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Trained Nurses' Knowledge And Practice Of Oral Care On Three Wards In Acute Care Hospital in Abu Dhabi, UAE.

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ABSTRACT

Background. Mouth care is an essential nursing procedure that nurses are expected to have good knowledge of. Poor knowledge may compromise the quality of patient care and result in unsafe practice. Documentation of nurses' current knowledge and practice is crucial if improvement efforts are to proceed. **Aims**. To investigate nurses' reported knowledge and practice of oral care, to identify the relationship between nurses' knowledge and practice and their demographics, and to identify nurses' perceived barriers to good practice. **Methods.** Cross-sectional descriptive survey. 58 nurses on three wards represented the target population. The questionnaire generated information about personal data, education and level of knowledge and practice of mouth care. **Results.** 46 nurses (79%) completed the questionnaire. Questionnaire analysis revealed knowledge deficits about several important aspects of oral care and inadequate practice. However, no statistically significant differences were detected among groups**.** Lack of materials, lack of time, and uncooperative patients were perceived barriers to good practice. **Conclusion.** It is now time for action. Paste and brush should be regularly provided. Hydrogen Peroxide 3% to be withdrawn. Nurses's knowledge to be improved. Individual results to be disseminated to each ward.

Descritores: Oral care, Knowledge, Practice.

INTRODUCTION

Mouth care, an essential nursing procedure (Evans 2001)(1) helps to maintain comfortable, clean, moist and infection- free mouth (Watson 1989)(2) and thereby improve the patient's quality of life (Holmes & Mountain 1993)(3). Poor knowledge has the potential to compromise the quality of patient care and result in unsafe practice (Bayraktar & Erdil 2000)(4). Therefore, it is crucial for nurses to have up-to-date knowledge and skills of oral care.

The literature review indicates that nurses' knowledge and practice of oral hygiene is a very important issue and, thus, had been investigated from mid seventies onwards. These studies used different sampling frames and methods of data collection, making it difficult to draw reasonable comparisons among them. However, lack of knowledge in relation to the important aspects of oral care resulting in inadequate practice had been a common feature (Howarth (1977)(5), Morton 1980 (6), Miller & Rubinstein 1987 (7), Boyle (1992)(8), Adams (1996) (9), Milligan et al (2001) (10), Honnor & Law (2002) (11)).

In the UAE, the Ministry of Health (2001) (12) requires nurses to base their care on the best available evidence and research. However, there is no published work on trained nurses' knowledge and practice of mouth care of the hospitalised patients. The results of other studies undertaken elsewhere, though useful and valuable, may not be generalisable to the UAE's unique context in which multicultural staff forms most of the nursing workforce. Therefore, this study will collect baseline data on which to build in terms of improving clinical practice.

AIMS

The principal aims of the study were to:1) Investigate nurses' reported knowledge and practice of the important aspects of oral care; 2) Establish association, if any, between nurses' reported knowledge and practice of mouth care and their demographics; and 3) Identify perceived barriers to good oral practice.

RESEARCH METHODS

This was a descriptive, exploratory, one-event study following a survey approach.

Population, sample and setting.

Country of education	Selected sample	%	Achieved sample	%
A	25	43%	19	41%
B	20	34%	16	35%
C	9	16%	7	15%
D	3	5%	3	7%
E	1	2%	1	2%
Total	58	100%	46	100%
Sex: Male	7	12%	6	13%
Female	51	88%	40	87%
Age: 21-30	25	43%	20	44%
>30-40	19	33%	15	33%
>40	14	24%	11	23%
Experience: 1-5 years	23	40%	17	39%
6-10 years	13	22%	11	22%
>10 years	22	38%	18	39%
Qualification: BSN	20	34%	17	37%

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Diploma	38	66%	29	63%
Post: AT-A	3	5%	2	4%
QT	49	84%	38	83%
CT	6	11%	6	13%

The target population was all 58 trained nurses working on three wards in a general hospital in Abu Dhabi, UAE (19 on a male medical ward, 19 on neuro-renal-surgical ward and 20 on the female medical ward). These are the wards where patients with chronic conditions are admitted in, a matter that necessitates ongoing oral care. A convenience sample representative of the target population participated in the study.

Ethical approval

The Hospital Research Ethics Committee approved the study. Each nurse signed a consent and was identified by a code to ensure anonymity. All data obtained during the course of the study were kept confidential.

Instrument

Data were collected from nurses by means of a modified version of a questionnaire developed by Adams (1996) (9).

A 24-item structured and pre-tested questionnaire was used to obtain information about personal data; nurses' training and their knowledge and practice of oral care. Participants' qualifications, age and length of experience were identified from the human resources database in the hospital. The questionnaire, containing both open and closed questions was modified following a pretest in 10 nurses who were unrelated to the study. Face validity and content validity of the questionnaire were assessed by the investigator, an epidemiologist **and senior nurses.**

Data collection

The main study took place in November 2002. Names of all trained nurses were listed from the duty rosters and were used to identify which nurses returned the questionnaires, as three members of staff collected data from participants. Two days were planned for data collection. However, due to heavy workload, the procedure was completed in three days. It was felt that with a longer period of time, participants might access literature or converse with colleagues with potential invalidation of the results. On the actual days of data collection, every qualified nurse on each ward was approached face-to-face with an information sheet about the study. Upon agreement to participate, he/she consented before completing the questionnaire. Two nurses, who assisted in data collection, received training on the administration of the questionnaires and guidelines sheet. Participants were fully supervised when completing the questionnaire.

Coding

Data were coded and entered onto a computer programme running SPSS (version 11) for windows.

Data analysis

Descriptive statistics were used to analyse data obtained from the questionnaire using percentages, frequencies and cross-tabulation between different variables to establish associations.

Sample characteristics:

Table 1: Sample characteristics

	Nurses response	# of Nurses Total # of Indicators
Indicator	N %	6 13
Clean teeth	42 91.3%	2 12
No infection	39 84.8%	3 11
Pink mucosa	35 76.1%	5 10
Pink Tongue	32 69.6%	4 9
Moist tongue	31 67.4%	6 8
No dentures debris	28 60.9%	6 7
Normal swallow	28 60.9%	4 6
Moist mucosa	27 58.7%	2 5
Smooth lips	27 58.7%	5 4
Pink lips	25 54.3%	2 3
Moist lips	26 56.5%	1 2
Watery saliva	16 34.8%	-- --
Voice	16 34.8%	-- --

Forty-six participants (79%) took part in the study, while the other 12 could not be approached because one nurse refused while the other 11 were on holiday. However, the basic demographic characteristics of respondents and non-respondents are similar enough to assume the absence of sampling bias. Sample characteristics are displayed in Table (1). Participants received nursing education in the United Arab Emirates, the Philippines, India, Tunisia and Pakistan. 2 were Assistant Nurses A; 38 were Qualified Nurses and 6 Charge Nurses.

Nurses' knowledge of oral care

Oral assessment

The majority of participants indicated that all patients admitted to wards should have assessment of the mouth. However, 18 participants believed that mouth assessment is not necessary and that some admitted patients should have an oral assessment.

Indicators of healthy mouth

Table 2: Nurses' responses concerning healthy mouth indicators

Total # of nurses	Condition of patient	Frequency of care/hr & percentage of nurses stating each frequency			
		1-6	>6-12	>12-18	>18
45	Dehydrated	36 (80%)	7 (16%)	--	2 (4%)
46	Oxygenated	32 (69.6%)	13(28.3%)	1 (2.2%)	--
44	Has oral infection	39 (89%)	5 (11%)	--	--
46	Unconscious	32 (69.6%)	13 (28.3%)	--	1 (2.2%)
42	As a preventive measure	13 (31%)	26 (62%)	--	3 (7%)

Thirteen indicators of a healthy mouth were listed and participants were asked to tick as many indicators as applicable. The results are presented in Table 2. The second column shows the total number of participants who identified each individual indicator. The third column shows the sum of indicators and the number of participants identifying them.

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Frequency of mouth care

Table 3: Nurses' responses on frequency of mouth care for various patients.

Drug	Nurses responses	
	N	%
Steroids	6	23%
Antibiotics	5	19%
Radiotherapy	4	15%
Chemotherapy	4	15%
Immunosuppressants	4	15%
Epaneutin	3	12%
Iron	3	12%
Other drugs	6	23%

Participants were asked to indicate how often mouth care should be performed on certain categories of patients such as those who are dehydrated, oxygenated, unconscious, those having oral infections or as a preventive measure. The results in Table 3 describe the proposed frequencies of oral care for each category and the number of participants suggesting each frequency.

Knowledge of adverse drugs effects

Table 4: Nurses' responses of drugs adversely affect oral health.

Nurses response of ideal equipment	N	%	Nurses response of ideal solution	N	%
Oral care set	19	41.3%	Toothpaste	18	39.1%
Toothbrush	18	39.1%	Hydrogen peroxide	16	34.8%
Tongue depressor and gauze	7	15.2%	Normal Saline	15	32.6%
Other equipment	4	8.7%	Antiseptic wash	7	15.2%
			Betadine	4	8.7%
			Other solutions	8	17%

Of the 46 participants, 26 (56.5%) reported awareness of adverse drug effects. Sixteen participants (34.8%) were unaware, while four answers (8.7%) were missing.

Results in relation to drug effects are presented in Table 4. As indicated, the list of drugs is very limited in terms of the number of drugs identified by each participant and in the total number of participants who identified each individual drug. Only three nurses identified three drugs; nine identified two, and fourteen identified only one correct drug. However, some participants named drugs with no adverse effects such as Vitamin C, Mycostatin, Anti-TB drugs and Rifampicin.

Materials ideal for oral hygiene

Table 5: Nurses' knowledge of materials ideal for mouth cleaning.

SN	Condition of patient	Nurses Responses	
		N	%
1	Bedridden	11	42%
2	Unconscious	9	35%
3	Stroke	9	35%
4	Oral problems	3	12%

Results concerning participants'knowledge of materials ideal for oral care are presented in Table 5. Many participants preferred oral care sets (swab, tongue depressor and gauze) provided by the hospital, toothbrush and toothpaste. Others preferred hydrogen peroxide 3% and normal saline. However, some participants gave both oral care sets and toothbrushes equal weight by including them in their answers. The majority of participants (67%) who preferred brush and paste were on ward N.

Practice of mouth care

Oral assessment

Of the 46 participants, 26 (56.5%) reported that patients with certain conditions had oral assessment on admission. However, many participants (n = 19) said that no patients are assessed. One nurse did not answer the question.

Types of patients assessed

Table 6: Types of patients reported to be assessed.

Materials names	Number of nurses Citing materials used	
	N	%
Equipment		
Oral care set	22	48.8%
Tongue depressor & gauze	17	37.8%
Toothbrush	17	37.8%
Dressing set	4	9%
Other equipment	5	11%
Solutions		
Hydrogen Peroxide 3%	28	62%
Normal Saline 0.9%	24	53%
Toothpaste	17	38%
Betadine	4	9%
Water	4	9%
Other solutions	6	13%

Participants identified 16 categories of patients reported to have oral assessment on admission. The main categories identified appear on Table 6. The other categories not shown on the table had two or less responses. The question, however, was not directed at individual level, but aimed at understanding what generally occurred in practice. In terms of who carries out mouth care, all participants reported that trained nurses in fact do. However, it should be noted that the wards studied are mainly staffed by trained nurses.

Materials used for mouth care

In relation to materials reported to be used, forty five participants reported using oral care materials, while one new nurse reported using nothing. Seventeen nurses reported using toothbrush and toothpaste, of whom 12 worked on ward N. Other equipment included spatulas, swab sticks, and artery clamps. 62 % of participants reported using Hydrogen peroxide 3%. Other solutions included Mycostatin, Orofar, Glycerin, and Potassium Permanganate.

Oral assessment tools

Participants were asked to indicate whether they use any oral assessment guide and to name it if applicable. 39 participant (85%) replied "no", while 7 (15%) replied "yes", despite the fact that the hospital does not use any guide. Whether the participants used their own guides was not asked about. However, most participants (n = 45) indicated their agreement on the importance of using such a guide.

The influence of demographics on nurses' knowledge and practice.

At 95% CI, no statistically significant differences were detected among groups to indicate that certain demographic characteristics **(age, sex, experience and education)** were

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associated with better performance than the other on the knowledge and practice sections of the questionnaire. This conclusion may be attributed to the fact that the numbers of participants having certain demographics were very small to detect significant differences.

Barriers prohibiting nurses from delivering high quality mouth care.

Participants were asked to identify if barriers existed to prohibit good mouth care. Thirty-six nurses (78.3%) replied "yes", while ten (21.7%) replied "no". Those who replied "yes" identified several barriers, such as lack of materials (n=19), lack of time (n=17), uncooperative patient (n=16), staff shortages (n=15) and no assignments (n=4). 17 nurses identified one barrier, while the other 19 nurses identified more than one barrier. The list of barriers is not exhaustive and although the hospital was having a bad staffing crisis that culminated in the recruitment of new locum nurses, only fifteen participants indicated that understaffing is a problem. The reason for this perception could be that some participants indicated that oral care is a simple and non-time consuming procedure that nurses found no difficulty to perform. However, an individualised patient care system does not exist on any of the wards studied and nurses are task oriented and thus may lose focus of individual patient's needs.

Suggestions put forth by participants

Further research into ICU nurses' knowledge and practice of mouth care. It appears from comments put forth by some participants that patients who are transferred from the intensive care areas suffer poor oral care that culminates in some oral health problems.

- More information about the use of oral care solutions
- Providing oral care guide
- Supplying supportive equipment (suction machines)
- Recruitment of dental hygienist
- Offering in-service education on oral hygiene in order to update nurses and combat knowledge deficits
- Offering family education pertinent to oral care of their patients.

DISCUSSION

The study sought to explore trained nurses' reported knowledge and practice of oral hygiene and to identify whether nurses' basic training and demographics influenced their knowledge and practice. In addition, the study aimed to identify perceived barriers to good practice.

Nurses' knowledge of important aspects of oral care

The results suggest that nurses' overall knowledge of oral hygiene was poor or at baseline level, although most participants (80.4%) reported to have mouth care instruction during training. 37% of participants reported having post-training instruction; 26% could not remember, while 37% said that they received no mouth care instruction since qualifying. However, participants were not asked to comment on the quality and quantity of instruction they received during or after training. Although the majority (61%) of participants believed that oral assessment is required for all patients, 39% of them felt that oral assessment is not necessary for all admitted patients as opposed to earlier recommendations (Fitzpatrick 2000)(13). Indeed, every patient admitted should have a thorough oral assessment, because

the percentage of the population undergoing regular dental checkup in the UAE is not known and many of them could potentially have some oral disorders. In Adams' (1996)(9) study, the majority of participants felt that oral assessment of all patients was not needed and only 38.2% felt that all patients should be assessed. One or more aspect of knowledge deficits identified in this study concurs with findings from previous studies. Knowledge gaps concerning healthy mouth indicators, frequency of oral hygiene and drug effects were reported (Adams 1996)(9). Lack of knowledge in relation to healthy mouth indicators has implications for participants' ability to carry out proper assessment. Adams (1996)(9), however, found that none of the respondents stated oral care frequency of less than 6 hours, whereas, in this study, many nurses stated a frequency of less than 4 hours. Gooch (1985)(14) and Krishnasamy (1995)(15) recommended hourly mouth care of dehydrated and unconscious, oxygenated patients with oral infections respectively; Honnor & Law (2002) (11) recommended **mouth care every 6 hours** for all patients. In addition, Krishnasamy (1995) (15) recommended 4 to 6 hours as a preventive measure against potential infection. Howarth (1977)(5) concluded that mouth care **every 4 hours** was inadequate. However, there is no consensus on the optimal frequency of mouth care (Bowsher et al 1999)(16). Taking this into consideration, and given the fact that the nursing department is understaffed, it would seem practical to suggest mouth care every 6 hours.

In addition, poor knowledge of drug effects mirrored in other studies (Rak & Warren (1990) (17), Honnor & Law (2002)(11)). Addressing the issue of materials among nurses, more nurses were aware of brush and paste as materials ideal for mouth care (39%) than in previous studies (Trentor-Ruth & Creason (1986)(18), Rak & Warren (1990)(17), Kite (1995)(19), Adams (1996) (9), Miller & Kearney (2001) (20)).

Nurses' reported practice of oral care

As a result of knowledge deficits and, possibly, other barriers, nurses' reported practice was inadequate. Such a conclusion can be deduced from the fact that only some participants reported oral assessment of very limited categories of patients and that the reported assessment remained an individual preference not following a systematic approach. **The number of nurses who reported oral assessment of the bedridden, unconscious, stroke patients and patients with oral problems were 11, 9, 9, and 3 respectively.** Poor assessment was reported by Adams (1996)(9) and Honnor & Law (2002)(11). If nurses were to give individualised patient care as recommended (McCord & Stalker 1988)(21), then patients should have a proper oral assessment in order to identify individual needs. Poor assessment could be attributed to knowledge deficits concerning healthy mouth indicators and lack of oral assessment guide. Using an assessment guide is of vital importance (Holmes & Mountain (1993)(3), Hatton-Smith (1994)(22)). This hospital treats cancer patients and, therefore, it is very important for nurses to be competent in performing appropriate oral assessment. Another finding was that participants on the medical wards rarely reported using toothbrushes and toothpaste, supporting findings reported by Adams (1996)(9). In contrast, many nurses on ward N reported using toothbrushes and toothpaste as recommended (Hallet (1984)(23), Levine (1993)(24), Bowsher et al (1999)(16)). Ward N nurses were said that they adopt a questioning approach towards their practice and that many of them surf the internet. Water which is the safest and most moisturising agent (Gooch (1985)(14),

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Clarke (1993)(25)) was mentioned only by few nurses supporting early findings (Adams 1996) (9). Nurses espoused using oral care sets, tongue depressors and gauze and, other equipment, that are of unproven value and not recommended by research, supporting early findings (Rak & Warren (1990)(17), Adams (1996) (9), Fitzpatrick (2000) (13)). Furthermore, Hydrogen peroxide should not be used (DeWalt & Haines (1968)(26), Hatton-Smith (1994)(22)) because of its detrimental effects on oral mucosa, its unpleasant taste and as Segelman and Doku (1977) (27) point out it forms an excellent medium for candidiasis.

The influence of nurses' basic training on their reported knowledge and practice

Participants' poor knowledge of oral care reported may suggest inadequate educational input and lack of regular updating, although most of them indicated that they needed such updates on annual basis. Good preparation and updating are required for nurses working in hospitals (Fitzpatrick(2000)(13)). However, variations in participants' knowledge may indicate variations in educational provision across different countries. However, others (Miller & Rubinstein (1987)(7), Wallace & Freeman (1987)(29), Barnett (1991)(28)) are critical of the issue that mouth care instruction during training is rarely carried out by experts in the field. In an evaluative study, Longhurst (1998)(30) found out that many nursing training establishments' (NTEs) oral care coverage was deficient.

The influence of demographics on nurses' knowledge and practice

The small numbers of nurses having certain dempgraphics did not enable meaningful comparisons among groups. In order to identify statistically significant differences to be detected, larger samples are required. However, this aim did not feature in previous studies targetting multinational staff.

Barriers prohibiting nurses from delivering high quality oral care

Lack of time and nursing shortages, as reported barriers, are congruent with early findings (Rak & Warren (1990)(17), Adams (1996) (9), Pyle (1999)(31)). In addition, lack of knowledge reported above mirrored other studies (Rak& Warren (1990)(17), Adams (1996) (9)). Lack of supplies was reported by Fiske & Lloyd (1992)(32). Lack of cooperation on the part of dependent patient and lack of assignments system reported here did not feature in previous studies.

Study Limitations:

Language difficulty

The questionnaire was designed in English which is not the native language of any of the study participants, despite the fact that it is the language of instruction for all study participants and a medium of communication in the hospital. It could be that some participants misunderstood some questions. Where participants were judged to have misunderstood the question, the answers they gave were coded as "missing variables" and were excluded from analysis.

Limitations of reported practice

Caution needs to be exercised when interpreting participants' reported practice, as nurses may report a knowledge that is not reflected in practice and a practice that may not actually be performed. The other problem for this

study relates to the superficiality of information obtained through fixed-choice questionnaires (Polit & Hungler 1999) (34), although there is a set of open-ended questions capable of producing more in-depth understanding of participants' views.

Limitations of generalisability of the results

Participants were trained under five different educational systems. Small numbers of participants represented each country and therefore, it may not be possible to generalise the study findings to all nurses from any of these countries who work in other hospitals. However, the findings could be confidently generalised to other nurses on the same wards, as they are not significantly different.

CONCLUSIONS AND RECOMMENDATION

Despite its limitations, this study accomplished the first important step in providing useful information on trained nurses' knowledge and practice of mouth care, which were reported to be deficient with an obvious need for improvement.

It might be a sound idea to appoint a dental hygienist, who would take the issue of mouth care forward as Howarth (1977) (5) and Lewis (1984)(33) argue. In the UK, some hospitals used to recruit dental hygienists (Rak & Warren 1990)(17) who provided oral care for inpatients and offered advice to nurses. In addition, policy and procedure guidelines on mouth care might improve the quality of oral care delivery.

As the percentage of nurses who receive their education in this country is ever increasing, reexamination of the extent of oral care coverage in nursing curricula in this and other countries who supply nurses may be warranted. In-service education and ward based learning may play a positive role in the process of preparing and updating of nurses on this important aspect of nursing care. Nurses in this hospital, like many others around the world, need a library with access to nursing journals or electronic databases that publish research literature.

As the results suggest, nursing shortages have a negative impact on the quality of mouth care provided to patients. Therefore, it is the responsibility of policy makers to ensure that the hospital has adequate staffing. Lack of materials such toothbrushes and toothpaste influence nurses either to use other methods of oral cleansing that are of less quality or to totally ignore mouth care. There is an urgent need to withdraw Hydrogen Peroxide 3%. Based on the results of this study, the hospital administration, for the first time, provided a regular supply of paste and brushes to different hospital departments. Work is underway to disseminate the results of the study to individual wards and prepare an oral care protocol to guide practice in the studied wards.

The available evidence from literature is conclusive and strongly indicates poor oral care for patients across different cultures and boundaries. Instead of re-inventing the wheel by recommending further research, action needs to be taken to correct the existing situation that may, hopefully, improve patient care.

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