Factors promoting intensive care patients’ perception of feeling safe: A systematic review

Annelies Wassenaar a,*, Jeroen Schouten b, Lisette Schoonhoven a,c

a Scientific Institute for Quality of Healthcare, Radboud University Nijmegen Medical Centre, Nijmegen, The Netherlands
b Department of Intensive Care Medicine, Canisius Wilhelmina Ziekenhuis, Nijmegen, The Netherlands
c Faculty of Health Sciences, University of Southampton, Southampton, UK

Article history:
Received 26 November 2012
Received in revised form 1 July 2013
Accepted 5 July 2013

Keywords:
Intensive care
Critical illness
Adult patients
Systematic review
Feeling safe

Background: Feeling safe in the intensive care unit is of great importance while recovering from critical illness. Moreover, feeling unsafe can result in distress. In order to meet the safety needs of intensive care patients as well as to stimulate their recovery and prevent distress, nurses must be aware of factors promoting patients’ perception of feeling safe during an intensive care admission. To our knowledge, there is no synthesis of these factors available as yet.

Objective: To systematically describe the factors that promote patients’ perception of feeling safe in an intensive care unit.

Design: A systematic review of qualitative and quantitative studies.

Data sources: PubMed, Embase, CINAHL, and PsycINFO were searched up to March 2012.

Review methods: Methodological quality was assessed by two authors using the QualSyst tool. Data from the included studies were extracted into a customised data extraction form.

Results: The initial search resulted in 1326 records. Ultimately, eleven studies were relevant to the research question and included in the review. No studies needed to be excluded because of low quality scores. Analysis of the factors in these studies resulted in four overarching themes that promote intensive care patients’ perception of feeling safe. These themes were: nursing care, patients’ issues, relatives, and technological support. Nursing care was described most frequently as an important factor promoting patients’ feeling of safety in an intensive care unit. Relatives were the link between intensive care patients and staff.

Conclusions: Nurses can increase the perception of feeling safe in critically ill patients by taking into account the promoting factors described in this review. By being aware of these factors nurses can improve quality of care in their intensive care unit.

© 2013 Elsevier Ltd. All rights reserved.

What is already known about this topic?

- Feeling safe in the intensive care unit is a very important need for intensive care patients and is vital during their recovery from critical illness.
- Positive experiences of patients during intensive care admission are directly associated with feeling safe.
- Intensive care nurses (rather than doctors or other health care professionals) have the largest impact on creating a safe environment for intensive care patients.

What this paper adds

- Nursing care, patients’ issues, relatives, and technological support are the four overarching themes that promote patients’ perception of feeling safe during an intensive care admission.
• Nursing care, including communication, monitoring, personal approach and attitude, is described most frequently by intensive care patients in relation to their perception of feeling safe.
• Relatives are intensive care patients’ interpreters in communicating with others and are able to provide consolation, resulting in a feeling of safety.

1. Introduction

Patient safety is a crucial aspect in improving quality of health care and has been defined as ‘freedom from accidental injury’ (Kohn et al., 2000). Unfortunately, adverse events occur frequently, negatively influencing patient outcome (Kohn et al., 2000). Although over the years many initiatives have been taken to improve quality of health care and prevent adverse events (WHO, 2012), the incidence of adverse events in hospitalised patients in the Netherlands has not decreased as yet (5.7% in 2004 and 8.0% in 2008) (Langelaan et al., 2010).

Risk for adverse events increases when health care becomes more complex (Garrouste Orgeas et al., 2008; Kohn et al., 2000; Wagner, 2007). Treatment in an intensive care unit (ICU) means complex care, due to the combination of its invasive nature and the extensive use of technical equipment. As a result, patients admitted to an ICU are more prone to experience adverse events compared to patients admitted to general units (Garrouste-Orgeas et al., 2012; Rothschild et al., 2005; Stockwell and Slonim, 2006). Therefore, focus on patient safety is vital during intensive care admission.

Intensive care patients are considered to be critically ill. Critical illness has been defined as ‘impairment of one or more vital organ systems, such that there is a high probability of imminent or life-threatening deterioration in the patients’ condition’ (CMS, 2008). Regardless of the disease, intensive care patients are almost entirely dependent on intensive care nurses during their treatment, monitoring and care (Van den Brink et al., 2006). Due to the use of invasive techniques (such as endotracheal intubation, insertion of venous and arterial catheters, and tubes), intensive care patients are not able to move independently without risk of complications. Some of the above-mentioned techniques induce abnormal communication (Van den Brink et al., 2006), resulting in difficulties in interaction with intensive care nurses, loss of privacy and loss of self-control (Hupcey, 2000; Merilainen et al., 2010). As intensive care patients are frequently unable to actively influence these problems (Merilainen et al., 2010), it is essential that they can fully rely on their intensive care nurses to provide safe care (Hweidi, 2007; Van den Brink et al., 2006). This is all the more essential since intensive care nurses are at the bedside around the clock and continually oversee, coordinate and provide patient care (Sauls and Warise, 2010; Weingart et al., 2005).

Recent studies have shown that intensive care nurses have the largest impact on creating a safe environment for intensive care patients, by taking into account the patients’ point of view (Merilainen et al., 2010; Sauls and Warise, 2010). McKinley et al. (2002) found that positive experiences of patients during intensive care admission were directly associated with feeling safe. Based on patients’ responses, Russell described feeling safe as a state in which a patient experiences an absence of risk of physical or emotional harm (Russell, 1999). Feeling safe in the ICU is a very important need for intensive care patients (Aro et al., 2012) and vital during the recovery from critical illness (Merilainen et al., 2010). Moreover, feeling unsafe can result in increased distress (Hupcey, 2000). Hence, it is of great importance for intensive care nurses to understand the factors that feature most often as promoting patients’ perception of safety in the ICU (Hupcey, 2000; Lasiter, 2011; McKinley et al., 2002; Merilainen et al., 2010).

To our knowledge, no synthesis of factors promoting the perception of feeling safe of critically ill patients during an intensive care admission has been completed as yet. Therefore, the aim of the current review is to systematically describe the factors promoting patients’ perception of feeling safe in the ICU.

2. Methods

2.1. Study design

To conduct this systematic review, the design was informed by relevant criteria from ‘The Guidance for Undertaking Reviews in Health Care of the Centre for Reviews and Dissemination’ (CRD, 2009). PRISMA guidelines have been used to guide reporting and the flow diagram selection as shown in Fig. 1 (Moher et al., 2009).

2.2. Search strategy

Eligible studies were identified by searching the following online databases: PubMed (1950 to March 2012), Embase (1980 to March 2012), CINAHL (1982 to March 2012), and PsycINFO (1806 to March 2012). The search included the following MeSH terms and keywords: (feeling OR experience OR perception) AND (“patient safety” OR safe) AND (“intensive care” OR “intensive care units” OR “critical illness” OR “critical care” OR “critical care unit” OR “intensive care patient”). No limits were used during the online search. A detailed description of the search strategy can be found in Table 1. After selection of the eligible studies, the reference lists of selected studies were manually searched to identify additional references. We also searched for related citations of the included studies from PubMed, to ensure that no relevant studies were missed.

2.3. Selection criteria

During the selection process studies were included based on the following criteria: the articles should be published in English or Dutch, refer to adult patients (older than eighteen years), refer to critically ill patients, and refer to the perception of feeling safe during an intensive care admission. Both qualitative and quantitative designs were included. Articles were excluded if they were (conference) abstracts, supplements, letters, editorials, reviews or meta-analyses. However, individual references from reviews and
Records identified through database searching (PubMed, Embase, CINahl, PsychINFO) (n = 1,326) → 5 March 2012

Additional records identified through reference tracking and related citations in PubMed (n = 4)

Records after duplicates removed (n = 1,183)

Records excluded (n = 1,163)

Records screened (Ti/Ab) (n = 20)

Articles excluded (n = 2) Articles did not meet inclusion/exclusion criteria

Full-text articles assessed for eligibility (n = 18)

Articles excluded (n = 7) Articles did not meet inclusion/exclusion criteria

Studies used for qualitative synthesis (n = 11)

Table 1
Search strategy and search outcome.

<table>
<thead>
<tr>
<th>Database</th>
<th>Search strategy</th>
<th>Limits</th>
<th>Hits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PsychINFO</td>
<td>(feeling OR experience OR perception) AND (“patient safety” OR safe) AND (“intensive care” OR “intensive care units” OR “critical Illness” OR “critical care” OR “critical care unit” OR “intensive care patient”)</td>
<td>None</td>
<td>248</td>
</tr>
<tr>
<td>CINahl</td>
<td>(feeling OR experience OR perception) AND (&quot;patientsafety&quot; OR safe) AND (&quot;intensivecare&quot; OR &quot;intensive care units&quot; OR &quot;criticalillness&quot; OR &quot;critical care&quot; OR &quot;critical care unit&quot; OR &quot;intensive care patient&quot;)</td>
<td>None</td>
<td>183</td>
</tr>
<tr>
<td>Embase</td>
<td>#1.1 AND #1.2 AND #1.3 #1.3 ‘intensive care’/exp OR ‘intensive care units’/exp OR ‘critical illnes’/exp OR ‘critical care’/exp OR ‘critical care unit’ OR ‘intensive care patient’</td>
<td>None</td>
<td>154</td>
</tr>
</tbody>
</table>

Total 1326

Fig. 1. Flow diagram selection (based on Moher et al., 2009).

meta-analyses were included when they complied with our inclusion criteria.

2.4. Quality assessment

The methodological quality of each of the eleven studies included was independently assessed by two authors (AW, LS). The quality assessment was compared for these two reviewers. In case of disagreement, consensus was reached through discussion or consultation of the co-author (JS). Qualitative studies were assessed using the QualSyst tool for qualitative studies (Kmet et al., 2004). This tool is a validated generic checklist consisting of ten items with scores from zero to two, with the maximum total score being 20. A summary score was calculated for each study by summing the total score obtained across the ten items and dividing them by the total possible score of 20.

Two studies (Hofhuis et al., 2008; Russell, 1999) used a combination of a qualitative and a quantitative approach. Of these, one study (Russell, 1999) analysed all collected data qualitatively. An appraisal of the quantitative part was therefore not possible. The other study (Hofhuis et al., 2008) was conducted in two phases, using a qualitative approach in phase one and a quantitative approach in phase two. The quality of the quantitative part of this study was assessed using the QualSyst tool for quantitative studies (Kmet et al., 2004). This tool is a validated generic checklist consisting of fourteen items with scores from zero to two and the possibility to score ‘not applicable’. Items that were rated ‘not applicable’ were excluded from the calculation of the summary score. The maximum total score is 28. The summary score was calculated for this study by summing up the total score obtained across the relevant items and dividing that by the total possible score (i.e., 28 – (number of ‘not applicable’ × 2)). Studies were excluded based on a minimum threshold of a summary score of 0.55 for inclusion of studies in the systematic review (Kmet et al., 2004).

2.5. Data extraction

Data from studies meeting the inclusion criteria were extracted into a customised data extraction form by one author (AW). The data extraction was then checked by another author (LS). The following data items were extracted: author, year, country, design, sample, data collection/analysis methods, main findings (see Table 2).

3. Results

3.1. Search outcome

The initial search resulted in 1326 records, the selection process of which has been presented in Fig. 1. These records were imported into an electronic bibliography, from which 147 duplicates were removed after checking authors’ names, title and year published. Two authors (AW, LS) independently screened the remaining 1179 records on title and abstract for eligibility using the inclusion criteria. Disagreements between the two authors (AW, LS) regarding eligibility were resolved by discussion. This resulted in fourteen articles of which the full text had been assessed. Reference tracking and searching for related citations in PubMed resulted in four additional articles. Ultimately, eight studies from the initial search and three studies from reference tracking and related citations in PubMed were relevant to the research question. These eleven studies were included for quality assessment.

3.2. Data synthesis

A total of eleven studies were included. Nine studies used a qualitative design (Ballard et al., 2006; Engstrom and Soderberg, 2007b; Hupcey, 2000; Lasiter, 2011; McKinley et al., 2002; Samuelson, 2011; Wahlin et al., 2006; Wang et al., 2009; Wong and Arthur, 2000). Two studies used a combination of qualitative and quantitative designs (Hofhuis et al., 2008; Russell, 1999). Regarding the qualitative studies, five used a phenomenological design (Ballard et al., 2006; Engstrom and Soderberg, 2007b; Wahlin et al., 2006; Wang et al., 2009; Wong and Arthur, 2000), two used a grounded theory design (Hupcey, 2000; Lasiter, 2011) and two used a descriptive design (McKinley et al., 2002; Samuelson, 2011). Hofhuis et al. (2008) used a qualitative design with semi-structured interviews, followed by a quantitative design with self-reported questionnaires. Russell (1999) conducted an exploratory study, using a qualitative design with interviews and a quantitative design with self-reported questionnaires.

The sample size varied from ten (Hofhuis et al., 2008) to 298 patients (McKinley et al., 2002). Of the studies using a qualitative design, five studies included patients until data saturation was reached (Ballard et al., 2006; Hofhuis et al., 2008; Hupcey, 2000; Lasiter, 2011; Wang et al., 2009).

Ten studies focussed on intensive care patients over eighteen years of age (Ballard et al., 2006; Engstrom and Soderberg, 2007b; Hofhuis et al., 2008; Hupcey, 2000; McKinley et al., 2002; Russell, 1999; Samuelson, 2011; Wahlin et al., 2006; Wang et al., 2009; Wong and Arthur, 2000). The remaining study focussed on intensive care patients over 65 years of age (Lasiter, 2011). The diagnoses of the patients differed from medical to (neuro)surgical and trauma. In eight studies (a part of) the patients were mechanically ventilated for a varied period of time (Ballard et al., 2006; Engstrom and Soderberg, 2007b; Hofhuis et al., 2008; Hupcey, 2000; McKinley et al., 2002; Samuelson, 2011; Wahlin et al., 2006; Wang et al., 2009, see Table 2).

Three studies were conducted in the USA (Ballard et al., 2006; Hupcey, 2000; Lasiter, 2011), three studies in Sweden (Engstrom and Soderberg, 2007b; Samuelson, 2011; Wahlin et al., 2006), two studies in Australia (McKinley et al., 2002; Russell, 1999), two studies in China (Wang et al., 2009; Wong and Arthur, 2000) and one study in The Netherlands (Hofhuis et al., 2008).

There was a large variability in the moment of data collecting in the included studies. Two studies collected data either during ICU admission or after transfer to a general unit (Ballard et al., 2006; Hupcey, 2000). Six studies collected data one day up to six months after transfer to a general unit (McKinley et al., 2002; Russell, 1999; Samuelson, 2011; Wahlin et al., 2006; Wang et al., 2009; Wong and Arthur, 2000). One study collected data
<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th>Country</th>
<th>Design</th>
<th>Sample</th>
<th>Data collection/analysis methods</th>
<th>Main findings</th>
</tr>
</thead>
</table>
| Ballard et al.  | 2006  | USA         | Phenomenological, qualitative approach      | Purposive sample. 11 participants >18 years. MV 3–23 days              | Private in-depth interviews, 48–72 h after extubation, in ICU or at general ward. Unstructured open-ended questions. Interviews until saturation. Data analysis: use of constant comparative method | 4 Themes and 3 subthemes were identified:  
  - Feeling of going back and forth (having weird dreams)  
  - Loss of control (fighting or being tied down), (being scared)  
  - Almost dying  
  - Feeling cared for                                                                 |
| Engstrom and    | 2007b | Sweden      | Phenomenological, qualitative approach      | Purposive sample. 10 participants >18 years. North Sweden. MV > –24 h | Personal interviews, narrative approach, 1.5 years after becoming critically ill. Broad clarifying questions. Data analysis: naı¨ve understanding, structural analysis, comprehensive understanding and reflection | Naı¨ve understanding: to feel safe, participants wanted close relatives to stay near them. Structural analysis: – 1 theme: confirmation – 6 subthemes: receiving explanations, a feeling of being understood, a feeling of safety, getting strength and willpower, having possibilities and realising their value. Comprehensive understanding and reflections: participants felt safe in the presence of close relatives, relatives improved participants’ quality of life. |
| Hofhuis et al.  | 2008  | The Netherlands | 1: Qualitative approach using semi-structured interviews | 1: Purposive sample. 11 participants >18 years | 1: Maso’s approach (1989): data collection, analysis and creating relations of possible theoretical insights exchanging among each other. Semi-structured interviews with topic list, 6–14 days after discharge to the ward. Data collection until saturation.  
2: After a pilot study inclusion of participants. Participants received questionaire 3 months after discharge for retrospective evaluation of their experiences | Result part 1: providing the seriously ill patient with information and explanation — explanations and instructions resulted in less fear and insecurity. Knowing why was supportive and reduced fear. Placing the patient in central position — besides technology and expertise of nurses, human aspects like relieving fear and creating security were important to patients. Personal approach by the nurse — treatment was perceived as comforting, creating a feeling of safety. Result part 2: pain and noise most frequent complaints. Most annoying procedures during admission: not being able to talk, tracheal suctioning, thirst, and inadequate explanation of actions taken by the ICU staff. |
<p>| Hupcey          | 2000  | USA         | Grounded theory, qualitative approach       | Theoretical sample. 45 participants &gt;18 years. Admitted &gt;3 days to medical or surgical ICU. Rural American tertiary care centre | Open-ended, unstructured interviews with probing questions, once the person was stable (in the ICU, or immediately following transfer to general unit). Constant comparative process. Data collected and analysed simultaneously, coding and identifying of themes, until saturation was reached | The overwhelming need of ICU patients is to feel safe. A model of the psychosocial needs of ICU patients was developed around the core variable of feeling safe. 4 categories in the model affect experiences of feeling safe: knowing, regaining control, hoping, trusting. The perception of feeling safe was also influenced (+ or –) by family and friends, ICU staff and religious beliefs. |</p>
<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th>Design</th>
<th>Sample</th>
<th>Data collection/analysis methods</th>
<th>Main findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lasiter</td>
<td>2011</td>
<td>Grounded theory, qualitative approach</td>
<td>Purposive sample. 10 participants &gt;65 years. Admitted 1–5 days to ICU in 2 teaching hospitals Midwestern USA</td>
<td>A semi-structured interview guide with open-ended questions. Interview after transfer to general unit and 8 participants also 2 weeks after hospital discharge. Audio taping and transcribing verbatim. Data analysis with NVivo7. Data collection (until saturation) and analysis simultaneously and constant comparison. Open coding was used</td>
<td>A grounded theory of feeling safe in the ICU was developed with 4 main categories (initiative, proximity, oversight and predictability) and 1 central category (interaction with critical care nurse)</td>
</tr>
<tr>
<td>McKinley et al.</td>
<td>2002</td>
<td>Descriptive study, qualitative approach</td>
<td>14 participants &gt;18 years. Former ICU patients. Admitted 3–53 days to general or neurosurgical unit. Metropolitan tertiary hospital</td>
<td>In-depth focus group interviews, 3–6 months after admission to the ICU. 90 min per focus group, on 3 occasions. Continuous organisation of themes and subthemes. 2 investigators reached agreement of coding</td>
<td>Vulnerability best represented the experiences of the participants and was related to dependency in critical illness. Patients experienced security when they knew what was happening to them, had their needs anticipated, received personalised care, and had their family present. Security was associated with feelings of safety, comfort, assurance and confidence as well as feeling valued and important. When care was depersonalising, they had adverse experiences: uncertainty, insecurity, and fear and anxiety. Lack of sleep heightened vulnerability to these adverse experiences</td>
</tr>
<tr>
<td>Russell</td>
<td>1999</td>
<td>Exploratory study, qualitative and quantitative approach</td>
<td>298 participants &gt; 18 years, after admission to an ICU. 212 participants completed a questionnaire and 86 were interviewed</td>
<td>6 months after discharge from ICU, 298 patients were asked to describe their memories of the ICU, with self-reported questionnaires or structured interviews. Extensive notes were taken of the interviews. Statistics and bio-psycho-social perspective provided the context in this study</td>
<td>10 thematic categories were created of patients’ memories of the ICU. During admission patients were frequently without a voice. Reasons: intubation, fear, lack of knowledge/info, cultural barriers and language barriers and feelings of disempowerment. Although close surveillance by technology provided many patients/family with feelings of physical safety, it was often the reassurance and explanations given by health care workers that provided emotional safety. It was not only the attention, but also the expertise that made them feel safe. Poor communication not only caused anxiety while the patient was in ICU, but also contributed to less than optimal recoveries after discharge</td>
</tr>
</tbody>
</table>
### Table 2 (Continued)

<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th>Country</th>
<th>Design</th>
<th>Sample</th>
<th>Data collection/analysis methods</th>
<th>Main findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Samuelson2011</td>
<td>Sweden</td>
<td></td>
<td>Descriptive study, qualitative approach</td>
<td>250 participants, &gt;18 years. Admitted to 2 general ICUs in Sweden. MV 0.02–34 days</td>
<td>Participants interviewed 3–5 days after ICU discharge. Open-ended questions. Member checks. Open coding used during data analysis</td>
<td>10 categories emerged from data: 5 pleasant and 5 unpleasant memories: physical distress and relief of physical distress, emotional distress and emotional well-being, perceptual distress and perceptual well-being, environmental distress and environmental comfort, stress inducing care and caring service. Pleasant memories play an important role in relieving stress and promoting well-being</td>
</tr>
<tr>
<td>Wahlin et al.2006</td>
<td>Sweden</td>
<td></td>
<td>Phenomenological, qualitative approach</td>
<td>Purposive sample. 11 participants &gt;18 years. Admitted &gt;3 days to an ICU of 2 hospitals in Southern Sweden. 5 of the 11 participants were MV 1.5–30 days</td>
<td>Interviews conducted 4–30 days after patient left ICU. Interviews initiated by open question and follow-up questions. Analysis conducted in 5 steps in accordance with Karlsson (1995)</td>
<td>Empowerment in ICU was described in 5 themes: creating a safe environment, encouraging feelings of value and motivation, providing additional care, encouraging patient participation. Patient empowerment in ICU consists of strengthening and stimulating patients’ own inherent joy of life and will to fight</td>
</tr>
<tr>
<td>Wang et al.2009</td>
<td>China</td>
<td></td>
<td>Phenomenological, qualitative approach</td>
<td>Purposive sample. 11 participants, MV &gt;48 h on the ICU. University teaching hospital in Beijing, China</td>
<td>Participation after discharge ICU 3–14 days. In-depth interviews with open-ended questions. Data collection stopped when saturation was reached. Analysis following (Giorgi, 1997) four-step analytic method</td>
<td>5 themes emerged from data:  – Being in an unconventional environment (unfamiliar, terrible, disturbance of alarms)  – Physical suffering (helplessness, received treatment and care passively, dependence, vulnerability and powerlessness, experiencing of pain/discomfort)  – Psychological suffering (experiencing hallucinations and nightmares — fearful/frightening, experiencing fluctuating level of consciousness, relying on technology and others for survival — makes patient feel dependent and fearful)  – Self-encouragement (relying on self-positive attitude, getting better — confidence, crediting family support, aspiring for professional support — accompanied by a nurse to make you feel safe)  – Self-reflection (appraising the past, re-evaluating the value and meaning of life)</td>
</tr>
<tr>
<td>Wong and Arthur2000</td>
<td>China</td>
<td></td>
<td>Phenomenological, qualitative approach</td>
<td>Purposive sample. 10 participants within 5 days after discharge of ICU</td>
<td>Phases during the study: intuiting, analysing and describing. Interview in the general ward 1–5 days after transfer. Audio taping. Thematic content analysis of data was used based on Glaser and Strauss grounded theory approach</td>
<td>2 main categories emerged from patients’ responses: ‘feelings experienced’ and ‘needs during stay’. Sub-categories ‘feelings’: anxiety, safety and security. ‘Needs’: safety, rest and sleep, family visit and adequate pain relief</td>
</tr>
</tbody>
</table>

MV, mechanical ventilation; NMBAs, neuromuscular blocking agents; ICU, intensive care unit.

---

Table 3
Quality assessment with the QualSyst tool (Kmet et al., 2004).

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Ballard et al. (2006)</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>17/20 = 0.85</td>
</tr>
<tr>
<td>Engstrom and</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>16/20 = 0.80</td>
</tr>
<tr>
<td>Soderberg (2007b)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hupcey (2000)</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>20/20 = 1.00</td>
</tr>
<tr>
<td>Lasiter (2011)</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>18/20 = 0.90</td>
</tr>
<tr>
<td>Samuelson (2011)</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>16/20 = 0.80</td>
</tr>
<tr>
<td>Wahlin et al. (2006)</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>18/20 = 0.90</td>
</tr>
<tr>
<td>Wang et al. (2009)</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>18/20 = 0.90</td>
</tr>
<tr>
<td>Wong and Arthur (2000)</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>17/20 = 0.85</td>
</tr>
<tr>
<td>Hupcey et al. (2008)</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>19/20 = 0.95</td>
</tr>
<tr>
<td>McKinley et al. (2002)</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>17/20 = 0.85</td>
</tr>
<tr>
<td>Russell (1999)</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>12/20 = 0.60</td>
</tr>
</tbody>
</table>

2 = yes; 1 = partial; 0 = no.

Table 4
Quality assessment with the QualSyst tool (Kmet et al., 2004).

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Hofhuis et al. (2008)</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>n/a</td>
<td>n/a</td>
<td>2</td>
<td>1</td>
<td>16/18 = 0.89</td>
</tr>
</tbody>
</table>

2 = yes; 1 = partial; 0 = no; n/a = not applicable.
after being transferred to a general unit and approximately two weeks after discharge from the hospital (Lasiter, 2011). One study, which was conducted in two parts, collected data six up to fourteen days after transfer to a general unit in part one and three months after discharge from the hospital in part two (Hofhuis et al., 2008). One study collected data a year and a half after becoming critically ill (Engstrom and Soderberg, 2007b).

Because the qualitative design was predominant and the methodology differed between the studies, it was not possible to conduct a meta-analysis. Hence, the findings are reported in a narrative format in which the findings have been summarised under thematic headings (Thomas and Harden, 2008).

3.3. Quality assessment

The level of disagreement with regard to the quality assessment consisted of four items out of a total of 119 items, which is equivalent to 3.4%. All of the eleven studies included in the quality assessment scored a summary score of 0.60 or higher. Therefore, no studies were excluded based on quality scores. The quality assessment and summary scores per study are shown in Tables 3 and 4.

3.4. Factors promoting the perception of feeling safe

All included studies were checked line by line on relevant findings regarding factors promoting intensive care patients’ perception of safety. These findings were clustered based on similarities in content, whilst ensuring the descriptions were kept close to the original findings. Clustering resulted in four themes, which were labelled with thematic headings, based on overarching substantive themes (CRD, 2009; Thomas and Harden, 2008). The themes were: nursing care, patients’ issues, relatives, and technological support.

3.4.1. Nursing care

In ten studies nursing care was described by intensive care patients as an important factor related to their perception of feeling safe (Ballard et al., 2006; Hofhuis et al., 2008; Hupcey, 2000; Lasiter, 2011; McKinley et al., 2002; Russell, 1999; Samuelson, 2011; Wahlin et al., 2006; Wang et al., 2009; Wong and Arthur, 2000). The overarching theme ‘nursing care’ has been classified into the subthemes monitoring, personal approach, attitude and expertise, communication and information, and interaction with intensive care nurses.

3.4.1.1. Monitoring. Patients described how they felt safe knowing intensive care nurses were nearby, watching over them and having everything under control (Hupcey, 2000; Samuelson, 2011; Wahlin et al., 2006).

3.4.1.2. Personal approach. A personal approach by the intensive care nurse, concomitant with continuous support, positive attention, and sympathy during treatment, was perceived as comforting and resulted in a feeling of safety (Hofhuis et al., 2008; McKinley et al., 2002). Hearing calm and reassuring voices and feeling the warmth of the nurse’s touch were important means of enhancing patients’ emotional security (Engstrom and Soderberg, 2007b). When care was perceived as impersonal, patients were having adverse experiences including uncertainty, insecurity, fear and anxiety. Impersonal care was perceived as ‘rough’ and insensitive and felt like not being cared for as a person, but as an object or even not being present at all. A lack of sleep, attributed to noise, lights and activity, increased vulnerability to these adverse experiences (Hofhuis et al., 2008; McKinley et al., 2002).

3.4.1.3. Attitude and expertise. Apart from intensive care nurses’ attention, it was also their attitude and expertise that attributed to patients feeling safe (Lasiter, 2011; Russell, 1999; Wahlin et al., 2006). Intensive care nurses who did not take patients seriously or even reacted aggressively, for instance with regard to patients’ dreams or hallucinations, caused feelings of fear (Hofhuis et al., 2008). Nurses’ behaviour associated with this was described as ‘not explaining what was going on’, ‘using an aggressive tone of voice’ and ‘treating the patient like a child instead of an adult’.

3.4.1.4. Communication and information. Intensive care nurses taking time to communicate, providing information and explanation about what was happening to the intensive care patient, decreased fear and feelings of unsafety (Hofhuis et al., 2008; McKinley et al., 2002; Russell, 1999; Wahlin et al., 2006). However, a patient’s ability to hear intensive care nurses discuss his or her care (or another patient’s care) at the bedside led to mis-information and fear (Russell, 1999). The amount of information provided, the fact that information was incomplete or unintelligible, or the fact that information contained no positive elements, was related to the level of fear, anxiety and despair (Wahlin et al., 2006; Wong and Arthur, 2000). Russell (1999) stated that poor communication not only caused anxiety while the patients were in ICU, but also contributed to a less than optimal recovery after discharge. Examples of this are having traumatic experiences which remained in the patient’s thoughts, having nightmares, being unable to sleep and feeling depressed (Russell, 1999).

3.4.1.5. Interaction with the intensive care nurse. One study developed a theoretical model of feeling safe in the ICU. The essential aspect of this model was interaction with intensive care nurses, while the four main categories were classified as initiative (patients’ ability to get help and having control), proximity (nurses nearby enough to be quickly present), oversight (machine check and nurses’ check, being able to see the nurses and knowing they are watching/monitoring you), and predictability (nurses’ characteristics: confidence, education, quick reaction, ability to recognise problems, knowledge what to do in an emergency) (Lasiter, 2011).

3.4.2. Patients’ issues

In six studies patient-related factors were described by intensive care patients as an important factor related to their perception of feeling safe (Ballard et al., 2006;
Hupcey, 2000; Russell, 1999; Samuelson, 2011; Wang et al., 2009; Wong and Arthur, 2000). The overarching theme 'patients’ issues' has been classified into the subthemes 'psychosocial needs' and 'loss of control'.

3.4.2.1. Psychosocial needs. One study described the overwhelming need of intensive care patients to feel safe. In this study a model of the psychosocial needs of intensive care patients was developed around the core variable of feeling safe (Hupcey, 2000). The model affecting patients’ experiences of feeling safe consisted of four categories: knowing (knowing what was happening to them provided reassurance and appeared to help intensive care patients get through a terrible experience), regaining control (most patients felt a loss of control, which caused frustration and a sense of insecurity), hoping (maintaining hope was imperative for intensive care patients and greatly influenced by family and friends, intensive care staff, religious beliefs). Finally, trusting nurses and other staff was essential to feeling safe (Hupcey, 2000).

3.4.2.2. Loss of control. Loss of control made patients feel scared, frightened, distressed and insecure (Ballard et al., 2006; Hupcey, 2000). Being without a voice during intensive care admission also caused anxiety. There were many reasons for this voicelessness of intensive care patients, such as intubation, fear, lack of knowledge and information, cultural barriers and language barriers as well as feelings of disempowerment (Russell, 1999). Having hallucinations and nightmares resulted in fearful and frightening experiences for intensive care patients. Besides this, a fluctuating level of consciousness made patients feel dependent and fearful (Wang et al., 2009). Intensive care patients without ICU orientation and without knowledge about what to expect during an ICU admission, experienced feelings of anxiety. A pre-operative visit to the ICU prepared patients psychologically while creating a feeling of safety, because they realised that many nurses, doctors, equipment, and monitors were around to help them (Wong and Arthur, 2000). Creating an environment in which intensive care patients felt safe positively influenced patients’ empowerment; the ability to control their own lives (Samuelson, 2011).

3.4.3. Relatives

In four studies, intensive care patients described that they felt safe in the presence of their relatives (Engstrom and Soderberg, 2007b; McKinley et al., 2002; Samuelson, 2011; Wahlin et al., 2006). Relatives served as patients’ interpreters in communicating with others, while also being able to provide consolation. Patients experienced a sense of confirmation, constructed by receiving explanations, a feeling of being understood, a feeling of safety, getting strength and willpower, having possibilities, and realising their value. Feelings of loneliness and fear were described as being caused by the absence of their relatives (Engstrom and Soderberg, 2007b). Family support was of great importance to intensive care patients during critical illness and improved patients’ quality of life (Engstrom and Soderberg, 2007b; Wang et al., 2009).

3.4.4. Technological support

In three studies patients described close surveillance by technology as a factor providing feelings of safety (Hofhuis et al., 2008; Russell, 1999; Wong and Arthur, 2000). In one of these studies 81% of the patients were extremely pleased that technological support was used to monitor safety in the ICU (Russell, 1999). In another study technology was perceived in a more fluctuating way, from friend to enemy: patients felt dependent and fearful by relying on technology, but also expressed anxiety when technology was removed (Wang et al., 2009). Fighting against techniques and restraints were experiences fraught with anxiety (Ballard et al., 2006). Also, mechanical ventilation (MV) was predominantly described as a frightening and unpleasant experience (Wang et al., 2009).

4. Discussion

In this systematic review we provided a synthesis of factors promoting patients’ perception of feeling safe in the ICU. We found that these factors can be categorised into four overarching themes: nursing care, patients’ issues, role of relatives, and technological support.

Of these overarching themes, nursing care was most frequently described by intensive care patients as an important factor related to their perception of feeling safe (Ballard et al., 2006; Hofhuis et al., 2008; Hupcey, 2000; Lasiter, 2011; McKinley et al., 2002; Russell, 1999; Samuelson, 2011; Wahlin et al., 2006; Wang et al., 2009; Wong and Arthur, 2000). This theme has been further classified into the subthemes monitoring, personal approach, attitude and expertise, communication and information, and interaction with intensive care nurses.

The general importance of nursing care in relation to the perception of feeling safe is also found in other study populations. In a study exploring patients’ feelings of safety during hospitalisation in medical and surgical wards, nursing care was also the factor most likely to improve patients’ feeling of safety (Vaismoradi et al., 2011). Communication and information, a subtheme of nursing care, was also examined in two other studies with a different context. In these studies patients’ perceptions of safety increased with good communication, including being informed by healthcare professionals such as nurses (Scott et al., 2012; Wolosin et al., 2006). This corresponds with our findings, which showed that the amount of information provided, incomplete and incomprehensible information, or information without positive elements, were related to the level of fear, anxiety and despair (Wahlin et al., 2006; Wong and Arthur, 2000). In addition, poor communication not only caused anxiety while the patient was in the ICU, but also contributed to a less than optimal recovery after discharge (Russell, 1999). This was confirmed by a study of Rattray et al. (2010), which showed that a significant association existed between patients’ perceptions of their intensive care experience and the following items on the Intensive Care Experience Questionnaire: anxiety, depression, avoidance, and intrusion scores at hospital discharge.

Besides nursing care, intensive care patients described that they felt safe in the presence of their relatives.

were admission, (2011) enough the 1.5 determining improved 4.1. between feeling 2000). ICU patients, and searching ICU strengths and weaknesses. Engstrom and Soderberg, 2007a). During intensive care admission, critically ill patients and their relatives mainly interact with nurses. The nurses continually oversee, coordinate and provide care (Weingart et al., 2005), determining when relatives may be present. Therefore, nurses play a very central role in addressing the needs of both patient and relatives in an ICU (Cypress, 2010).

Nurses and relatives are both important in strengthening intensive care patients’ empowerment by creating a safe environment and encouraging patients’ participation (Wahlin et al., 2006). Karlsson et al. (2012) found that helping intensive care patients to strive for independence and control and stimulating their participation in care activities reduced feelings of dependence. Vaismoradi et al. (2011) confirmed these findings in medical and surgical wards. They found that patients’ feelings of safety improved when they were able to remain independent and take part in their own care.

Summarising, the findings show that there is a relation between nursing care and the presence of relatives in the ICU with regard to intensive care patients’ perception of feeling safe.

4.1. Strengths and limitations

In this review we used a strict methodology for the search strategy, the selection procedure and the critical appraisal of the studies included. We used the most relevant databases, while two reviewers carried out the selection procedure and critical appraisal. This resulted in enough material to provide a synthesis of factors promoting the perception of feeling safe of critically ill patients during an intensive care admission. This synthesis reflects the perceptions of a very diverse group of intensive care patients, mainly from purposive samples, which improves the overall transferability of this review. However, to interpret the results, some limitations should be considered.

First, there is the possibility of selection bias. We only included studies published in English and Dutch. Even so, because we only excluded one Spanish study on this criterion, it seems unlikely this influenced our results. Second, there is the possibility of measurement bias. We included studies with a large variability regarding the moment on which data were collected, and most studies were conducted retrospectively. Only two studies collected data either during ICU admission or after the transfer to a general unit (Ballard et al., 2006; Wahlin, 2000). The remaining studies collected data one day up to 1.5 years after intensive care admission (Engstrom and Soderberg, 2007b; Hofhuis et al., 2008; Lasiter, 2011; Mckinley et al., 2002; Russell, 1999; Samuelson, 2011; Wahlin et al., 2006; Wang et al., 2009; Wong and Arthur, 2000). Finally, patients may have found it difficult to talk about memories that were distressing and uncomfortable. Besides this, recall itself seemed to be traumatic and distressing (Ballard et al., 2006). Most of the patients could not put into words everything that they had experienced and did not remember all the events or when things had actually happened (Engstrom and Soderberg, 2007b). Although there is a chance that these factors distorted the accuracy of recall, it seems unlikely they influenced the representativeness of our systematic review, due to the consistency of the results.

Although in eight of the selected studies at least some patients were on mechanical ventilation for a variable time period (Ballard et al., 2006; Engstrom and Soderberg, 2007b; Hofhuis et al., 2008; Wahlin, 2000; Mckinley et al., 2002; Samuelson, 2011; Wahlin et al., 2006; Wang et al., 2009), we cannot be sure of the exact influence of mechanical ventilation. It is likely however that there is little difference between factors promoting patients’ perception of feeling safe, whether patients are on mechanical ventilation or not. The reason for that is that in most of the included studies nursing care was an important promoting factor for intensive care patients’ perception of safety, irrespective of mechanical ventilation.

4.2. Implications for clinical practice

Intensive care nurses can learn to focus their interventions on making patients feel safer, by using our synthesis of promoting factors. Some key actions have already arisen from our review. First, intensive care nurses should not discuss patient care or another patient’s care at the bedside, to prevent misinformation and fear (Russell, 1999). Rather, they should pay attention to providing patients with the right amount of complete and comprehensible information, including positive elements. Second, throughout the night it is important for nurses to limit noise, lights and activity, to prevent lack of sleep which heightens patients’ vulnerability to uncertainty, insecurity, fear and anxiety (Sauls and Warise, 2010). Third, nurses should organise pre-operative visits to the ICU to prepare patients with a planned admission psychologically and create a feeling of safety (Wang et al., 2009). Moreover, to provide patient support, nurses will have to work closely with intensive care patients’ relatives and incorporate them as part of the team. In addition, Sreen and Schuurmans (2011) have already called for an expansion of open visiting policies on ICUs. This is important because intensive care patients feel safe in the presence of their relatives (Engstrom and Soderberg, 2007b; Mckinley et al., 2002; Samuelson, 2011; Wahlin et al., 2006). Finally, the presence of relatives ought to be facilitated by nursing and medical staff (Engstrom and Soderberg, 2007b), and ICUs should be designed taking the factors promoting critically ill patients’ perception of feeling safe into account.

Based on the findings of this review, intensive care nurses need to take on a leading role in increasing patients’ perception of feeling safe by taking into account the promoting factors described in our review.
4.3. Suggestions for future research

Despite the fact that intensive care nurses have a major role in patients’ perception of safety in the ICU, no research is found that surveyed intensive care nurses’ views on this topic. Furthermore, Attree et al. (2008) showed that although education is important in promoting patient safety, this topic was not explicitly mentioned in an English nursing curriculum. In the professional profile for intensive care nurses in the Netherlands patient safety has also not explicitly been mentioned (NVICV, 2004). This led us to conclude that there is no insight into the extent to which intensive care nurses promote patient safety. Therefore, further research is needed to describe and understand intensive care nurses’ views regarding their role in patients’ perception of safety in the ICU.

Finally, most patients could not put into words everything they experienced and they did not remember all the events that occurred during intensive care admission (Ballard et al., 2006). It is therefore necessary to examine how relatives experience feelings of safety during intensive care admission and to explore whether these factors correspond to the factors promoting the perception of feeling safe of critically ill patients themselves.

5. Conclusion

In this systematic review we provided a synthesis of factors promoting patients’ perception of feeling safe in the ICU. Four overarching themes were found, namely nursing care, patients’ issues, role of relatives, and technological support. This systematic review shows that intensive care nurses can increase critically ill patients’ perception of feeling safe, stimulate their recovery and prevent distress during intensive care admission, by taking into account the factors described in our synthesis. Moreover, they can prevent the occurrence of the adverse effects resulting from feeling unsafe. Ultimately this can lead to an improvement of the quality of care in ICUs.

Further research should focus on intensive care nurses’ views regarding their role in patients’ perception of safety in the ICU. In addition, further research is needed to explore how relatives experience feelings of safety during intensive care admission and which factors promote relatives’ perception of feeling safe in the ICU.

Conflict of interests

None declared.

Funding

This study was not externally funded.

Ethical approval

None.

Acknowledgements

None.

References


Thomas, J., Harden, A., 2008. Methods for the thematic synthesis of qualitative research in systematic reviews. BMC Medical Research Methodology 8, 45.


