

Access this article online
Quick Response Code:

Website: www.jehp.net
DOI: 10.4103/jehp.jehp_88_18

Attitudes and practices of nurses toward oral care of hospitalized patients – A cross-sectional survey in Riyadh, Saudi Arabia

Deyaaldeen Mohammad Al Rababah, Mohammad Zakaria Nassani¹, Omar Ghazi Baker², Eyad M. Alhelih³, Suzan Ali Almomani⁴, Samer Rastam⁵

Abstract:

BACKGROUND: Oral care of hospitalized patients is an important measure that aims to maintain and promote the health of oral and dental tissues. This study aimed to investigate nurses' attitudes and practices regarding oral care of hospitalized patients in Riyadh, Saudi Arabia.

MATERIALS AND METHODS: A cross-sectional, descriptive design was implemented. The research instrument was a self-administered questionnaire that was designed and distributed among 300 nurses working at five hospitals located in Riyadh.

RESULTS: Totally, 226 questionnaires were completed (response rate: 75%). Almost all participants (97.8%) think that providing oral hygiene is an important element of patient care and 90.7% think that nurses need to update their oral care knowledge and skills. Only 46% of the nurses reported the presence of a policy for oral care at their hospital unit and 55.3% indicated that patients are assessed for oral health at their department. About 56.2% of participants did not receive training on oral assessment and provision of oral care and a few nurses (2%) received training on oral care at their current job place. A large proportion of nurses (44%) expressed a desire to undergo training on oral care of hospitalized patients. Gender, nationality, and previous training were the most important predictors of a positive attitude.

CONCLUSIONS: The outcome of this study indicates a positive attitude among the surveyed nurses toward provision of oral care for hospitalized patients. Current oral care practice in Saudi hospitals is suboptimal. Saudi hospitals need to pay more efforts to train their nursing staff and issue clear policies and guidelines regarding oral care of hospitalized patients.

Keywords:

Attitudes, hospitalized patients, nurses, oral care, Saudi Arabia

Introduction

Oral care of hospitalized patients is among the comprehensive medical care measures provided for patients admitted to hospitals. The need for oral care becomes more evident for long-stay hospital patients and those patients whose physical conditions impact their ability to maintain an adequate oral health. When oral care is lacking or

inadequate, deterioration of oral and dental health is highly expected. Adequate oral care is a key factor for the prevention of dental caries, periodontitis, and oral lesions. Furthermore, research findings indicated that poor oral care may negatively impact general health and could adversely affect patient's quality of life.^[1-6]

Nurses, as well-established, are the principal health-care providers for patients admitted

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: reprints@medknow.com

How to cite this article: Al Rababah DM, Nassani MZ, Baker OG, Alhelih EM, Almomani SA, Rastam S. Attitudes and practices of nurses toward oral care of hospitalized patients – A cross-sectional survey in Riyadh, Saudi Arabia. *J Edu Health Promot* 2018;7:149.

Department of Nursing Sciences and ¹Prosthetic Dental Sciences, AlFarabi College for Dentistry and Nursing, Departments of ²Nursing Administration and Education and ³Medical Surgical Nursing, College of Nursing, King Saud University, Riyadh, Saudi Arabia, ⁴Department of Pediatrics, Jordan University Hospital, Amman, Jordan, ⁵Department of Basic Medical Sciences, AlFarabi College for Medicine, Riyadh, Saudi Arabia

Address for correspondence:

Dr. Mohammad Zakaria Nassani, Department of Prosthetic Dental Sciences, AlFarabi College for Dentistry and Nursing, P O Box 85184, Riyadh 11691, Saudi Arabia. E-mail: mznassani@hotmail.com

Received: 12-04-2018
Accepted: 01-11-2018

to hospitals and providing oral care is one of their duties.^[7] In principle, provision of oral care for hospitalized patients should be on three levels; assessment of oral health, promotion of oral health by educating patients, and providing primary oral care to maintain the oral health. Thus, nursing staff should possess the required skills and knowledge to provide effective oral care for their patients on the aforementioned levels of care. Training and education related to oral care of hospitalized patients should be an essential part of nursing academic programs and continuous education courses. Furthermore, hospitals should issue clear guidelines and policies for the assessment and management of oral health for hospitalized patients.

Previous research indicated that nurses worldwide have a positive attitude about oral care of hospitalized patients. However, their knowledge about oral health was limited and fraught with misunderstanding.^[8-11] Other studies concluded that nurses' knowledge and skills about oral care were inadequate and plans for improvement are needed.^[12-15] Some authors indicated that tailored training and education about oral health is needed to enhance nurses' skills, knowledge, attitude, and perception of the importance of oral care when caring for hospitalized patients.^[6,16,17] In recent decades, there has been dramatic expansion in the Saudi health sector.^[18] This was coupled with great emphasis on provision of quality-health services. Recruitment of highly qualified and well-trained nursing staff was central to plans for provision of standard medical care. Provision of adequate oral care for hospitalized patients is a practice that should be encouraged as a mark of standard medical care. However, to date, there is no clear picture concerning nurses' awareness of oral care of hospitalized patients in Saudi Arabia. The aim of this research was to investigate nurses' attitudes and practices regarding oral care of hospitalized patients in Riyadh city, the capital of Saudi Arabia. Factors that may affect nurses' attitudes toward oral care of patients will also be evaluated.

Materials and Methods

Design

A cross-sectional, descriptive design was implemented in this research.

Setting and sample

The target population was nursing staff working at three governmental and two private hospitals located in Riyadh City, Saudi Arabia. Convenience sampling was used to select participants. Eligibility criteria included nursing staff working at various patients' units who provide bedside nursing care and available during conducting the survey.

Instrument

The research instrument was a self-administered questionnaire that was developed by the research team based on a review of similar earlier investigation.^[7] The questionnaire was presented in English and reviewed by a consultant in nursing and another in dentistry to ensure validity and clarity of the content. Furthermore, a group of ten nurses completed the questionnaire and provided their comments about its structure. In light of that, the questionnaire was revised and used in the main study. Reliability of the questionnaire was assessed by inviting a group of ten nurses to complete the questionnaire in two occasions with a 1-week interval. The reliability analysis illustrated that the values of Cronbach's alpha test for the majority of questionnaire items exceeded 0.70, indicating the acceptable level of internal consistency for study questionnaire.

The questionnaire was divided into four parts. The first part was designed to record the general demographic data of participants. The second part comprised three questions to assess participants' attitudes toward oral care of hospitalized patients. In the third part of the questionnaire, participants were asked questions related to their current practice regarding oral care of patients at their current work place in the hospital. The last part of the questionnaire was devoted to collect information related to type and quality of previous received training on oral care.

Ethical considerations and data collection

This survey was carried in the period between January and June 2016. The study protocol was registered and approved by the Research Ethics Committee at AlFarabi College for Dentistry and Nursing, Riyadh, Saudi Arabia. A letter was prepared by the research team and signed by the administration of AlFarabi College seeking the permission of the Education Departments at the targeted hospitals to distribute study questionnaire among their nursing staff. After the approval was obtained, the questionnaires were circulated among the nursing staff in coordination with the Education Department at each hospital. The cover page of the questionnaire presented a brief explanation about the purpose of study, assured confidentiality of provided information, and that participation is anonymous and voluntary. On average, 10 min were needed to fill in the questionnaire.

Data analysis

The SPSS statistical package was used for data analysis (IBM SPSS Statistics for Windows, Version 20.0, Released 2011, IBM Corp, Armonk, New York, USA). Descriptive statistics presented the demographic data of participants and frequency tables were generated to illustrate response of participants to questionnaire items.

The nonparametric Mann–Whitney Utest was used to examine the statistical significance among nurses’ groups in their attitudes toward oral care of hospitalized patients. The significance level was set at $P < 0.05$. To control for the potential confounding factors, a logistic model was created with the “attitude questions” as the outcome variables and “gender, nationality, qualification, clinical experience, and previous training on oral care” as predictors. Odd ratios (ORs) and their 95% confidence intervals (CIs) were calculated.

Results

Over the period of this investigation, 300 questionnaires were distributed among a convenience sample of nurses working in Riyadh city. Of these, 226 questionnaires were returned resulting in 75% response rate. The mean age of the participants was 31 years (standard deviation = 6.5) with a range between 22 and 57 years. The majority of respondents were female (65.9%) and non-Saudi (69.5%). Countries of non-Saudi nurses were Philippine, India, and Pakistan. Clinical experience of participants ranged between 1 and 30 years (mean = 7.45). Characteristics of the study sample are summarized in Table 1. Table 2

Table 1: Characteristics of participating medical nurses (n=226)

Variable	n (%)
Gender	
Female	149 (65.9)
Male	75 (33.2)
Missing	2 (0.9)
Nationality	
Saudi	55 (24.3)
Non-Saudi	157 (69.5)
Missing	14 (6.2)
Qualification	
Diploma in nursing	107 (47.3)
Bachelor in nursing	114 (50.4)
Master in nursing	2 (0.9)
Missing	3 (1.3)
Clinical experience (years)	
<7	97 (42.9)
≥7	96 (42.5)
Missing	33 (14.6)
Training regarding oral care	
Did not receive training	127 (56.2)
Received training	97 (42.9)
Missing	2 (0.9)

Table 2: Attitudes of participating nurses toward oral care of hospitalized patients (n=226)

Item	Strongly agree, n (%)	Agree, n (%)	Not sure, n (%)	Disagree, n (%)	Strongly disagree
Providing adequate oral hygiene is a valuable use of time in the patient’s care	158 (69.9)	63 (27.9)	0	4 (1.8)	1 (0.4)
All patients should have oral health assessment upon admission to hospital	108 (47.8)	99 (43.8)	1 (0.4)	16 (7.1)	2 (0.9)
Qualified trained nurses need to update their knowledge and skills on oral care of patients	113 (50)	92 (40.7)	8 (3.5)	7 (3.1)	4 (1.8)

shows that almost all participating nurses think that providing adequate oral hygiene is an important element of patient care (97.8%). 91.6% think that all patients should undergo oral health assessment on admission to hospital and 90.7% think that nurses need to update their oral care knowledge and skills. Table 3 illustrates the attitudes toward oral care of hospitalized patients according to nurses’ groups. Overall, the vast majority of participants in each group tend to respond positively.

Response of participants to questions related to the current practice regarding oral care of patients admitted to hospitals is illustrated in Table 4. It can be noted that almost half of nurses reported the presence of a policy for oral health assessment and oral care at their hospital unit. Furthermore, only 55.3% indicated that all patients are assessed for oral health at their units. Moreover, approximately 44% of the nurses replied negatively or were not sure about documentation of oral care procedures for hospitalized patients. Some respondents (19.5%) indicated that there are barriers at their current work place for the provision of oral care for patients. They listed “patient refusal, language, and shortage of staff” as barriers for oral care provision.

Almost 77% of participants reported that nurses are the ones who provide oral care for patients at their hospital units. 3% indicated that oral care is provided by patient’s relatives and 8% by the patient himself/herself.

Participants were asked about the daily frequency of providing oral care at their hospital units. Responses were as follow: 12.4% not at all, 24.3% once a day, 25.2% twice a day, 26.1% three times a day, and 10.6% ≥ more than three times a day.

About 19% of the nurses indicated the routine use of toothbrush as part of patient’s oral care at their hospital unit and 19% indicated use of mouthwashes.

A considerable proportion of participating nurses (56.2%) stated that they did not receive any training on the assessment and provision of oral care. However, 42.9% of the nurses received such training. About 31% of the participants reported that they undertook training on oral care as part of undergraduate nursing program. On the other hand, a few nurses (2%) indicated that

Table 3: Attitudes toward oral care of hospitalized patients according to nurses' groups (n=226)

Attitudes items	n (%)				
	Strongly agree	Agree	Not sure	Disagree	Strongly disagree
Providing adequate oral hygiene is a valuable use of time in the patient's care					
Gender					
Female	108 (72.5)	37 (24.8)	0	3 (2)	1 (0.7)
Male	50 (66.7)	24 (32)	0	1 (1.3)	0
Nationality*					
Saudi	30 (54.5)	24 (43.6)	0	1 (1.8)	0
Non-Saudi	116 (73.9)	37 (23.6)	0	3 (1.9)	1 (0.6)
Qualification					
Diploma in nursing	72 (67.3)	31 (29)	0	3 (28)	1 (0.9)
Bachelor/master in nursing	85 (73.3)	30 (25.9)	0	1 (0.9)	0
Clinical experience (years)					
<7	65 (67)	29 (29.9)	0	3 (3.1)	0
≥7	73 (76)	21 (21.9)	0	1 (1)	1 (1)
Previous training on oral care					
Did not receive training	84 (66.1)	39 (30.7)	0	3 (2.4)	1 (0.8)
Received training	73 (75.3)	23 (23.7)	0	1 (1)	0
All patients should have oral health assessment upon admission to hospital					
Gender					
Female	71 (47.7)	66 (44.3)	1 (0.7)	11 (7.4)	0
Male	36 (48)	32 (42.7)	0	5 (6.7)	2 (2.7)
Nationality					
Saudi	22 (40)	25 (45.5)	1 (1.8)	5 (9.1)	2 (3.6)
Non-Saudi	77 (49)	69 (43.9)	0	11 (7)	0
Qualification					
Diploma in nursing	51 (47.7)	43 (40.2)	1 (0.9)	10 (9.3)	2 (1.9)
Bachelor/master in nursing	56 (48.3)	54 (46.6)	0	6 (5.2)	0
Clinical experience* (years)					
<7	42 (43.3)	45 (46.4)	1 (1)	7 (7.2)	2 (2.1)
≥7	54 (56.2)	39 (40.6)	0	3 (3.1)	0
Previous training on oral care					
Did not receive training	57 (44.9)	56 (44.1)	1 (0.8)	11 (8.7)	2 (1.6)
Received training	51 (52.6)	41 (42.3)	0	5 (5.2)	0
Qualified trained nurses need to update their knowledge and skills on oral care of patients					
Gender					
Female	77 (52)	59 (39.9)	8 (5.4)	3 (2)	1 (0.7)
Male	36 (48)	33 (44)	0	3 (4)	3 (4)
Nationality					
Saudi	25 (45.5)	22 (40)	1 (1.8)	4 (7.3)	3 (5.5)
Non-Saudi	78 (50)	68 (43.6)	7 (4.5)	2 (1.3)	1 (0.6)
Qualification					
Diploma in nursing	56 (52.8)	39 (36.8)	5 (4.7)	6 (5.7)	0
Bachelor/master in nursing	56 (48.7)	52 (45.2)	3 (2.6)	0	4 (3.5)
Clinical experience (years)					
<7	44 (45.8)	44 (45.8)	5 (5.2)	0	3 (3.1)
≥7	54 (56.2)	36 (37.5)	3 (3.1)	2 (2.1)	1 (1)
Previous training on oral care					
Did not receive training	60 (48)	55 (44)	6 (4.8)	1 (0.8)	3 (2.4)
Received training	51 (52.6)	37 (38.1)	2 (2.1)	6 (6.2)	1 (1)

*Significant difference at $P < 0.05$ as indicated by Mann-Whitney U-test

they received training on oral care at their current job place. The desire to undergo training on oral care was apparent among a large proportion of participating nurses (44%).

The results of Mann-Whitney Utest indicated almost full agreement among nurses' groups in their attitudes toward oral care of hospitalized patients ($P > 0.05$). However, there was significantly more positive attitude

Table 4: Response of participating nurses to questions related to practices regarding oral care of patients at current workplace (n=226)

Item	Yes, n (%)	No, n (%)	Not sure, n (%)
Is there a policy for oral health assessment at your hospital/unit?	117 (51.8)	69 (30.5)	39 (17.3)
Is there a policy for oral health care at your hospital/unit?	104 (46)	74 (32.7)	40 (17.7)
Are all patients assessed for oral health in your department at your hospital/unit?	125 (55.3)	76 (33.6)	25 (11.1)
Do you think that mouth care in your hospital is always done as often as it should be?	140 (61.9)	49 (21.7)	34 (15.0)
Is there documentation for oral care at your hospital/unit?	122 (54.0)	57 (25.2)	42 (18.6)
Are there any barriers for the provision of oral care for the patients at your current workplace?	44 (19.5)	136 (60.2)	8 (3.5)

among non-Saudi nurses toward the provision of oral care for hospitalized patients ($P < 0.05$) [Table 3]. Furthermore, nurses with greater clinical experience showed more encouraging stand toward the idea that all patients should have oral health assessment upon admission to hospital ($P < 0.05$) [Table 3].

Logistic regression analysis revealed that possession of a previous training on oral care of hospitalized patients was the most important determinant of nurses' positive attitude toward provision of oral care for hospitalized patients. Gender, nationality, and previous training were the most important predictors of a constructive attitude toward the idea of assessment of oral health for all patients upon admission to hospital. The attitude of male nurses, non-Saudi nurses, and nurses with previous training was significantly more positive among the study population [Table 5].

Discussion

Oral care of hospitalized patients is an important preventive measure that aims to maintain and promote the health of oral and dental tissues. It also requires educating patients about the care of their mouths. Thus, it can be argued that oral care of hospitalized patients is a good example for the application of principles of comprehensive health care. These principles involve prevention and treatment of disease. As well, promoting the optimal health and educating patients to take part in their treatment process. In this context, the role of the nurse as a principle provider of oral care for hospitalized patients cannot be underestimated. Such practice should become a routine part of their daily nursing duties. However, nurses will not be able to deliver a quality oral care unless they are well-trained and educated in this respect. This should be coupled with building a positive attitude among nurses toward the importance of oral care for the welfare of hospitalized patients. Nevertheless, the current stand of nurses in Saudi Arabia regarding oral care of hospitalized patients is not yet clear. Alotaibi *et al.*^[19] surveyed Saudi Intensive Care Unit nurses to assess their knowledge and attitudes regarding oral care delivery to mechanically ventilated patients. Furthermore, the same authors evaluated the impact of oral care guidelines on delivery of oral care for those

patients.^[20] The current study can be considered the first to investigate the status, attitudes, and practice regarding oral care delivery for hospitalized patients among nurses working in Saudi Arabia.

The results of this study reveal a very positive attitude among the vast majority of the surveyed nurses toward the provision of oral care for hospitalized patients. Furthermore, most participants expressed a will to update their knowledge and improve their skills regarding oral health. These findings may reflect the huge efforts that have been paid to recruit committed nursing staff of high standard to work in Saudi hospitals. In recent years, there has been a trend among Saudi hospitals to spread the culture of standard care. Furthermore, hospitals have been encouraged by Saudi Ministry of Health to be enrolled in accreditation programs as a sign of quality health care.^[21] Such growing environment in Saudi hospitals may affected nursing staff and created this constructive attitude.

On the other hand, the results of this investigation indicate a problem on the level of current practice regarding oral care of hospitalized patients in Saudi hospitals. It can be noted, according to participants, that not all patients are subjected to oral health assessment. In addition, there is a lack of clear published policies in some hospitals about oral care of hospitalized patients. Moreover, there is a problem with documentation of oral care procedures coupled with barriers for the provision of adequate oral care for patients. Furthermore, the need to equip nurses in Saudi Arabia with effective training and continuous education on the level of oral care for hospitalized patients is evident as a majority of participating nurses indicated a deficiency in their training on oral assessment and provision of oral care. The aforesaid shortcomings need to be addressed in a further research to provide solutions and recommendations for improvements of oral care delivery for hospitalized patients in Saudi hospitals.

The results of regression analysis provided more insight on the attitudes of nurses in Saudi Arabia toward oral care of hospitalized patients. It can be concluded that female nurses, Saudi nurses, and nurses who never received training on oral care require more motivation

Table 5: Logistic regression results for the attitudes questions

Attitudes items	OR (95% CI)	P
Providing adequate oral hygiene is a valuable use of time in the patient's care		
Gender		
Female	Reference	0.41
Male	1.56 (0.54-4.53)	
Nationality		
Saudi	Reference	0.06
Non-Saudi	3.12 (0.96-10.1)	
Qualification		
Diploma in nursing	Reference	0.49
Bachelor/master in nursing	1.32 (0.6-2.9)	
Clinical experience (years)		
<7	Reference	0.15
≥7	1.96 (0.78-4.96)	
Previous training on oral care		
Did not receive training	Reference	
Received training	2.4 (1.09-5.26)	0.03*
All patients should have oral health assessment upon admission to hospital		
Gender		
Female	Reference	0.02*
Male	3.69 (1.24-10.97)	
Nationality		
Saudi	Reference	0.01*
NonSaudi	4.75 (1.38-16.34)	
Qualification		
Diploma in nursing	Reference	0.37
Bachelor/master in nursing	1.4 (0.67-2.89)	
Clinical experience (years)		
<7	Reference	0.53
≥7	1.3 (0.58-2.93)	
Previous training on oral care		
Did not receive training	Reference	0.03*
Received training	2.15 (1.06-4.37)	
Qualified trained nurses need to update their knowledge and skills on oral care of patients		
Gender		
Female	Reference	0.98
Male	0.99 (0.39-2.53)	
Nationality		
Saudi	Reference	0.51
Non-Saudi	1.44 (0.49-4.22)	
Qualification		
Diploma in nursing	Reference	0.87
Bachelor/master in nursing	0.94 (0.46-1.92)	
Clinical experience (years)		
<7	Reference	0.53
≥7	0.77 (0.34-1.72)	
Previous training on oral care		
Did not receive training	Reference	0.06
Received training	1.94 (0.98-3.83)	

*Significant difference at $P < 0.05$. CI: Confidence interval, OR: Odds ratio

to increase their awareness about the importance of oral care for hospitalized patients. Continuous education programs and training sessions at Saudi hospitals should

pay more attention to these groups of nurses if policies and guidelines about oral care of patients to be widely implemented.

It should be noted that the design of this survey was not made to explore the depth of knowledge and level of competency of nurses working in Saudi Arabia regarding oral care of hospitalized patients. Furthermore, the quality of oral care provision in Saudi hospitals cannot be assessed based on the structure of this survey. The aforementioned points could be topics for further research.

A limitation of this study is that the surveyed sample is a convenience sample and hence the findings are not necessarily generalizable to all nurses in Saudi Arabia. However, the recruited sample is quite large to reflect on the current attitudes and practices of nurses in Riyadh city regarding oral care of hospitalized patients. Furthermore, Riyadh city is the capital of Saudi Arabia. It provides a large bulk of medical services and yields a great support from the Saudi government to provide a quality medical care.^[18] Thus, it can be argued that the results of this study provide a rather important insight for Saudi health services planners about the views and practices of medical nursing staff regarding the delivery of oral care for hospitalized patients in Saudi Arabia. To obtain a full clearer picture, a future national survey is highly recommended.

Conclusions

The outcome of this study indicates a positive attitude among the surveyed nurses toward provision of oral care for hospitalized patients. Gender, nationality, and previous training were the most important predictors of a constructive attitude. Current oral care practice in Saudi hospitals is suboptimal. Saudi hospitals need to pay more efforts to train their nursing staff and issue clear policies and guidelines regarding oral care of hospitalized patients.

Acknowledgments

The authors wish to thank nurses who participated so willingly in this study.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

- Mazul AL, Taylor JM, Divaris K, Weissler MC, Brennan P, Anantharaman D, et al. Oral health and human papillomavirus-associated head and neck squamous cell carcinoma. *Cancer* 2017;123:71-80.

2. Hashim D, Sartori S, Brennan P, Curado MP, Wünsch-Filho V, Divaris K, et al. The role of oral hygiene in head and neck cancer: Results from international head and neck cancer epidemiology (INHANCE) consortium. *Ann Oncol* 2016;27:1619-25.
3. Huang J, Roosaar A, Axéll T, Ye W. A prospective cohort study on poor oral hygiene and pancreatic cancer risk. *Int J Cancer* 2016;138:340-7.
4. Saensom D, Merchant AT, Wara-Aswapati N, Ruaisungnoen W, Pitiphat W. Oral health and ventilator-associated pneumonia among critically ill patients: A prospective study. *Oral Dis* 2016;22:709-14.
5. Williams KA, Shamia H, De Baz C, Palomo L. Quality of life and poor oral health: A comparison of postmenopausal women. *Dent J* 2016;4:44.
6. Özveren, H, Özden D. Turkish nurses; attitudes and practices regarding oral care. *Int J Nurs Knowl* 2015;26:163-9.
7. Kerans R, Brewer A, Booth M. Oral hygiene practices in Scottish intensive care units-a national survey. *J Intensive Care Soc* 2009;10:155-8.
8. Gillam JL, Williams A, Gillam DG. Nursing staff and oral care awareness. *Int J Dent Oral Health* 2016;2. DOI: [dx.doi.org/10.16966/2378-7090.162](https://doi.org/10.16966/2378-7090.162).
9. Paryag A, Rafeek R, Lewis D. Knowledge, attitudes, beliefs and training of care givers and nursing staff in relation to oral care in institutions for older people in Trinidad. *Int J Dent Oral Health* 2016;2. DOI: [dx.doi.org/10.16966/2378-7090.207](https://doi.org/10.16966/2378-7090.207).
10. Sharif S, Saddki N, Yusoff A. Knowledge and attitude of medical nurses toward oral health and oral health care of pregnant women. *Malays J Med Sci* 2016;23:63-71.
11. Al Sharbatti S, Sadek M, Sreedharan J, Muttappallymyalil J. Nurses' knowledge of oral health among old people in Ajman, United Arab Emirates. *Asian J Gerontol Geriatr* 2014;9:27-32.
12. Pai RR, Ongole R. Nurses' knowledge and education about oral care of cancer patients undergoing chemotherapy and radiation therapy. *Indian J Palliat Care* 2015;21:225-30.
13. Rabiei S, Mohebbi SZ, Yazdani R, Virtanen JI. Primary care nurses' awareness of and willingness to perform children's oral health care. *BMC Oral Health* 2014;14:26.
14. Tranmer R, Boyd L, Johnson T, Howlett B, Bowen D, Peterson T. National survey of oncology members' knowledge, education and patient management regarding oral care in cancer therapy. *Health Interprof Pract* 2013;2:eP1049.
15. Chan EY, Hui-Ling Ng I. Oral care practices among critical care nurses in Singapore: A questionnaire survey. *Appl Nurs Res* 2012;25:197-204.
16. Ragotero IG, Balabagno AO, Rodriguez HM. Impact of oral health education program (OHEP) on competencies among nurses caring for totally dependent patients in two government tertiary hospitals in the Philippines. *Philipp J Health Res Dev* 2015;19:6.
17. de Lugt-Lustig KH, Vanobbergen JN, van der Putten GJ, De Visschere LM, Schols JM, de Baat C, et al. Effect of oral healthcare education on knowledge, attitude and skills of care home nurses: A systematic literature review. *Community Dent Oral Epidemiol* 2014;42:88-96.
18. Saudi Ministry of Health, Kingdom of Saudi Arabia. Statistical Year Book; 2016. Available from: <https://www.moh.gov.sa/en/Ministry/Statistics/Book/Pages/default.aspx>. [Last accessed on 2018 Aug 31].
19. Alotaibi AK, Alotaibi SK, Alshayiqi M, Ramalingam S. Knowledge and attitudes of Saudi intensive care unit nurses regarding oral care delivery to mechanically ventilated patients with the effect of healthcare quality accreditation. *Saudi J Anaesth* 2016;10:208-12.
20. Alotaibi AK, Alshayiqi M, Ramalingam S. Does the presence of oral care guidelines affect oral care delivery by intensive care unit nurses? A survey of Saudi intensive care unit nurses. *Am J Infect Control* 2014;42:921-2.
21. Alkhenizan A, Shaw C. Impact of accreditation on the quality of healthcare services: A systematic review of the literature. *Ann Saudi Med* 2011;31:407-16.