnstone, 2016](#)) and anticipate the changes in a patient's condition ([Benner et al., 2014](#)). Patient observation skills have been identified as a part of critical care nursing competence ([Ääri et al., 2008](#) ; [European federation of Critical Care Nursing associations, 2013](#)), and as a part of competence, they are connected with the safety and quality of patient care ([Kendall-Gallagher and Blegen, 2009](#)).

In order to describe skills in patient observation the relevant literature was searched by using the Embase-, CINAHL-, Cochrane-, and PubMed-databases with the following search terms: critical care nurse (critical care nurse, intensive care nurse), patient observation (clinical, physical, physiological, patient AND observation, monitoring, evaluation, assessment), and skills (skills, competence, ability, proficiency). Originally conducted in March 2014, the search was updated November 2016. The search generated 788 articles; after inspection of titles, abstracts and full texts, 16 articles were included in the review. The search was not limited by study year or design, but was restricted to peer-reviewed research articles in English. Articles were excluded if the setting was not critical care or if the focus was on the observation technology instead of CCNs' skills. The review focused on the physiological aspect of observation, since observing a patient's psychological condition, pain, delirium or sedation is somewhat different in nature. Based on the literature search, patient observation skills can be seen as skills in focusing observation and using observation methods, and they are needed in CCNs' decision-making.

By focusing their observation, CCNs can concentrate on observing the most relevant body systems of their patients. The observation focuses on cardiovascular ([Aitken, 2003](#); [Currey and Botti, 2006](#); [Doig et al., 2011](#) ; [Karra et al., 2014](#)), respiratory ([Haugdahl and Storli, 2012](#); [Hoffman et al., 2009](#) ; [Randen et al., 2013](#)), central nervous ([Hoffman et al., 2009](#)), metabolic ([Karra et al., 2014](#)), renal ([Hoffman et al., 2009](#) ; [Karra et al., 2014](#)), limb circulation ([Hoffman et al., 2009](#)) and gastrointestinal ([Hoffman et al., 2009](#) ; [Li et al., 2014](#)) systems.

Various observation methods have been identified. CCNs use diverse cardiac monitoring options ([Doig et al., 2011](#)), and technical monitoring equipment such as invasive pressure monitoring ([Papathanassoglou et al., 2005](#)) and ventilator monitor display ([Chacón et al., 2012](#) ; [Haugdahl and Storli, 2012](#)). In addition to technical monitoring skills, physical examination skills as regards hemodynamic status ([Aitken, 2003](#) ; [Doig et al., 2011](#)), breathing ([Hoffman et al., 2009](#)), bowel sounds ([Li et al., 2014](#)) and peripheral circulation ([Hoffman et al., 2009](#)) have been recognised. CCNs have emphasised the priority of seeing the patient instead of the monitoring systems and their critical views on the accuracy of observation technology ([Tunlind et al., 2015](#)). However, CCNs do not always integrate monitored parameters with other observations ([Papathanassoglou et al., 2005](#)) and important findings may sometimes be missed while relying on observation technology ([Häggström et al., 2013](#) ; [Jones and Johnstone, 2016](#)).

CCNs' decision-making process includes using patient observation skills ([Currey and Worrall-Carter, 2001](#); [Karra et al., 2014](#) ; [Tingsvik et al., 2014](#)). The most common types of decisions made by CCNs are based on patient observation ([Karra et al., 2014](#)). CCNs collect multiple observed physiological factors ([Currey and Botti, 2006](#) ; [Kydonaki et al., 2016](#)), and integrate them in order to get to know their patient ([Tingsvik et al., 2014](#)) and the patient's individual condition ([Kydonaki et al., 2016](#)). This knowledge informs CCNs in making decisions ([Aitken, 2003](#)).

Based on the literature search patient observation skills are multifaceted. However, in previous studies ([Chacón et al., 2012](#); [Haugdahl and Storli, 2012](#) ; [Li et al., 2014](#)), the focus has been on individual skills instead of describing all skills as a whole. In addition to previous studies, textbooks in critical care nursing (e.g. [Morton and Fontaine, 2013](#)) give detailed instructions on how to observe patients' physiological functions. However, they do not provide comprehensive descriptions for patient observation skills. A comprehensive description of patient observation skills is thus lacking.

There is an acknowledged need for the clarification of competence ([Pijl-Zieber et al., 2014](#)) in terms of contextual clinical skills ([Windsor et al., 2012](#)), as well as a need for empirical research focusing on critical care nursing competence ([Lakanmaa et al., 2012](#)). By empirically describing patient observation skills, critical care nursing competence may be partly clarified from the clinical skills' perspective. Developing competence is considered to be a highly important issue in critical care nursing globally ([Williams et al., 2015](#)).

The aim of this qualitative descriptive study was to provide a comprehensive description of multiple skills of patient observation in critical care nursing by using experienced CCNs as informants. A comprehensive description of patient observation skills is needed as regards clarifying the critical care nursing competence. Furthermore, the description may be used in developing clinical practice, patient safety and nursing education.

Methods

Participants and settings

Purposive sampling was used ([Grove et al., 2013](#)). The sample consisted of experienced CCNs, who were assumed to have experiential knowledge about patient observation and comprehensive perception of patient observation skills. In this study, an experienced CCN was defined as a registered nurse with at least five years' experience in critical care nursing and working daily in clinical patient care ([Benner, 1984](#)). In Finland, there is no specialising education in critical care nursing, and therefore expertise is gained mainly through working experience and professional continuing education during the clinical career. The sample was limited to registered nurses as the proportion of practical nurses working in Finnish ICUs is very small.

CCNs were recruited for interviews from three adult medical and surgical (mixed) intensive care units (A, B, C) in two university hospitals in Finland. The nurse managers informed experienced CCNs about the

possibility to participate voluntarily in the study. Those who volunteered to participate, contacted the researcher.

Ethical considerations

The study was conducted in accordance with the Declaration of Helsinki ([World Medical Association, 2008](#)). Ethical approval for the study was given by the Ethics Committee of the local university (approval number 14/2014), and permissions from university hospitals were granted. The participants were informed both orally and in writing about the voluntary nature of the study, confidentiality and anonymity as well as the possibility to withdraw from the study at any time without giving a reason. The participants signed a written consent before the interviews ([Finnish Advisory Board on Research Integrity, 2009](#)).

Data collection

Data were collected using semi-structured individual interviews carried out between May and October 2014. Semi-structured interview was considered to be an appropriate method as it is already known that patient observation is an important part of CCNs' practice requiring multiple skills. Therefore, semi-structured interview provided a focused structure for discussion, ensuring collection of similar data from each participant while being flexible enough to leave space for participants' individual expressions ([Kallio et al., 2016](#)). Based on the aim of the study, an interview guide for semi-structured interviews was designed. The structure was designed with three main questions asking the CCNs: a) to describe patient observation in their clinical practice, b) to describe the skills required in patient observation, and c) to give examples of both of these. The interview guide also included background questions about education and working experience. On the strength of the pilot interview with one CCN, the content was considered to be appropriate and no changes in questions were required. The pilot interview was included in the study ([Grove et al., 2013](#)). The interviews took place in a separate room during the shift of the CCNs. During the interviews, the CCNs were free from other duties. The interviews were audio-recorded with the permission of the participants, and transcribed verbatim.

Data analysis

Thematic analysis was used as an analysis method as it is well structured yet flexible and suitable for descriptive study design ([Vaismoradi et al., 2013](#)). Thematic analysis followed the six phases described by [Braun and Clarke \(2006\)](#).

The first phase of the analysis began during the data collection when the researcher (first author) familiarised himself with the data by transcribing and reading the interviews. In the second phase, data extracts interpreted as meaningful as regards the aim of the research were coded. These extracts consisted of expressions ranging from a few words to several sentences. The initial codes were given names describing their content. In the third phase, the initial codes ($n = 34$) were compared to each other, and combined into potential themes ($n = 8$). In the fourth phase, potential themes were evaluated in relation to the data extracts coded under them, and in relation to the entire data set as well. On the basis of this evaluation, potential themes were revised into four final themes and eleven subthemes. Associations between the themes were evaluated and tentative thematic maps were drawn. In the fifth phase of the analysis, each theme was defined and named. Finally in the sixth phase, the report of the findings was produced, the thematic map was illustrated as a figure ([Fig. 1](#)), and the researcher checked that the entire data set was represented in the themes. The accuracy of the thematic analysis was ensured by using a checklist introduced by [Braun and Clarke \(2006\)](#).

Patient observation process and skills in critical care nursing

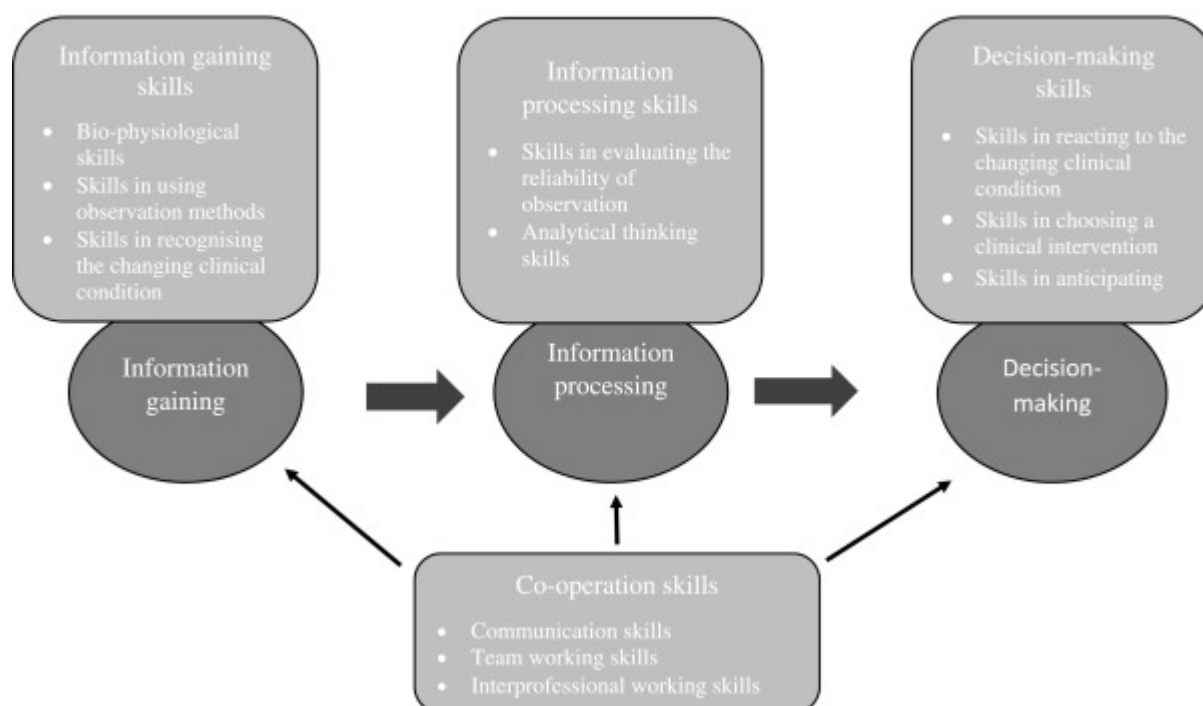


Fig. 1.

Patient observation process and skills in critical care nursing. (Darker grey refers to the process and lighter grey to the skills).

[Figure options](#)

Findings

Participants

The CCNs ($n = 20$, ICU A: $n = 9$, B: $n = 5$, C: $n = 6$) had an average of 20 (9–35) years' working experience in nursing, of which an average of 16 (8–35) years in critical care nursing. In their current positions in intensive care units, the duration of working experience was on average 13 (4–35) years, and 40% ($n = 8$) of the CCNs also had working experience from other intensive care units. Thus, the CCNs had an extensive experiential base in critical care nursing. Data were evaluated to be well saturated as the same themes began to recur during the interviews (Cleary et al., 2014). The length of the interviews ($n = 20$) varied between 18 and 32 minutes (mean 24 minutes).

Patient observation skills in critical care nursing

On the basis of the thematic analysis, four themes in patient observation and the corresponding patient observation skills were identified (Fig. 1). 1. Information gaining skills 2. Information processing skills, 3. Decision-making skills and 4. Co-operation skills. The first three themes of patient observation form a process in which gaining information is a prerequisite for processing information that precedes making decisions. Co-operation has a special role compared to the other themes as it occurs throughout the process. In this process-like structure patient observation skills are integrated in each phase of the process, and they occur in succession: information gaining skills are followed by information processing skills and eventually by decision-making skills. Co-operation skills occur in each phase of the process.

In the following sections, a more detailed description of the themes with their subthemes will be provided. The findings are supported with direct quotations from the data. Additionally, each theme, subtheme and code will be presented in [Table 1](#), [Table 2](#), [Table 3](#) ; [Table 4](#) with examples derived from interviewees' expressions.

Table 1.

Information gaining skills.

Theme 1: Information gaining skills

Subtheme	Initial code	Example
Bio-physiological skills	Understanding normal physiological functions of human body	Cardiovascular, respiratory and central nervous systems
	Understanding the pathophysiology of critical illnesses/conditions	Manifestations of sepsis, effects of increased cranial pressure
	Recognising the objects of observation in general	Vital signs
	Recognising the objects of observation in different patient groups	Differences between cardiac and neurological patients
	Recognising the objects of observation based on the patient's individual condition	The patient is in risk of myocardial ischemia
Skills in using observation methods	Physical assessment	Inspecting facial grimace, palpating abdomen, auscultating lungs and bowel sounds
	Using own senses	Touch, sight, hearing, and smell
	Using technical monitoring devices	ECG, EEG, pulmonary artery catheter
	Understanding operational principles of devices	Principles of plethysmography
	Using laboratory exams	Acid-base balance, arterial blood gas, electrolytes
	Continuing observation	A patient is constantly under observation

Theme 1: Information gaining skills

Subtheme	Initial code	Example
Skills in recognising the changing clinical condition	Observing alongside other duties	Observing during hygienic care and mobilisation
	Understanding the effects of clinical interventions	Effects of fluid therapy, effects of renal replacement therapy

[Table options](#)

Table 2.

Information processing skills.

Theme 2: Information processing skills

Subtheme	Initial code	Example
Skills in evaluating the reliability of the observation	Recognising the source of errors in technical monitoring	Malfunctions in monitor, damaged measurement wire
	Recognising artefacts in measured parameters	Shape of pressure waveforms, rationality of numeric values
	Separating drug effects from pathological condition	Opioids decreasing blood pressure
Analytical thinking skills	Connecting information	Connecting information about acid-base balance, urine output and haemodynamic parameters
	Comparing information	Comparing the arterial blood gas with peripheral oxygen saturation
	Excluding insignificant information	Minor change in central venous pressure is not significant when clinical condition is otherwise stable
	Making interpretations	A patient's blood pressure is insufficient for maintaining urine output
	Diagnosing clinical conditions	Diagnosing metabolic or respiratory acidosis, arrhythmias

[Table options](#)

Table 3.

Decision-making skills.

Theme 3. Decision-making skills

Subtheme	Initial code	Example
Skills in reacting to the changing clinical condition	Deciding to follow up the situation	Blood pressure is decreasing, but it is assumed to normalise spontaneously as it previously did
	Deciding to intervene	Decreasing blood pressure threatens the perfusion of vital organs
Skills in choosing a clinical intervention	Choosing a clinical nursing intervention	Suctioning the airways on the basis of the auscultation findings
	Choosing between interventions prescribed beforehand by a physician	Administering fluids instead of increasing the dosage of vasoactive drug
Skills in anticipating	Anticipating on the basis of observation findings	Multifocal ventricular extrasystoles are occurring increasingly, that may precede ventricular tachycardia
	Intuitive anticipation	Minor signs in a patient's parameters and habitus make a sense of clinical condition to deteriorate

[Table options](#)

Table 4.

Co-operation skills.

Theme 4. Co-operation skills

Subtheme	Initial code	Example
Communication skills	Informing other professionals	Informing about restrictions a patient's current clinical condition causes for physiotherapy
	Consulting other professionals	Consulting a physician in case of a patient's clinical condition is deteriorating

Theme 4. Co-operation skills

Subtheme	Initial code	Example
	Involving patients and next of kin	Asking and listening a patient's own expression of his condition and the effects of treatment
Team working skills	Sharing observation responsibility	Observing a patient taken care by a colleague during her/his rest break
	Reciprocal observation	Noticing something a colleague missed in her/his observation and greeting a colleague's notice in observation, that otherwise would have been missed
Interprofessional working skills	Observing together with other professionals	Taking a closer look at a patient's clinical condition together with a physician
	Recognising own limitations in observation	Understanding when one has neither the power nor the expertise to take care of observation situation independently

[Table options](#)

Information gaining skills

The theme information gaining skills includes three subthemes ([Table 1](#)): bio-physiological skills, skills in using observation methods and skills in recognising the changing clinical condition.

Bio-physiological skills form the basis for patient observation. By thoroughly understanding the normal functions of human physiology as well as the pathophysiology of various illnesses and conditions, observation can be focused appropriately. This implies recognising the targets that are necessary to observe in general in the care of a critically ill patient. Moreover, it concerns recognising the specific requirements for observation that are set by different patient groups, and in particular, by the individual situation of each patient, as illustrated in the following quotations:

"... with regard to neurosurgical patients you have to observe the level of consciousness in different ways... more vigilance is needed than with some other patients". (A6)

"One has to understand, what kind of parameters are normal for this patient. The parameters mentioned in text books do not apply to every patient". (A7)

The skills in using observation methods consist of physical assessment, use of own senses, use of technical devices and laboratory results. Physical assessment includes inspecting the patient's demeanour, palpating the abdomen and extremities, and auscultating the lungs and bowel sounds. A lot of information is received through various technical devices, and understanding the operational principles of these devices is important. However, a substantial amount of information about a patient's clinical condition can be gained by using the senses:

“There are plenty of devices and machines in the ICU, but you have to use your own eyes and hands and even sense of smell. That actually tells you more”.(A1)

Skills in recognising the changing clinical condition involve continuous and uninterrupted observation, also during other nursing tasks. This enables recognising the trend of the progress in the patient’s clinical condition:

“Also when I’m writing a report or dispensing medication, I have to be aware of my patient’s condition”. (A8)

Recognition of the changing clinical condition requires an understanding of the effects of various clinical interventions, since both desired and unwanted changes may be caused by interventions:

“If there is a continuous hemodiafiltration going on, you have to monitor whether the treatment has an effect or whether you should make some changes, make the treatment more effective”. (C2)

Information processing skills

The theme information processing skills includes two subthemes ([Table 2](#)): skills in evaluating the reliability of the observation and analytical thinking skills.

Skills in evaluating the reliability of the observation concern separating erroneous data from reliable data. Information gained from different sources and with different methods is liable to many errors. Hence, these skills include awareness of possible sources of error as regards malfunctions and artefacts, and furthermore, a general understanding of the technical principles of monitoring devices:

“To work out whether the readings are reliable. If saturation shows low readings, you have to really look at the patient and examine him and ponder whether it is reliable”. (A6)

Analytical thinking skills include skills in connecting the pieces of information gained from different sources and skills in separating relevant information from insignificant information as regards a patient’s clinical condition. Analytical thinking skills are used in order to visualise an overall picture of a patient’s clinical condition:

“They are connected to each other and that’s why you should be concerned with the whole, not only stare at how the heart beats if the level of consciousness is poor”. (A3)

Hence, analytical thinking skills entail making constant comparisons between information received through technical monitoring, laboratory results, and the senses. By relating all the relevant information it is possible to conceptualise a general view of the patient’s clinical condition instead of clinging to separate parameters:

“You may observe one abnormal parameter for some reason, and it may not be significant. Let’s say you are monitoring arterial blood pressure and ECG. For some reason the monitor alarms asystole, but you are able to notice that the patient still has perfusable blood pressure”. (B1)

Furthermore, analytical thinking also includes skills in making interpretations about the cause and its effect, as well as skills in diagnosing certain clinical conditions:

“You can also evaluate what is the reason for the current condition. Are you administering some fluids too fast? Is there something wrong with the ventilator’s settings? Should you adjust them?” (C4)

Decision-making skills

The theme decision-making skills includes three subthemes ([Table 3](#)): skills in reacting to the changing clinical condition, skills in choosing a clinical intervention and skills in anticipating.

Skills in reacting to the changing clinical condition enable CCNs to know when to react immediately and when to wait and continue to observe the patient's clinical condition:

"For example, patient is having arrhythmias. First, I decide to record ECG without a physician prescribing it". (B3)

Based on the observation, a suitable intervention can be chosen between the various nursing interventions and interventions prescribed beforehand by a physician. Understanding suitable and available treatment options for different kinds of clinical conditions forms the basis for choosing interventions:

"Saturation is low, airway pressure is rising – is there mucus in the airways? Should I perform suctioning?" (A2)

Skills in anticipating on the basis of patient observation appear in developing scenarios about the potential course of a patient's clinical condition and making plans for how to deal with possible problems:

"I notice that there are more and more ventricular extrasystoles, and that may precede other arrhythmias. Then I can kind of anticipate what I should do. I may place the defibrillator within reach". (A8)

Sometimes anticipating is based on a CCN's intuition:

"Even though the monitor looks nice and pretty, and you really don't have a specific reason to be worried about the patient: however, you have this gut feeling – there is something wrong". (A7)

Co-operation skills

The theme co-operation skills includes three subthemes ([Table 4](#)): communication skills, team working skills and interprofessional working skills. Co-operation skills have a special role in patient observation process as they occur in each phase.

Communication skills are aimed at informing and consulting other professionals about a patient's condition.

"When the condition is worsening, I consult the physician in advance and tell her what my considered assessment of the situation is". (B4)

Communication skills include listening and asking patients' and their next of kin's perception about the clinical condition. This may bring out relevant information about a patient's condition before got ill:

"Family members may give you information, they may tell you, that the patient is his own self or he is behaving in a very strange way". (C6)

Involving patients in observation occurs also when a patient is able to evaluate the effects of clinical interventions. Involving patients requires skills in listening to the patient and constantly paying attention on their expressions:

“You can ask, even though the patient is on a ventilator. You can ask whether breathing is more difficult or easier now after changing the position”. (C1)

Team working skills cover both teamwork with colleagues and the interprofessional team. Sharing both observation responsibility between colleagues and their perception of the patient’s clinical condition with other professionals are part of team working skills:

“I can present the issues (to the physician) that I considered to be worrying in a patient’s condition. The physician is responsible for medical care, but there are many issues we can discuss and decide on together.” (A9).

Discussion

The aim of the study was to provide a comprehensive description of multiple skills in patient observation in critical care nursing. As patient observation skills have been identified as part of CCNs’ competence ([Ääri et al., 2008](#)), the findings contribute to clarifying this part of the competence by providing a comprehensive, yet context-specific and concrete description. On the basis of this study, patient observation is a process and there are multiple skills related to each phase of the process ([Fig. 1](#)).

The findings of the study are in line with previous studies as regards skills in focusing observation on various body systems ([Karra et al., 2014](#)), skills in using various observation methods ([Doig et al., 2011](#) ; [Hoffman et al., 2009](#)) and observation skills as an integral part of decision-making ([Currey and Botti, 2006](#) ; [Karra et al., 2014](#)).

This study focused mainly on the physiological dimension of patient observation. Although the interview guide was not restricted to the physiological dimension, the psychological dimension was much less emphasised by the CCNs. Even though observing a patient’s mental state and pain were mentioned by several CCNs, the physiological observation seems to dominate. As a result, the findings may not provide a picture of holistic observation. Critically ill patients are known to suffer from psychological disturbances, that may have long term negative effects ([Black et al., 2011](#)) and therefore psychological dimension of observation deserves notice as well. However, CCNs emphasised the importance of integrating both technical monitoring and patient assessment skills as well as integrating the information gained through them. This integration allows them to get a comprehensive view of a patient’s clinical condition. In this regard, the findings support those of [Tunlind et al. \(2015\)](#).

Patient observation skills can be seen as an integral part of the patient safety agenda, as was also noticed by [Jones and Johnstone \(2016\)](#). Reflections into patient safety can be seen throughout the observation process: in order to provide safe care, CCNs have to observe the right factors with the right methods, evaluate whether their observations are reliable and significant, and furthermore they have to make conclusions and react accordingly, and anticipate in advance. Skills in evaluating the reliability of observation have an essential role in patient safety as erroneous information may lead to false treatment or delaying the correct treatment. Patient observation plays an important role in detecting the deterioration of the status of critically ill patients ([Benner et al., 2014](#) ; [Jones and Johnstone, 2016](#)). However, patient safety is not restricted to detecting the deterioration, but it is also about skilful observation of the effect of clinical interventions and following the course of a patient’s clinical condition.

Co-operation skills have a special role in the patient observation process, since they are connected to every phase of the process. This probably reflects the highly collaborative nature of critical care in general ([Lakanmaa et al., 2012](#) ; [Marshall et al., 2016](#)). Collaboration occurs on professional and interprofessional levels, but also with patients and next of kin. As part of communication skills, a CCN listens to how patients

or their next of kin perceive the clinical condition. Involving patients and next of kin reflects the idea of patient-centred care. [Allbutt et al. \(2016\)](#) have raised the question of the role of patients and relatives in detecting the signs of clinical deterioration in the hospital ward environment; perhaps a similar question could be raised in intensive care units as well. According to the findings of the current study, patients can be asked to evaluate their condition even though they are critically ill. There is always a possibility of patients bringing out something that would otherwise be missed. Contemporary sedation practices in critical care make patients' involvement in the observation even more relevant as they may not be heavily sedated or may be awake in intensive care units ([Bassett et al., 2015](#)).

Patient observation skills can be examined in relation to the well-known work of [Benner et al. \(2009\)](#) concerning skill acquisition in nursing. During their nursing education as novices, and when entering critical care as advanced beginners, CCNs have bio-physiological knowledge and procedural knowledge about observation methods. Through experiential learning CCNs transform their knowledge into patient observation skills that they can apply in different situations, and in the care of different patients. Eventually, at expert level, CCNs have a grasp of their patient's clinical condition and they are able to see the big picture, react according to the patient's responses, and are able to anticipate and detect even the unexpected situations and act accordingly.

How can patient observation process and skills be learned? The role of experiential learning ([Benner et al., 2009](#)) is undisputed, but the question is how experiential learning of patient observation process and skills can be supported during the nursing education and orientation when entering critical care? The findings of this study may be applied in simulation-based learning as it enables learners to apply their knowledge in simulated clinical contexts ([Cant and Cooper, 2010](#)) and acquire skills in patient observation. Virtual learning environments have potential in enabling learners to develop their skills ([Cant and Cooper, 2014](#)). The findings of this study may therefore be used as a framework for developing virtual scenarios in patient observation. However, it is important to ensure that learners have an adequate level of bio-physiologic skills, as well as patient assessment and monitoring skills as they form the foundation for patient observation skills.

In addition to education, the findings of this study have implications for clinical practice as well. The description of patient observation skills may serve as a checklist for evaluating and ensuring CCNs' observation skills. The checklist may be applied in self-evaluation, but also in more objective methods of skills evaluation, for example by nurse managers or clinical teachers in evaluating patient observation skills as part of CCNs' competence. The description of patient observation skills may guide CCNs to take all aspects of observation into account to create an overall view of a patient's clinical condition. The description can be assumed to be useful especially for newly graduated and novice CCNs.

The application of the findings is not limited only to critical care nursing, since patient observation skills are much needed in other fields of nursing as well. Coronary and postoperative care units share many similarities with intensive care units regarding nurses' observation skills. Skills in non-technical physical assessment are required in wards as well. Patient observation skills are also essential in anaesthesia nursing ([Jeon et al., 2015](#)). Patient observation is internationally recognised as a part of CCNs' competence ([European federation of Critical Care Nursing associations, 2013](#)), and therefore the findings may have relevance outside Finalnd as well.

Based on this study, some suggestions concerning future studies can be made. This study described the patient observation skills, but did not explore observation in the clinical context. Studies focusing on the depth and accuracy of patient observation are needed, as are studies describing the in-depth cognitive processes in patient observation. Holistic patient observation, including psychosocial dimension, requires further clarification. In future studies, it would be important to develop methods of evaluating CCNs observation skills, and define the adequate level of patient observation skills for CCNs in different phases of

their professional development ([Benner, 1984](#)). The connection between patient observation skills and patient safety would be important to study as well. Educational interventions for enhancing patient observation skills are needed, and their effectiveness needs to be evaluated.

Strengths and limitations of the study

This study has both strengths and limitations. As regards strengths, first, the CCNs who participated in the study met the commonly used criteria for expertise ([Benner, 1984](#)) and provided rich interview data. Second, all the CCNs had sufficient time to express their views without rush even though the interviews were conducted during their shift. No interviews were interrupted or discontinued because of lack of time. Third, the critical care expertise in the research group allowed critical analysis of the data. Fourth, throughout the research process attention was paid to staying close to the data and avoiding making in-depth interpretations ([Milne and Oberle, 2005](#)). Fifth, thematic analysis ([Braun and Clarke, 2006](#)) provided a well-structured method for analysis, and allowed associations between the themes to be evaluated. Sixth, a check list for thematic analysis (Braun and Clarke) was used to assure the accuracy of the analysis.

The study has several limitations. First, the data were collected in three level 3 ([Marshall et al., 2016](#)) intensive care units in two university hospitals in one country. The findings are therefore not generalizable, and may be affected by some national characteristics. Second, despite being a strength of this study, the critical care expertise in research group may have had some effects on objectivity. Third, the analysis was made mostly by the first author. At the beginning of the analysis the accuracy of coding was checked with another researcher, and the analysis process was discussed in the research group. Fourth, the methods used did not allow in-depth description of cognitive processes during the patient observation, and the findings are based on the CCNs' views, not on observing the patient observation process in clinical practice. Fifth, even though associations between themes were evaluated, the methods used did not allow in-depth exploration of associations between the themes; as a result, the tentative theoretical structure needs to be further tested.

Conclusion

This study provided a comprehensive description of patient observation skills in critical care nursing. Based on the findings, patient observation is a three-phased process with multiple skills related to each phase of the process. Information gaining skills are the starting point for the process, followed by information processing skills and decision-making skills. Co-operation skills are related to all phases of the process.

Patient observation skills are part of CCNs' competence; hence the findings contribute to clarifying this part of the competence. The description of patient observation skills may be applied in both clinical practice and education as it may serve as a framework for orientation, ensuring clinical skills and designing learning environments. Based on this study, patient observation skills can be recommended to be included in critical care nursing education, orientation and as a part of CCNs' competence evaluation.

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