

Knowledge, Perceptions, and Practices of Intensive Care Unit Nurses Regarding Holistic Oral Care for Critically Ill Children

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Abstract

Background: As there are very much limited research on evidence-based oral care in pediatric critical care, there is a clear need for this study. **Objectives:** This study examines the knowledge, perceptions, practices, and education of pediatric critical care nurses regarding oral care for critically ill children. **Materials and Methods:** It is a cross-sectional study, conducted from October 2022 to March 2023 in Babylon Governorate, specifically in four hospitals located in Hillah City. The sample comprised nurses working in critical care units (170). Statistical analysis was performed using statistical package for the social sciences software. **Results:** The study involved 170 intensive care unit nurses, with 105 female nurses and 65 male nurses, selected using a strata sampling method. The findings indicated that the mean score for oral health knowledge was moderate (2.14), perception also moderate (2.46), and practice score was good (2.02). There were no significant differences in comprehensive mouth care scores based on age and education qualification. Nevertheless, a significant difference was observed in the mean score for complete oral care between male and female nurses (18.37 vs. 17.85, $P = 0.021$). Additionally, significant differences were found in knowledge and practice scores based on years of experience. **Conclusions:** This study provides insights into the knowledge, perception, and practice of intensive care unit nurses.

Keywords: ICU nurses, comprehensive oral care, critically ill children, knowledge, perception, practice

INTRODUCTION

All phases of a child's growth need the provision of oral hygiene to sustain oral health. A child's oral cavity is challenged by a disturbance to typical protective systems when faced with a serious disease and the associated therapy and commonly becomes dysfunctional as a result.^[1]

Critically unwell children make up a diverse group of patients. Many children, ranging in age from newborn to teenager, are pre-morbidly healthy, whereas others have an acute episode connected to a preexisting ailment.^[2] Saliva production and mobility around the mouth are restricted in a kid who is asleep or intubated because they are unable to speak, eat, or drink. When a child is non-dentate, the endotracheal tube puts pressure on the oral cavity because it rests on the gingivae rather than the teeth. In addition, the child who has been intubated orally is forced to maintain his or her mouth open for long periods. Children are frequently subjected to high-flow oral suctioning and face oxygenation even when not intubated, which dries out

the mucosa. To maintain a clean, moist environment as a result, it is crucial yet challenging to provide appropriate oral care.^[3,4] Critical disease and the necessary follow-up treatments not only have an impact on oral health, but they also can affect systemic health. Fungal and bacterial pathogens that cause respiratory and bloodstream infections in children who are receiving critical care have a significant financial, morbidity, and death impact.^[5] International healthcare organizations, such as the Institute of Health Improvement and the Centers for Disease Control and Prevention, are increasingly prioritizing the provision of oral hygiene in critical care. There is currently a dearth of evidence about the efficacy and suitability of oral hygiene practices in pediatric critical care.^[6]

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The purpose of this study was to evaluate pediatric critical care nurses' knowledge, perceptions, practices, and education related to oral care. Properly establishing and integrating evidence-based oral care into pediatric critical care. To assess if nationwide research was feasible, recruiting results were also gathered.

MATERIALS AND METHODS

Design

This study utilized a descriptive cross-sectional design to assess the knowledge, perceptions, and practices of intensive care unit nurses regarding holistic oral care for critically ill children in Babylon Governorate.

Study setting

The study was conducted in four hospitals located in Hillah City, Babylon Province. The participating hospitals included Babylon Maternity and Children Teaching Hospital, Imam Sadiq Teaching Hospital, and Morgan Teaching Hospital, representing pediatric, general, and specialized tertiary healthcare settings, respectively.

Sample

The sample consisted of nurses working in specific critical care units in the selected hospitals. Participants were stratified by gender and included nurses with a minimum of 3 months of working experience in critical care units caring for hospitalized male and/or female patients aged 15 and below. The selection of participants was described in the flow diagram as shown in Figure 1.

Sample size

The sample size was determined based on the assumption of an average of 302 nursing staff in the selected settings. A total sample size of 170 nursing personnel was determined using a 95% confidence level, 5% margin of error, and consideration of gender-specific intra-stratified correlations.

Data collection

Data collection was carried out by distributing the questionnaire to the nurses, and the researcher was present to address any questions or provide clarifications. The content validity of the instrument was assessed by experts, and a pilot study was conducted with a subset of

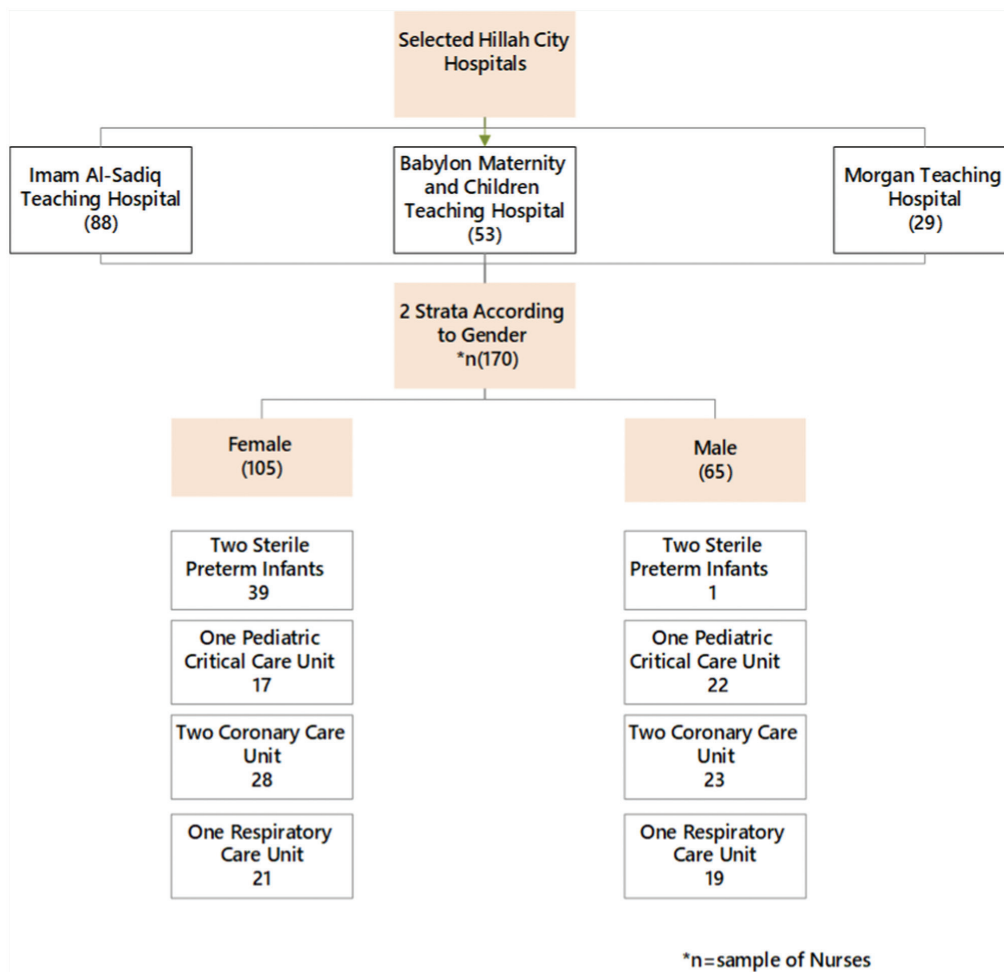


Figure 1: Participant stratification

the sample to test the Arabic version of the questionnaire. The reliability of the instrument was determined to be good based on Cronbach's α .

Statistical analysis

The data were analyzed using SPSS software (IBM, International Business Machines Corporation, Armonk, New York, USA), and descriptive statistics, such as mean, range, and standard deviation, were used to present the data. Mean differences, confidence intervals, Pearson correlation tests, and *t* tests were employed for data analysis.

Ethical approval

The study obtained administrative approvals from the University of Babylon, College of Nursing, and Higher Studies Committee, as well as the Scientific Research and Ethical Committee at the College of Nursing. Official permission was also acquired from the Ministry of Health's Babylon Health Office Development and Training Center. Formal agreements were reached with three hospitals in Hillah City for data collection (No. 123, dated January 30, 2023).

RESULTS

Table 1 provides social demographic characteristics of 170 nurses who participated in the study. The sample's average age was 26.78 year, and the half of participants were female nurses 56.0%. Bachelor's graduate participants comprised 64.7% with 2.58 years of work experience, and 2.09 years of experience in the ICU. The mean number of training courses received related to the ICU was 1.84.

Figure 2 displays the distribution of respondents' levels of knowledge about oral health care, which were categorized as poor, moderate, or good. Out of the 170 respondents, 72 (42.4%) were categorized as having poor knowledge, 88 (51.8%) were categorized as having moderate knowledge, and 10 (5.9%) were categorized as having good knowledge.

Figure 3 shows that the majority of ICU nurses (80.6%) ranked the importance of examining a child's mouth on.

Figure 4 shows that 37 participants (22%) had a poor perception, 101 (59.4%) had a moderate perception, and 32 (19%) had a good perception.

Figure 5 displays the distribution of nurses' practice scores after presenting comprehensive mouth-nursing care to critically children. Results indicate that 35% of the nurses demonstrated poor practice, 28% exhibited moderate practice, and 37% showed good practice.

Availability and use of mouth care protocol in ICU

Figure 6 shows the percentage of participants who answered "Yes" or "No" to the question "Do you carry out oral health assessment on a child on admission?." The majority of participants (72.4%) answered "Yes"

Table 1: Social demographic characteristics of nurses (N = 170)

Variables	Categories	f	%
Age categories	Young nurse (20–39 years)	166	97.6%
	Middle age nurse (40–65 years)	4	2.4%
	Mean	26.78	
	Std. deviation	4.197	
Gender of nurses	Male	75	44.0%
	Female	95	56.0%
Education qualification	High nursing school	15	8.8%
	Diploma graduate	44	25.9%
	Bachelor's graduate	110	64.7%
	Postgraduate	1	0.6%
Nur. experience/ service	<1 year	33	19.4%
	Nur. experience 1–2 years	50	29.4%
	Nur. experience 3–5 years	53	31.2%
	Nur. experience 6–10 years	27	15.9%
	Nur. experience 11–15 years	4	2.4%
	>15 years' experience	3	1.8%
	Mean	2.58	
	Std. deviation	1.145	
ICU Nur. experience/ service	<1 year	51	30.0%
	Nur. experience 1–2 years	67	39.4%
	Nur. experience 3–5 years	45	26.5%
	Nur. experience 6–10 years	2	1.2%
	Nur. experience 11–15 years	2	1.2%
	>15 years' experience	3	1.8%
	Mean	2.09	
	Std. deviation	0.999	
The number of local training courses that participated for ICU	I did not get any session ICU training	73	42.9%
	One-session ICU training	66	38.8%
	Two sessions ICU training	17	10.0%
	3 or more sessions ICU training	14	8.2%
	Mean	1.84	
Total	Std. deviation	0.915	
		170	100.0

f: frequency, Std. deviation: the scores standard-deviation

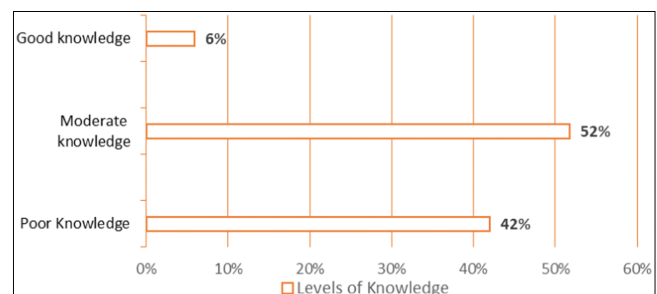


Figure 2: Nurses knowledge score (N = 170)

indicating that they do conduct an oral health assessment upon admission of a child, whereas 27.6% answered “No” indicating that they do not. The findings revealed that among the 170 participants, 80 (47.1%) reported using

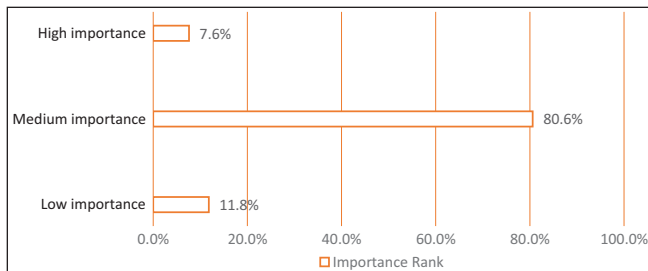


Figure 3: The importance of examining a child's mouth on admission ($N = 170$)

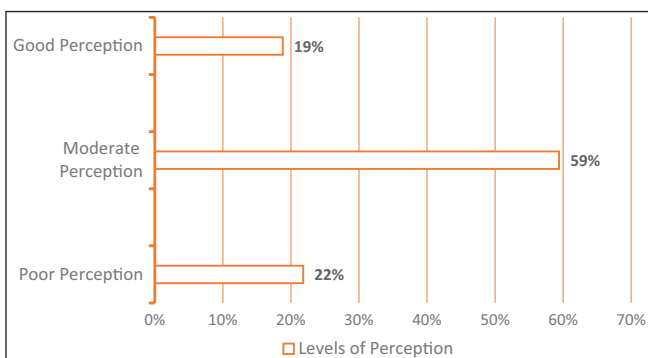


Figure 4: Perception level of nurses about comprehensive mouth care ($N = 170$)

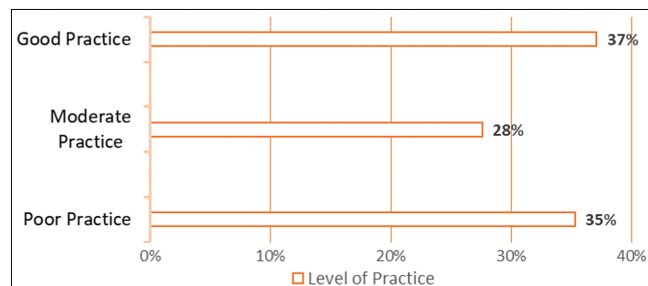


Figure 5: Level of practice ($N = 170$)

an assessment tool or guide to evaluate the oral care condition of the child, whereas 90 participants (52.9%) reported not using any such tool or guide.

A significant number of respondents (58.2%) face difficulties in providing regular oral health care for children in their unit. Considering the results, it seems that only 44.7% of the respondents have a protocol for oral care in their unit, whereas the majority of 55.3% do not have one.

Figure 7 shows that the most common difficulties that nurses face when providing comprehensive mouth care for critically ill children are a lack of time (27.1%), a lack of supplies and equipment (28.2%), and a lack of skills (20.6%).

Table 2 presents the variations in ICU nurses' perceptions of the importance of oral care based on their demographic characteristics. It includes *Gender*: Male nurses ($N = 75$) have a slightly lower mean score (17.85) compared to female nurses ($N = 95$) with a higher mean score (18.37). The P value of 0.021 indicates a statistically significant difference in attitudes towards oral care between genders. *Education qualification*: There is no significant difference in attitudes based on education qualification, as the P value (0.244) is greater than 0.05. The highest mean score is among nurses with a postgraduate qualification (18.833), but the sample size is only 1. *Years of experience in the work*: Nurses with 6–10 years of experience ($N = 27$) have the highest mean score (18.5815) among all experience categories. However, the P value (0.077) suggests that the difference in attitudes based on years of experience in the work is not statistically significant at the conventional significance level of 0.05.

Years of experience in intensive care: Similarly, there is no significant difference in attitudes based on years of experience in intensive care, as the P value (0.695) is greater than 0.05. *ICU training sessions*: Attending different numbers of ICU training sessions does not result in a significant difference in attitudes towards oral care, as the P value (0.224) is greater than 0.05. The highest mean score is among nurses who attended two sessions (18.047).

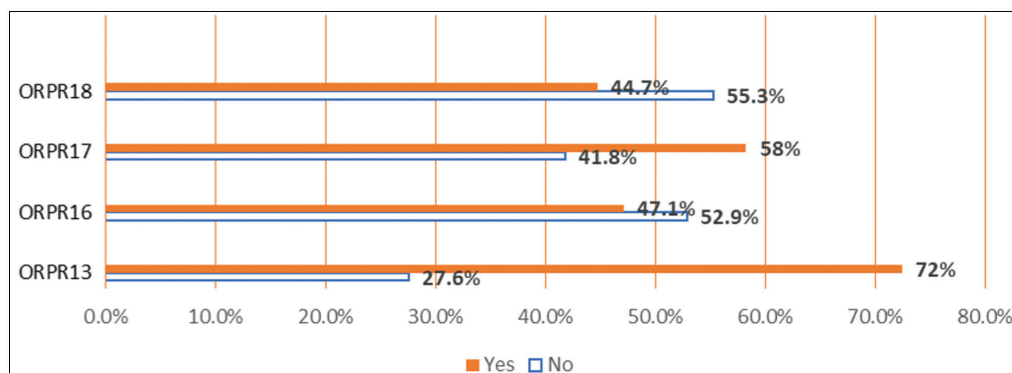


Figure 6: Performing comprehensive mouth care ($N = 170$)

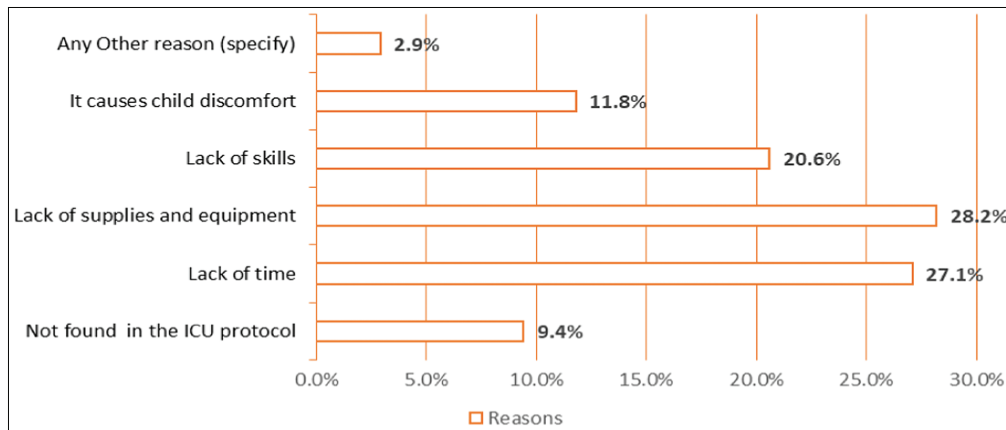


Figure 7: Difficulties met with nurses while doing comprehensive mouth care for ICU children ($N = 170$)

Table 2: Variations in ICU nurses' perceptions of the significance of oral care based on demographic characteristics

Variable	Category	N	M	±SD	P
Gender	Male	75	17.85	1.06087	0.021
	Female	95	18.37	1.8002	
Education qualification	High school	15	18.3	1.660	0.244
	Diploma	44	18.15	1.606	
	Bachelor's degree	110	17.895	1.482	
	Postgraduate	1	18.833	\	
Experience years in the work	<1 year	33	18.1606	1.544	0.077
	Nur. experience 1–2 years	50	18.4400	1.477	
	Nur. experience 3–5 years	53	17.6491	1.539	
	Nur. experience 6–10 years	27	18.5815	1.594	
	Nur. experience 11–15 years	4	18.3250	1.050	
	>15 years' experience	3	17.7000	0.000	
Experience years in intensive Care	<1 year	51	18.333	1.4864	0.695
	Nur. experience 1–2 years	67	17.965	1.6804	
	Nur. experience 3–5 years	45	18.160	1.4529	
	Nur. experience 6–10 years	2	18.800	1.2727	
	Nur. experience 11–15 years	2	19.100	.70711	
	>15 years' experience	3	17.700	0.000	
ICU training	Did not get any session	73	18.405	1.4507	0.224
	One-session	66	17.993	1.4767	
	Two sessions	17	18.047	2.2663	
	Three or more sessions	14	17.628	1.0102	

M represents the mean, SD the scores standard deviation, P value [a] significance level of less than] 0.05]

DISCUSSION

The social demographic characteristics of the 170 nurses in the study revealed that the majority were young women with less than two-thirds holding a bachelor's degree. Two-fifths of the nurses had 1–2 years of critical care experience, whereas one-third had less than one year of experience. Approximately one-third of the nurses had attended local ICU-related training sessions [Table 1]. These findings are consistent with previous studies conducted in Belgium^[7] and Malaysia.^[8] The study also found that most nurses had received at least one local training session related to ICU, which is consistent with existing literature.^[9] In terms of oral care training, the majority of nurses in the current study had received at least one local training session

related to ICU, aligning with previous studies. However,^[9] discovered that more than half of the nurses had not obtained oral care procedures training in the past year.

The study found that ICU nurses demonstrated varying levels of knowledge and perception regarding oral care practices. Whereas the majority had positive perceptions of comprehensive mouth care for children, there were mixed responses to certain items, indicating variations in perceptions among participants. This is consistent with findings from previous studies.^[10,11]

Challenges and barriers in implementing comprehensive mouth care practices were identified, including time constraints, lack of resources and equipment, and a lack

of organizational support.^[12] These findings are consistent with previous studies.^[13-15]

The study also examined the association between social demographic characteristics and oral care practices. It found that gender, age, education qualification, years of experience, and number of local training courses attended did not consistently show significant differences in oral care practices.^[16]

The correlation matrix revealed associations between perception, knowledge, and practice of oral care practices for critically ill children, highlighting the significance of perceptions and knowledge in shaping nurses' practices.^[7] However, there were also studies that found inadequate oral care practices among nurses despite positive attitudes and perceptions.^[17-20]

In summary, the study provides insights into the social demographic characteristics of ICU nurses and their exposure to oral care training. The findings highlight the need for ongoing training and education to improve nurses' understanding and practices in oral care procedures. The study also identifies challenges and barriers in implementing comprehensive mouth care practices and emphasizes the importance of positive perceptions and adequate knowledge in promoting effective oral care practices. Further research is needed to understand the underlying factors and develop interventions to improve oral care in the ICU.

In conclusion, this study highlights the social demographic characteristics of ICU nurses and their exposure to oral care training. The majority of nurses were young women, and whereas most had received local training sessions, there were variations in knowledge and perceptions. Challenges in implementing comprehensive mouth care practices were identified, emphasizing the need for standardized protocols and resources. Additional research is necessary to gain a deeper understanding of how social demographic characteristics impact oral care practices. Improving oral care in the ICU requires addressing barriers, enhancing nurses' knowledge and perception, and implementing standardized protocols.

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Author Contribution

Prof. Nuhad Aldoori: had full access to all of the data and take responsibility for the integrity of the data, the accuracy of data analysis, and study concept and design. Ms. Sura Obayes Radhi Al-Qayyim; Critical revision of the manuscript for important intellectual content: Main researcher.

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Conflicts of interest

There are no conflicts of interest.

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