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# Oral Health Care Knowledge among Nurses in the Pediatric Intensive Care Units in Abha, Saudi Arabia

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## ABSTRACT

*Background: Numerous systemic diseases are usually related to dental conditions and therefore general health needs efforts of each medical and dental care providers. Oral health cannot be divided from the health and wellness of hospitalized individuals. As the patients in Intensive Care Unit (ICU) completely rely on the caregivers; the knowledge, attitude, and practices accompanied by the nurses impact the recovery regarding patients to the great extent. Objectives: Evaluate the Oral health care knowledge among female nurses in the pediatric intensive care units in Abha, Saudi Arabia.*

*Materials and Methods: A cross-sectional study was carried out on the sample size of 200 female nurses working at various government and private hospitals A self-administered questionnaire was distributed to the subjects after giving instructions.*

*Results: The result showed that nurse knowledge was considerably linked to the level of education. most of them agreed that getting proper oral care is necessary for the overall health and wellness of the patient. The most regular restriction to perform oral care was lack of education (29%) followed by lack of time with workload. There is no substantial connection between ICU nurses' experience and their knowledge, attitude, and practice towards oral treatment.*

*Conclusion: A positive knowledge and attitude among the surveyed nurses toward provision of oral care for pediatric patients in ICU. Very less proportion of nurses had oral care training during their basic nursing education. The most frequent barrier to perform oral care was lack of education, work overload, oral endotracheal tube of the patients. Most respondents would like to receive more education and training in the provision of oral care. Standardized oral hygiene practice gets the possible to contribute to enhanced oral health of children within the pediatric essential care setting.*

**Key words:** Knowledge, Nurses, Oral health care, Intensive care unit, Pediatric patient

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## INTRODUCTION

Numerous systemic diseases are usually related to dental conditions and therefore general health needs efforts of each medical and dental care providers [1]. Oral health cannot be divided from the health and wellness of hospitalized individuals. Optimally, total healthcare requires the mixed efforts of the dental and medical

professions [2]. The oral hygienist should become part of typically the multidisciplinary team to assist consist of wellness care professionals within long-term care services [3]. Maintenance of oral hygiene continues to be known as one of the fundamental tasks of nurses working at private hospitals especially intensive care units. However, patients' rights have turn out to be a part of contemporary health care methods [4]. Dental hygiene significantly impacts children's well-being. Pediatric Intensive Care Unit (PICU) are dependent mainly on the nursing care team for their oral care and is an integral part of their attention to intubated and ventilated children, which enhances a feeling of wellbeing and comfort. As the patients in Intensive Care Unit (ICU) completely rely on the caregivers; the knowledge, attitude, and practices accompanied by the nurses impact the recovery regarding patients to the great extent. Regrettably, oral health issues are usually outweighed by other severe needs in critically ill patients. In addition, nursing personnel appear to understand dental health as typically the most difficult part of their work; therefore, it has already been a lowpriority treatment [5]. Nurses should have clear knowledge of oropharyngeal bacterial infections leading to systemic diseases such as ventilatorassociated pneumonia (VAP) in critically unwell patients [6]. VAP will leads to increased hospital stay due to its increased morbidity and mortality in children. This study was conducted to investigate the oral health knowledge, attitude and practice of female nurses towards PICU in Saudi Arabia.

## MATERIALS AND METHODS

A cross-sectional study was carried out on the sample size of 200 female nurses working at various government and private hospitals in Abha region of Saudi Arabia. After fulfilling the criteria for selection and written informed consent was obtained from the participants after explaining to them the purpose of the study. A self-administered questionnaire was designed to evaluate oral health care knowledge among nurses in the pediatric intensive care units in Saudi Arabia. Experts was reviewed the questionnaire to ensure content validity. Permission to conduct the study was obtained from the hospitals. The questionnaire was distributed to the subjects after giving instructions. Sufficient time was given to the nursing interns for completing the forms. Later the forms had collected, and the surveys were kept anonymous. Ethical approval for performing the survey was obtained from the Institutional review board (IRB/KKUCOD/ETC/2019-20/040) of College of Dentistry King Khalid University.

The questionnaire was formulated, which comprised of two parts: The first portion included the questions related to the demographic information of participants, such as age and educational qualification. The other part of the questionnaire comprised 10 questions with 'yes' and 'no' pattern and the multiple-choice question was prepared, and piloting was done to obtain information about knowledge, attitude, and practice of oral health care in children. After data were extracted, it was revised, coded, and fed to statistical software IBM SPSS version 22(SPSS, Inc. Chicago, IL). All statistical analysis was done using two-tailed tests. A P-value of less than 0.05 was considered to be statistically significant. For awareness items, each correct answer was scored one point, and the total summation of the discrete scores of the different items was calculated. A patient with a score of less than 60% (5 points) of the maximum score was considered to have poor awareness, while good awareness was considered if he had score of 60% (6 points or more) of the maximum or more. Descriptive analysis based on frequency and percent distribution was done for all variables, including demographic data, awareness items, and nurses' practice. Crosstabulation was used to assess the distribution of awareness according to nurses' personal and practice data. Relations were tested using Pearson chi-square test.

## RESULTS

The study included 200 nurses whose ages ranged from 20-50 years old with mean age of 30.1 ± 15.9 years old. Exact of 107 (53.5%) of the nurses were unmarried. Regarding experience years, 98 (49%) had experienced less than 5 years and 48 (24%) had the experience of 10 years or more. As for educational level, 149 (74.5%) had a bachelor's degree in nursing, and only 8 (4%) had a master's degree. Exact of 74 (37%) had previously training regarding oral health (Table 1).

**Table 1: Personal data of participating nurses for oral health care.**

| Personal data | n | % |
|---|---|---|
| Age in years | | |
| 20-29 | 109 | 54.50% |
| 30-39 | 78 | 39.00% |
| 40-49 | 13 | 6.50% |
| Marital status | | |
| Unmarried | 107 | 53.50% |
| Married | 93 | 46.50% |
| Experience years | | |
| < 5 years | 98 | 49.00% |

| | | |
|---|---|---|
| 5-10 years | 54 | 27.00% |
| > 10 years | 48 | 24.00% |
| Educational level | | |
| Bachelor | 149 | 74.50% |
| Diploma | 43 | 21.50% |
| Master | 8 | 4.00% |
| Oral Health Training | | |
| Yes | 74 | 37.00% |
| No | 126 | 63.00% |
| n=Number; %=Percentage | | |

Table 2 demonstrates nurses' awareness regarding oral health. Exact of 141 (70.5%) nurses reported that proper oral care is needed for the general health of the patient, 133 (66.5%) agreed on that oral hygiene is an essential task when caring for children in the PICU, 128 (64%) reported that poor oral hygiene could cause aspiration pneumonia and oral cavity is difficult to clean while 108 (54%) agreed on that brushing the teeth with fluoridated toothpaste can prevent tooth decay. Totally, 61 (30.5%) nurses had a good awareness level regarding oral health.

**Table 2: Awareness regarding oral health among participating nurses.**

| Awareness items | Yes | | No | |
|---|---|---|---|---|
| | n | % | n | % |
| All patients should have an oral check-up during admission | 125 | 62.50% | 75 | 37.50% |
| The oral cavity is difficult to clean | 128 | 64.00% | 72 | 36.00% |
| Oral hygiene is an essential task when caring for children in the PICU | 133 | 66.50% | 67 | 33.50% |
| Proper oral care is needed for the general health of the patient? | 141 | 70.50% | 59 | 29.50% |
| Oral problems and their treatments can be delayed as they are not life threatening | 117 | 58.50% | 83 | 41.50% |
| Poor oral hygiene can cause aspiration pneumonia? | 128 | 64.00% | 72 | 36.00% |
| Brushing the teeth with fluoridated toothpaste can prevent tooth decay | 108 | 54.00% | 92 | 46.00% |
| OVERALL AWARENESS | Poor | Good | | |
| | 139 (69.5%) | 61 (30.5%) | | |
| n=Number; %=Percentage | | | | |

Considering nurses practice regarding oral health care (Table 3), half of the nurses (50%) reported that they use chlorhexidine 0.12% mouth rinse for oral hygiene cares. Also, 179 (89.5%) nurses see that they keen to learn more about oral hygiene in the PICU. About barriers that may prevent adequate oral hygiene for children in the PICU, lack of education was the most reported barrier (29%; 58), followed by lack of time with workload (25%; 50), Oral endotracheal tube (23.5%; 47), Maxillofacial surgery children (15.5%; 31), Unstable/critically ill child (5%; 10), and non-sedated child (2%; 4).

**Table 3: Nurses practice regarding oral health care.**

| Nurses practice regarding oral care | n | % |
|---|---|---|
| Do you use chlorhexidine 0.12% mouth rinse for oral hygiene cares? | | |

| | | |
|---|---|---|
| Yes | 100 | 50.00% |
| No | 100 | 50.00% |
| Keen to learn more about oral hygiene in the PICU | | |
| Yes | 179 | 89.50% |
| No | 21 | 10.50% |
| Barriers that may prevent adequate oral hygiene for children in the PICU | | |
| Lack of education | 58 | 29.00% |
| Time/workload | 50 | 25.00% |
| Oral endotracheal tube | 47 | 23.50% |
| Maxillofacial surgery children | 31 | 15.50% |
| Unstable/critically ill | 10 | 5.00% |
| Non-sedated child | 4 | 2.00% |
| n=Number; %=Percentage | | |

Table 4 illustrates the distribution of nurses' awareness regarding oral care by their personal data and practice. Good awareness regarding oral health was detected among 75% of nurses with a master's degree compared to 30.2% of those with a bachelor's degree with recorded statistical significance (P=.014). Also, 49% of nurses who use chlorhexidine 0.12% mouth rinse for oral hygiene care had a good awareness level in comparison to 12% of those who did not (P=.001). Exact of 31.3% of nurses who were Keen to learn more about oral hygiene in the PICU had a good awareness level compared to 23.8% of those who were not (P=.049). All other factors were significantly related to nurse's awareness level (P>0.05).

**Table 4: Distribution of nurses' awareness regarding oral care by their personal data and practice.**

| Factors | Awareness level | | | | P-value |
|---|---|---|---|---|---|
| | Poor | | Good | | |
| | n | % | n | % | |
| Age in years | | | | | |
| 20-29 | 75 | 68.80% | 34 | 31.20% | 0.12 |
| 30-39 | 58 | 74.40% | 20 | 25.60% | |
| 40-49 | 6 | 46.20% | 7 | 53.80% | |
| Marital status | | | | | |
| Unmarried | 75 | 70.10% | 32 | 29.90% | 0.845 |
| Married | 64 | 68.80% | 29 | 31.20% | |
| Experience years | | | | | |
| < 5 years | 69 | 70.40% | 29 | 29.60% | 0.868 |
| 05-Oct | 36 | 66.70% | 18 | 33.30% | |
| >10 years | 34 | 70.80% | 14 | 29.20% | |
| Educational level | | | | | |
| Bachelor | 104 | 69.80% | 45 | 30.20% | 0.014* |
| Diploma | 33 | 76.70% | 10 | 23.30% | |
| Master | 2 | 25.00% | 6 | 75.00% | |
| Oral Health Training | | | | | |
| Yes | 47 | 63.50% | 27 | 36.50% | 0.159 |
| No | 92 | 73.00% | 34 | 27.00% | |
| Do you use chlorhexidine 0.12% mouth rinse for oral hygiene cares? | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| Yes | 51 | 51.00% | 49 | 49.00% | 0.001* |
| No | 88 | 88.00% | 12 | 12.00% | |
| Keen to learn more about oral hygiene in the PICU | | | | | |
| Yes | 123 | 68.70% | 56 | 31.30% | 0.049* |
| No | 16 | 76.20% | 5 | 23.80% | |
| P: Pearson X2 test | | | | | |
| * P<0.05 (significant); n=Number; %=Percentage | | | | | |

## DISCUSSION

Oral health care necessary for in the hospital patients is usually connected with nurse's knowledge and practices while in hospitalization. oral treatment of hospitalized patients can be an important preventive gauge that aims to keep up and promote the fitness of oral and dental care tissues. In addition, it requires educating patients concerning the care of their mouths. Thus, it could be suggested that oral treatment of hospitalized individuals is a great example for the use of principles of extensive healthcare. These guidelines involve prevention and treatment of illness. As well, promoting the ideal health and guiding individuals to be a part of their therapy procedure. In this situation, the purpose of the nurse as a standard supplier of dental care after hospitalized patients can't be neglected. In this research the proportions of nurses who have been trained oral health treatment (37%), this outcome was accordance to England study [7], where almost all nurses had received coaching during initial nursing program (42.41%). Current research showed that most nurses (74.5%) had been graduated with bachelor degree while only 4 %have masters.

A report completed in Riyadh figured medical professionals with diploma degree revealed increased oral health knowledge weighed against university graduates. The feasible justification for this could possibly be that diploma holders were even more included in-patient care in comparison with university graduates, who have been more most likely to be engaged in patient administrative function [8]. In this study, nurse knowledge was considerably linked to the level of education. The finding follows the research carried out in Singapore and Pakistan [9,10].

Half of the nurses had good understanding of patients' oral treatment. This shows that a lot of the nurses were alert to oral care. This may improve the likelihood of performing the task. This finding is related to the analysis survey in Texas (51.1%) and India (48.7%). A lot more than 65% of nurses took oral health care trained in India, and much more than one medical centre was contained in Sudan [11].

Pertaining to educational level, nurses who've higher level of educational position will have good attitude towards oral care. The finding is comparable to the analysis in Belgium where diploma holders had a much decrease positive attitude as in comparison to greater than diploma holders, and a positive approach increases because the level of education raises in Pakistan, Sudan, and Menoufia [10]. The similarity may be because of the fact an increased degree of education really helps to read different types of literature concerning oral that may bring a positive attitude. This may be due to exposure for training throughout their clinical experience. In current research, nurses who tool oral care education had a confident mindset. This finding is good investigation done in Netherlands [12]. The feasible explanation could possibly be upgrading the data of nurses about oral care may modify earlier ideas regarding oral care. The study assessed the idea of nurses in knowing the importance of oral health care in pediatric patients that are critically ill. The significance of oral hygiene for the well-being, in addition to the upkeep of wellness in pediatric patients, will be unquestionable [13]. Generally, extraordinarily little interest is paid to look at oral hygiene procedures, especially in seriously ill kids. Also, not any definitive strategy could be decided to determine the most suitable method for the maintenance of oral hygiene among children [14]. Essential to get initiatives for research and boost nursing expertise to enhance pediatric oral hygiene ability. Unfortunately, in every country, the experience of intensive care nurses for maintaining oral hygiene is not focused much. At the same time, nurses have the effect of cleaning the oral cavities frequently and keeping oral areas of kids in ICU secure [15]. The majority (54%) of the nurses provide oral care with their patients with brushing one's teeth with fluoridated toothpaste to deal with the oral cavity. Unavailability of the toothbrush in PICU in these hospitals may prevent the nurses from providing oral care. These results strongly show that nurses provide care to their patients based on the available materials for oral care [16].

A significant number of nurses reported that staying too busy prevents them from providing oral care with their patients. Among some other factors that limit nurses for the provision of oral care are insufficient education, oral endotracheal tube, critically ill patients, and non-sedated child. Another study by Lisa, J. (2010) result indicated that just 9% of nurses did not provide oral care due to workload. 64% of nurses were accepted that cleansing mouth is difficult; this could be due to inadequate knowledge and skills of the nurses [17]. The majority (70.5%) of them agreed that getting proper oral care is necessary for the overall health and wellness of the patient. Regarding the substance useful for the oral hygiene process, nearly half of the nurses effectively

responded to the usage of 0.12% chlorhexidine. However, 50% of nurses have the knowledge that chlorhexidine is the most appropriate material for oral hygiene in hospitalized individuals. Among oral antiseptics, chlorhexidine is among the strongest and studied antimicrobial agents; it is more effective and generally used because of the standard with regards to the energy of other agents. During hospitalization, the oral cleaning of these patients gets deficient or absent, an undeniable fact that outcomes in plaque accumulation. Due to chemical properties and mechanism of action of chlorhexidine, at low concentrations acts as bacteriostatic and at high concentrations, acts preventively in decreasing plaque, and maybe the standard substance used in patients with physical limitations, proven fact in patients hospitalized in ICUs. Chlorhexidine mouthwash was routinely utilized by 58.5% in the UK [18] and 81.9% in the USA [19]. Nurses in this study, 54% reported the use of a toothbrush with a dentifrice even though, that toothbrushes tend to be more efficient in plaque removal and gingival stimulation. By educating primary health care workers to comprehend the dental caries procedure and get competency in identifying fundamental dental health problems, patients who require dental treatment could be referred early to decrease the dependence on more complex dental care at a later phase. The American Association of Critical Treatment Nurses Endotracheal Tube and Oral Care procedure supplies the most evidence-based protocol for oral care to be utilized by health care providers [20]. It is immensely important the usage of the pediatric or adult (soft) toothbrush at the very least twice a daytime. To guarantee the best elimination of secretions and reduce the aspirations, suctioning the mouth before and after oral care was highlighted.

Critically ill patients within the ICU are related to raised morbidity, mortality, and hospital care costs mainly because patients are immunocompromised and at a higher threat for infections. The entire infection rate could be as higher as 50%-60% in patients who stay in ICU for a lot more than five days, and the occurrence of ventilatorassociated pneumonia (VAP) may range between 10% to 65% that could be a prime issue in ICU [21]. Hence, an intensive knowledge of the pathogenesis is usually essential among the hospital caregivers as critically ill individuals are reliant on them for medical care. In the current study, it revealed that there is no substantial connection between ICU nurses' experience and their knowledge, attitude and practice towards oral treatment, these results were accordance with Europe, where the more capable nurses, the extra knowledge, attitude, and practice of oral care was conducted to avoid VAP [22]. In Taiwan, also, there is a substantial correlation between the age of the nurses and their total rating on oral care practices [23]. In the current research, the most regular restriction to perform oral care was lack of education (29%), unlike in the United States, where this was related to limited staff [24]. Nurses will never be capable of delivering excellent oral care unless they're well qualified and educated in this regard [25].

The inadequate staff that leads to decreased patient-nurse contact time can be regarded as a key point in providing quality healthcare. When nurses are overburdened, oral care is frequently the first practice to become deferred [26]. A report conducted by Adib Hajbaghery, et al. in India indicated that probably the most barriers that limiting them for offering oral care were “an excessive amount of writing” accompanied by “insufficient time” and “personnel shortage.” [27]. The outcomes of the study reveal an extremely positive attitude on the list of the greater part of the surveyed nurses toward the provision of oral care for Pediatric patients in ICU. Furthermore, 89.5% of participants expressed a will to upgrade their knowledge and enhance their skills regarding oral health. To improve their awareness concerning the significance of oral care after hospitalized patients. Continuous training programs and education sessions at Saudi hospitals should pay out more focus on these sections of nurses if policies and recommendations about oral care of patients to be broadly implemented [28].

Nursing staff dealing with patients need to be improved educated in oral health care and ought to be observed by themselves among others within a team, where oral health care is defined and incorporated among other everyday nursing activities [29]. Nursing areas that might have to be covered consist of cavity prevention methods, such as for example brushing and limiting sugars in the dietary plan; practicing routine teeth' health care practices; dental appointments; and dental injury avoidance. Raising an understanding of oral health amongst nursing personnel is essential. Providing nurses with the required abilities will permit them to execute these tasks confidently, plus they would thus become more likely to apply what they will have learned. Training sessions of brief duration were proven to enable non-dental staff to recognize cases looking for referral. Pierce et al. [30] demonstrated that primary care providers obtained a suitable degree of proficiency at determining cavitated lesions after just 2 hours of training in infant oral health. The evaluation of attitude and practice only based on information from professionals without direct observation of the management of oral health care is one of the limitations of the study that should be considered. In addition, a longitudinal study that incorporates qualitative design is recommended to explore further. The gaps in knowledge, attitude and practice observed can help identifying points to be developed and emphasized in various continued education programs for nursing professionals.

## CONCLUSION

The current study concludes a positive knowledge and attitude among the surveyed nurses toward provision of oral care for pediatric patients in ICU. Very less proportion of nurses had oral care training during their basic nursing education. The most frequent barrier to perform oral care was lack of education, work overload, oral endotracheal tube of the patients and the least frequent barrier was critically ill and children with

maxillofacial surgery. Most respondents would like to receive more education and training in the provision of oral care. There is a growing recognition that oral hygiene provision and the link between oral and systemic health needs to be better integrated into the undergraduate curricula of nursing programs [31]. The study highlighted the need for setting of ICU protocols and adoption of advanced training for ICU nurses. As nurses are usually on the frontline with regards to the provision of healthcare, involving in training and education ought to be a priority. Education of public health nurses who is responsible for public at community level and deal pediatric patients in the ICU. Hence, it is essential that information on oral health prevention be integrated into the undergraduate curriculum before these experts are expected to provide this service with their patients [32]. Present oral care treatment in Saudi hospitals was suboptimal. Saudi hospitals must pay more attempts to teach their nursing personnel and problem apparent guidelines and policies regarding oral care of pediatric patients. Standardized oral hygiene practice gets the possible to contribute to enhanced oral health of children within the pediatric essential care setting. Prevention of hospitalassociated infections is advocated as an important objective in critically ill patients. Mandatory education of healthcare workers can, however, decrease the overall mortality rates and medical care costs.

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**CONFLICTS OF INTEREST**

There are no conflicts of interest.

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