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ORIGINAL ARTICLE

Knowledge and practice of intensive care nurses for endotracheal suctioning in a teaching hospital in western Turkey

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KEYWORDS
Endotracheal suctioning;
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Summary
Objectives: This study was conducted to determine intensive care nurses' knowledge and practice levels regarding open system endotracheal suctioning and to investigate if there is a relationship between nurses' demographic characteristics and their knowledge and practice.
Research methodology/design: The study was conducted as a cross-sectional and non-participant structured observational design. Data were collected using a 45-item structured and self-administered questionnaire and a 31-item observational checklist. The study sample included 72 nurses.
Setting: Three adult intensive care units in a teaching hospital.
Results: The nurses' mean scores of knowledge and practice were 23.79 ± 3.83 and 12.88 ± 2.53. Their level of knowledge was very good in 59.7%, good in 34.7%, and the level of practice was fair in 79.2% and good in 18.1%. The relationship between the type of unit and the nurses' knowledge scores was statistically significant ($p = 0.013$). The correlation between the nurses' scores of knowledge and practice was not statistically significant ($r = 0.220$; $p = 0.063$).
Conclusion: This study suggests that the knowledge level of most of the nurses was good and their practice level was fair. Intensive care nurses must perform suctioning procedures safely and effectively to ensure delivery of quality of care and eliminate complications.

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Implications for Clinical Practice

- Intensive care nurses should perform suctioning procedures safely and effectively in order to ensure delivery of quality of care and eliminate complications.
- To hold in-service training and upgrading courses are very important steps to improve suctioning skills. Effective educational strategies should be used during such activities for a high quality care of ICU patients.
- Clinical guidelines and care bundles based on the best evidence could be utilised and the efficiency of ETT suctioning practices following these guidelines could be explored in further studies. Moreover, evidence-based guidelines regarding ETT suctioning procedures should be mandatory in all ICU settings, and nurses should be encouraged to follow them.

Introduction

Suctioning is a necessary nursing procedure for intensive care unit (ICU) patients who have an endotracheal tube (ETT) in place. Due to the deterioration of ciliary movement and the cough reflex, the accumulation of secretions in the airway leads to increased airway resistance and workload of respiration, and to hypoxemia, hypercapnia, atelectasis and infection. Therefore, for patients with an ETT in situ, accumulated mucus in the trachea and in the lower airways must be removed regularly by suctioning (AARC, 2010; Çelik and Kanan, 2006; Morrow, 2007; Niël-Weise et al., 2007; Pedersen et al., 2009; Sole et al., 2015).

Today, ETT suctioning is performed using open and closed systems. The open suction system is only used once with the ventilator disconnected, whereas the closed suction system is used more than once and permits suction without disconnection of the ventilator (Çelik and Kanan, 2006; Morrow, 2007; Sole et al., 2015; Yazdannik et al., 2013).

When not performed properly, ETT suctioning may lead to serious complications such as arterial and venous desaturation, cardiac arrhythmia, cardiac arrest, atelectasis, bronchospasm, microbial contamination of the lower respiratory airways, ventilator-associated pneumonia, anxiety and dyspnea (Almgren et al., 2004; Argent, 2009; Floyd, 2011; Irajpour et al., 2014; Sole et al., 2015; Yazdannik et al., 2013).

Background

It has been shown that most of the ICU nurses act according to their own personal experience in their suctioning practice, rather than relying on scientific evidence (Ansari et al., 2012; Day et al., 2001, 2002; Kelleher and Andrews, 2008; Özden and Görgülü, 2012; Sole et al., 2003, 2015). In one study, it was found that all of the nurses (N = 48) set suction pressure to 200 mmHg or a higher value, they did not apply hyperoxygenation before and after suctioning, and 70.8% of them performed the suctioning for longer than 15 s (Özden, 2007). In another study which accorded with these findings, it was found that the ICU nurses (N = 45) did not perform ETT suctioning as recommended, and there were significant inconsistencies between the nurses regarding hyperoxygenation, infection control measures and the negative pressure used (Kelleher and Andrews, 2008). Similarly, in a study conducted by Day et al. (2001), the knowledge level of ICU nurses (N = 16) regarding suctioning was found to be low, and their suctioning practice was found not to reflect the latest evidence. These findings indicate a gap between theory and practice.

Although there are many studies in the world in general on ETT suctioning, the data in Turkey on this subject is limited. Based on observations and anecdotal evidence within local critical care areas/ICUs, it is possible to say that suctioning procedures vary between ICU nurses, but there are almost no published studies in this country consistent with the aims of the current study. Özden and Görgülü (2012) determined in their study that training of ICU nurses based on standard guidelines about open and closed system suctioning increased the level of knowledge, and brought the level of skills to a desired level. In another study, Çelik and Elbaş (2000) stated that most of the ICU nurses skipped the steps of ETT suctioning, such as hyperoxygenation, handwashing, recording of the procedure, and they did not base their practice on scientific evidence.

More data are needed about the state of knowledge and practice of ICU nurses in Turkey about ETT suctioning. This is important to strengthen the existing data and reveal different points and aspects of ETT suctioning. At the end of this study, data will be obtained regarding the latest status of ICU nurses' ETT suctioning applications, and in addition their shortcomings and requirements on this topic will be determined. We believe that our results will increase the awareness of ICU nurses in this regard. In addition, the results of the study are thought to guide the shaping of planned training programmes to improve the suctioning practices in the ICUs and to increase the quality of care.

Methods

Research objectives

This study was designed to fulfil the following aims: (1) to determine levels of open system ETT suctioning knowledge and practice among ICU nurses and (2) to investigate the relationship between nurses' demographic characteristics and the level of their knowledge and practice regarding ETT suctioning.

Design

The present study was conducted between November 2013 and October 2014 by means of a cross-sectional and non-participant structured observational design.