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Research article

Use of the CAM-ICU during daily sedation stops in mechanically ventilated patients as assessed and experienced by intensive care nurses – A mixed-methods study

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ABSTRACT

Background: Mechanically ventilated patients are at risk of developing delirium, which increases mortality and prolongs their stay in the Intensive Care Unit (ICU).
Aim: To investigate the assessment of delirium by ICU nurses and their experiences of using the Confusion Assessment Method for Intensive Care Unit (CAM-ICU) in mechanically ventilated patients during daily sedation stops.
Methods: The study employed an explanatory sequential mixed-methods design. The data (n = 30) were collected by two nurses who assessed the same patient (n = 15) using the tool. Data from the nurses' assessments were analysed by means of frequency analysis, while the interviews were analysed phenomenographically using Dahlgren and Fallberg's seven categories.
Findings: Four pairs of nurses made similar assessments, three pairs had differing assessments and in eight pairs, one of the nurses did not fill in the form properly. The interviews revealed variations in ICU nurses' preparation for, views on and use of the CAM-ICU.
Conclusion: Assessment and use of the CAM-ICU revealed variations, indicating the necessity of identifying barriers within the ICU team. ICU nurses need training in the use of the CAM-ICU and support in their decision–making. The individual nurse must take responsibility for updating their knowledge and for following guidelines.

Implications for Clinical Practice

- Barriers should be identified before staff education takes place.
- Regular training in using the CAM-ICU is important.
- Teamwork and individual responsibility need to be supported during implementation of the CAM-ICU.

Introduction

Mechanically ventilated patients in Intensive Care Units (ICUs) are at great risk of developing delirium (Hayhurst et al., 2016). Advanced age, multisystem disease and medication are factors that can increase this risk (Zaal et al., 2015). "Triggering factors" can be pain, hypoxia, infections, sleep disturbance and medications (Hayhurst et al., 2016). Studies indicate that delirium leads to higher mortality, a longer time in the ICU and poor outcomes in hospitalised patients (Ely et al., 2001b; Milbrandt et al., 2004; Pandharipande et al., 2005).

Delirium is an acute or fluctuating reversible attention and cognition disorder, or a change in the level of consciousness (Roberts, 2004). There are three manifestations of ICU delirium: hyperactive delirium, characterised by restlessness, psychomotor hyperactivity, *hallucinations, aggression and emotionality; hypoactive delirium,*

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in which the patient is apathetic, lethargic, has slow mental and psychomotor responses, as well as depressive features and mixed delirium, where there are elements of both hyper- and hypoactive delirium (Roberts, 2004; Svenningsen and Tonnesen, 2011). A systematic review of delirium in ICUs, surgical departments and emergency departments revealed under-recognition (Neto et al., 2012). Although hypoactive delirium is the most common, it goes unrecognised in more than two thirds of patients (Ely et al., 2004). To date, this kind of delirium has received the least attention (Ely et al., 2001a; Svenningsen and Tonnesen, 2011), because patients can often be misdiagnosed as demented or depressed (Bourne, 2008).

Studies have shown that assessments of delirium are rare and not systematic (Devlin et al., 2008; Ely et al., 2004; Randen and Bjørk, 2010; Zaal et al., 2015), and the frequency has been found to vary from 16% to 89% (Zaal et al., 2015). Eastwood et al. (2012) have found that prescriptions of antipsychotic medications increased significantly in the CAM-ICU period despite no difference in patient profile. This indicates that focus on delirium assessment reveals incidences of delirium. However, using different instruments focusing on delirium one might receive more nuanced responses from patients. According to Bourne (2008), assessment makes it possible to detect delirium at an earlier stage and to identify and treat the triggering factors. Early detection of delirium may improve the treatment outcome for patients (Ely et al., 2004), which can enhance patient safety by preventing the risk of diagnostic error (Stichler, 2016). Treatment can include increased mobility, differentiating between day and night and ensuring quiet surroundings combined with the use of a sedation. Antipsychotic drug therapy is also recommended (Zaal et al., 2013).

Several tools can be used when screening for delirium (Luetz et al., 2010). The National Institute for Health and Clinical Excellence (National Clinical Guideline Centre UK, 2010) has recommended the Confusion Assessment Method for the Intensive Care Unit (CAM-ICU), which is supported by several studies (Gusmao-Flores et al., 2012; Han et al., 2014; Neto et al., 2012). The tool has been translated and validated in Norwegian and approved by Ely, who holds the copyright (Ely et al., 2001a). The CAM-ICU has four areas that are designed to reveal delirium: the patient has acute changes in mental status, has fluctuating levels of consciousness or is inattentive, and either has altered levels of consciousness or disoriented thinking (Ely et al., 2001a; Riekerk et al., 2009). During the course of daily sedation stops, the Richmond Agitation Sedation Scale (RASS) is used to assess the patient's alertness (Ely et al., 2003; Sessler et al., 2002). The RASS score is the basis for assessing whether the patient is sufficiently awake to be evaluated by the CAM-ICU.

Nurses were found to have positive attitudes towards the CAM-ICU both before and after its introduction (Eastwood et al., 2012). The same study revealed that nurses thought that it was worth spending time on the CAM-ICU assessment, although some found the tool difficult to use. Mistarz et al. (2011) described significant discrepancies in the detection of delirium by nurses who only used clinical observations compared to nurses who used the CAM-ICU, leading to the conclusion that clinical observations alone are not reliable for detecting delirium. Despite guidelines, delirium assessment varies widely (Devlin et al., 2008), which could be due to the culture of the organisations involved, i.e., their values, attitudes, beliefs and goals (Alayed et al., 2014).

Studies show that identifying delirium has low priority (Oxenbøll-Collet et al., 2016), the CAM-ICU method is difficult to learn (Jung et al., 2013) and ICU nurses harbour a number of concerns regarding the use of the tool (Zamoscik et al., 2017). However, studies are needed to investigate ICU nurses' assessment of delirium and educational strategies that highlight the effects of such assessments. The aim of this study is to investigate ICU nurses' assessment of delirium and their experience of using the CAM-ICU for mechanically ventilated patients in the course of daily sedation stops.

Method

The study employed an explanatory sequential mixed-method design (Fetters et al., 2013) based on the collection and analysis of quantitative data, followed by the collection and analysis of qualitative data, to provide a comprehensive picture of the assessment process.

Completed CAM-ICU forms were collected to investigate ICU nurses' assessments of delirium. Experiences of using the CAM-ICU were obtained by means of individual phenomenographic interviews.

The aim of phenomenography is to identify, describe and systematise the qualitatively different ways people experience, conceive or understand significant aspects of reality (Marton, 1981) Phenomenography focuses on descriptions of the different ways a phenomenon is understood or conceived to be, which in this study concerned nurses' experiences of delirium assessment using the CAM-ICU. This is referred to as the 'second-order perspective', which differs from the 'first-order perspective', where the focus is on what the phenomenon really is (Marton, 1981) The second-order perspective is fundamental in phenomenography as it deals with individuals' conceptions of how a phenomenon appears to them (Marton and Booth, 2000). The findings are presented as descriptive categories, with similarities and differences in individual conceptions of the phenomenon. All the descriptive categories are placed within vertical and horizontal relationships in an outcome space (Barnard et al., 1999).

Setting

The study was conducted in an ICU at a hospital in the eastern part of Norway. The ICU has 69 nurses and an average of two mechanically ventilated patients per day. Daily sedation stops were introduced as part of the department's aim to improve patient safety when reducing the use of ventilators. In this regard a protocol containing the Behaviour Pain Scale (BPS), Richmond Agitation and Sedation Score (RASS) and the CAM-ICU was developed. The implementation of the protocol began in February 2012 and the CAM-ICU was introduced in Spring 2013. The project was led by a group of three ICU nurses.

All ICU nurses received information about the reason for sedation stops from a physician and trained in using the screening tools in the project protocol by a project group of specialist nurses. The CAM-ICU was one of these tools. The project group followed up the ICU nurses by offering individual instruction in the use of the CAM-ICU, reminding them to carry out assessments and collecting feedback on completed assessments.

Participants

Thirty ICU nurses from the same department took part by assessing ventilated patients using the CAM-ICU. Of these, seven were interviewed individually about their experience of using the CAM-ICU. Purposive sampling was employed to achieve variation in age, gender, education, experience of intensive care and experience of using the CAM-ICU. The intention was to achieve width in the data, in line with the recommendations pertaining to phenomenography (Sjöström and Dahlgren, 2002) (Table 1).

Participants who made assessments using the CAM-ICU: Nursing experience ranged from seven to 38 years, with a mean of 19.6 years. Intensive care nursing experience ranged from six months to 21 years, with a mean of 7.9 years.

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