



The Effect of Oral Care Using an Oral Health Care Guide on Preventing Mucositis in Pediatric Intensive Care



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ABSTRACT

Objectives: To evaluate the effectiveness of standard-of-care oral care guides developed specifically for children in intensive care to prevent mucositis.

Design and Methods: This prospective, interventional and single-group study design was performed in the pediatric intensive care unit of a university hospital in Istanbul between January and December 2014. Daily oral care was implemented to pediatric patients in the study group in line with an oral care guide developed by the researchers. Data were collected using the data collection form and oral mucositis assessment scale published by the World Health Organization (WHO).

Results: Oral mucositis occurred in 16 (5.2%) patients in the pre-intervention group and 7 (2.5%) in the post-intervention group, 10 patients had grade 1, and 6 patients had grade 2 oral mucositis in the pre-intervention group, and in the post-intervention group, three patients had grade 1, and four patients had grade 2 oral mucositis. Although more patients in the pre-intervention group had mucositis than in the post-intervention group, the differences were not statistically significant ($P = 0.067$).

Conclusions: Oral mucositis can be reduced through the practice of administering oral care in accordance with oral healthcare guidelines.

Practice Implications: Oral care implemented in line with an evidence-based oral care guide and frequent observation of patients are the most important steps in preventing oral mucositis.

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Introduction

Providing oral care hygiene for patients in the intensive care unit and protecting oral mucosa are important in the promotion of healthy nutrition, comfort, and increasing patients' quality of life, as well as preventing infections that might develop in the oropharynx and respiratory tract (Berry & Davidson, 2006; Berry, Davidson, Masters, & Rolls, 2007; Johnstone, Spence, & Koziol-McLain, 2011; Özveren, 2010; Thomson, Ayers, & Broughton, 2003). Although pediatric patients in intensive care require frequent oral care, this is commonly overlooked by nurses (Kearns, Brewer, & Booth, 2009). In a study performed in an adult intensive care unit in India, it was determined that the most frequently used technique for oral care was suctioning (Adib-Hajbagheri, Ansari, & Azizi-Fini, 2013).

Bacteria start to reproduce within 24–48 h of admission to intensive care units, which rapidly deteriorates the health of oral mucosa (Sebastian, Lodha, Kamil, & Kabra, 2012; Sönmez-Düzkaya, 2014). Nasogastric catheter/intubation tube can cause mechanical trauma related to the reduction of saliva and immunoglobulin A (IgA) secretion in the mucosa (Özveren, 2010; Sebastian et al., 2012). The mouth is constantly open because of endotracheal tube (ETT) use, and drugs for treatment such as steroids, sedatives, and opioids. Oxygen therapy, fever, and adhesive tape used for securing the endotracheal tube lead to deterioration of tissue integrity in the mouth, results in the development in the mouth such as halitosis, dry mouth, cracked lips, and stomatitis (Abidia, 2007; Grap, Munro, Brooke, & Bryant, 2003; Sebastian et al., 2012; Thomson et al., 2003). In addition to such problems, insufficient application of oral care leads to an increase in the formation of plaques in the mouth, bacterial colonization in the oropharynx, and frequency of hospital infections. The incidence of ventilator-associated pneumonia is a concern (Grap & Munro, 2004; Johnstone et al., 2011; Sönmez-Düzkaya, 2014). It has been found that insufficient oral care affects mortality and morbidity, and that strategies should be formed to

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develop oral care in patients who are in a critical condition (Chan, Ruest, Meade, & Cook, 2007; Munro et al., 2006; Stonecypher, 2010).

For mechanical ventilator-dependent patients in intensive care, providing and sustaining oral hygiene, preventing pressure arising from biting and adhesive tape or trauma, and deterioration in skin/mucosa are important nursing care interventions that enhance good patient care (Abidia, 2007; Akdemir, 2013). Grap et al. (2003) detected that 72% of nurses performed oral care to intensive care patients 5 or more times per day but did not report it. To prevent oral mucositis and protect oral health in intensive care, it is important to evaluate the oral cavity (teeth, gum, tongue, mucosa membrane, and lips) and implement oral care with appropriate equipment (Berry et al., 2007; Fields, 2008; Garcia et al., 2009; Pearson, 1996; Uysal & Sönmez-Düzükaya, 2013).

Studies related to oral care have mostly been conducted in adult patients; it was shown that mucosal integrity deteriorated and functional loss occurred at a serious level in 4.4% of patients, and at a medium level in 41% of patients 24 h after inserting an ETT (Mohammed & Hassan, 2015). Ullman, Long, and Lewis (2011) detected that mucosal integrity deteriorated and functional loss occurred at a medium level in 62.6% of children in intensive care.

Nurses in intensive care units play an important role in the prevention or reduction of mucositis and increasing patients' quality of life because their role as health care providers is to continuously follow up patients and implement oral care. There is still no generally accepted standard treatment and care applications for preventing or managing mucositis. In accordance with standards of nursing practice and quality clinical care, nurses are encouraged to use evidence-based clinical guidelines (Çavuşoğlu, 2007; Grap et al., 2003; Yılmaz, 2007). A large number of studies are needed to determine the best oral care guide for patients in intensive care (Grap et al., 2003).

Method

Objectives

The purpose of this study was to review the effect of standardized oral care, which was implemented in line with the oral health care guide in children in intensive care to prevent mucositis formation.

Study Design

Oral care for preventing mucositis in the pediatric intensive care unit (PICU) was implemented in line with an oral care guide (OCG) that was developed by the researchers after reviewing the literature. The effect of using the guide was evaluated using prospective, interventional and single-group study methods (Franklin, Senior, James, & Roberts, 1999; Stonecypher, 2010; Ullman et al., 2011).

Study Period and Sample

The study was conducted between January and December 2014 with 320 patients who were admitted to the PICU of a university hospital in Istanbul. Convenience sampling was used because all patients were admitted as part of the study. No sampling selection was made and the entire population was taken into consideration; 5 patients who had oral mucositis on admission to intensive care, and 31 patients who were discharged from intensive care within 48 h were excluded from the study.

Over the study period, 284 pediatric patients who were admitted to the PICU for >48 h and had no oral mucositis on admission were included in the study; the participation rate in the study was 88.8%.

To evaluate the guide's impact, a retrospective study was conducted of oral mucositis rates before the oral care guide's implementation between January and December 2013. A total of 310 patients were included.

Study Setting

The 6-bed PICU in which the study was conducted is staffed by 13 nurses. An average number of 250–350 children with acute respiratory diseases, sepsis, shock, multi-organ insufficiency, poisoning, or those who require close post-operative follow-up are admitted to the unit yearly. The nurse-to-patient ratio is one nurse per two patients.

Study Stages

The research was performed in three stages.

Stage 1: We collected data retrospectively to evaluate the OCG's impact.

Stage 2: Nurses who worked in the clinic were informed about the scope of the study followed by a 2-hour training session on the use of the OCG and additional training on the data collection tools (data collection form and oral mucositis assessment scale). The responsible nurse gave monthly feedback to nurses about oral mucositis rates on the unit. Interventions were performed for children who developed oral mucositis, in addition to methods for protecting their oral mucosa, i.e. changing ETT fixation position, applying moisturizer to lips, suction, and increasing the frequency of oral care (Akdemir, 2013; American Academy of Pediatrics, Section on Pediatric Dentistry and Oral Health, 2008; Uysal & Sönmez-Düzükaya, 2013).

Oral Care Guidelines: (Akdemir, 2013; American Academy of Pediatrics, Section on Pediatric Dentistry and Oral Health, 2008; Berry et al., 2007; Fields, 2008; Johnstone et al., 2011; Thomson et al., 2003).

- Evaluate/assess mouths daily
- Perform oral care every 4 h each day (oral care should be applied every 2–4 h for high-risk patients such as those receiving chemotherapy, with fever, or using neuromuscular blocking medicine),
- Use disposable sponge sticks and solutions containing 0.12% chlorhexidine in oral care,
- Brush gums and teeth gently (with care if the patient is edentulous)
- To keep the tissues moistened, the mucous membrane should be coated with a moisturizer gel
- Apply moisturizer after oral care to prevent lips from drying,
- Toothpaste or secretions should be removed by rinsing the mouth using an irrigation syringe or sponge, and if necessary, secretions may be removed using suction at low negative aspiration pressure (50–80 mm Hg),
- Use soft fasteners in securing of the intubation tube, continuously watching the contact area of the skin, protect against damage to the skin when removing fasteners, and to sustain circulation by applying massage to the zones where tube securing is present.

Stage 3: A data collection form was completed for each patient in the first 24 h. The patients' daily oral care was provided using the OCG. The World Health Organization (WHO) oral mucositis assessment scale (Ahmed, 2013; Cheng, Molassiotis, Chang, Wai, & Cheung, 2001; World Health Organization, 1979) was used to evaluate the patients' mouths every day.

Stage 4: Retrospective data from before the OCG implementation were compared with the mucositis rates during the study period.

Pilot Study

A pilot study was conducted on nine patients to evaluate the conformity of the research forms. The patients in the pilot study were excluded from the research.

Data Collection

Data Collection Form

A Data Collection Form was prepared by the authors after reviewing the relevant literature (Chan et al., 2007; Munro et al., 2006;

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