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Oral health care awareness among nursing students in an Indian school – an experimental study

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ABSTRACT

The aim of this study was to determine the impact of a course on oral health care awareness among third-year undergraduate nursing students. This experimental study included all the students from the third year nursing undergraduate course (n=42) during the academic year 2102 -13. The intervention for the study included lectures, videos & live demonstrations on models and patients for oral health care. The effectiveness of the 3hr course was ascertained with a pretest and posttest 30-item questionnaire. The groups did differ significantly at the post-test, yielding highly significant results ($p < 0.001$) indicating the improvement in the students' competency in oral health knowledge and skills after implementation of a course on oral health care. Oral Health Care Awareness amongst Nursing Students has a strong impact on improving the students' competency in oral health knowledge and skills. Introducing the teaching and training of the essential components of oral health care in a nursing school is a prerequisite for good practice.

Keywords: Oral health care; Nursing practice; Oral health assessment

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INTRODUCTION

Oral health is a fundamental component in the overall well-being and quality of life [1]. Emerging evidence has shown a strong link between the effects of chronic oral inflammation and general health. Periodontal disease has been linked to systemic disease; likewise, systemic disease can have an impact on oral health. In fact, there are over 100 systemic diseases that have oral manifestations, such as cardiovascular disease, stroke, respiratory infections, pancreatic cancer, diabetes, and nutritional problems. This is a bidirectional relationship and the link is inflammation [2]. Nevertheless oral hygiene is undervalued in terms of its effects on patient health and nutrition [3]. Effective oral care interventions must not only involve recognizing the importance of oral health, but giving oral hygiene the same priority as other care practices in long-term care settings [1]. With the notable exceptions of high-risk

patient groups, such as those receiving chemotherapy in neonatal and intensive care units, and in terminal care, few patients enjoy regular, formal, oral assessments and care. Nurse administered oral hygiene should not be reserved only for high-risk groups but ideally be provided to all patients, whether in hospital or in the community, as they can reveal signs and symptoms of oral disease, manifestations of systemic disease, drug side-effects, or trauma and provide important diagnostic clues [4].

Background

Significance of nursing oral health care

Nurses make up the largest portion of health care persons in the work force today. Nurses, nurse practitioners (NPs), and health educators are far more

likely to encounter underserved and vulnerable populations than dental professionals, particularly family health and community nurses. Increasing nurses' awareness and knowledge about oral health in general can increase nurses' knowledge and skills in oral health care [5].

Nurses have the ability to incorporate oral health risk assessments, screenings, application of fluoride varnish, and oral health education into infant, child, and adolescent health assessment and the school setting [6]. Oral health care for children, critically ill or otherwise, should be an integral part of hospital nursing care [7]. Nursing staff working with geriatric patients need to be better educated in oral health care and should be seen by themselves and others as part of a team, where oral health care is clearly defined and included among other daily nursing activities [8]. Oral health problems can have an adverse effect on the quality of life and are more prevalent in older adults, but are not caused by aging [9]. Elderly in long-term care facilities often depend on nursing personnel for carrying out daily oral hygiene procedures. Therefore, the nursing personnel's knowledge and attitudes toward oral health make oral health education for health care professionals an important concern. ICU nurses undeniably require rigorous research studies in order to inform their practice in the provision of oral hygiene for critically ill patients [10].

Importance of oral health education in nursing curricula

Although oral care is an essential component of quality nursing care, it appears to be given low priority by some nurses [11]. However, much of their knowledge in this important area has been provided during their undergraduate and postgraduate training period and regular updates may not occur [12]. There is a paucity of oral health education in nursing curricula. Study indicates the need for educational updates for qualified nurses, adequate supply of oral care equipment and promotion of formal assessment tools usage in the hospital setting [13].

While nurses make up the largest portion of the health care work force, educational preparation to address oral health needs of elders and persons with disabilities is limited across nursing curricula [5]. Most studies in nursing journals have focused on all aspects of the nursing curriculum and little is known specifically about undergraduates' perceived competence in oral health care management skills. Oral health promotion module can sensitize nurses to the importance of oral health and increase oral health knowledge and skills [13].

Schools of nursing should include oral health assessment in their curriculum to provide the students

with the information and skills needed in order to become partners in oral health upon graduation [6]. It is recommended that oral health be given greater attention in the nursing curriculum, with more clinical hands-on training in oral examination and diagnosis of oral diseases [14]. Study indicates that a limited, one-session, four-hour oral health education, offered to caregivers within long-term-care facilities had a positive impact on the oral health status of residents [6].

Indian Context

Numerous challenges exist for expanding oral health care in India. The biggest challenge is the need for dental health planners with relevant qualifications and training in public health dentistry. Dentistry faces serious problems regarding accessibility of its services to all. An increase in the number of dental auxiliaries should be another high priority. An oral health service based on primary health care approach requires a large number of dental auxiliaries rather than dentists [15].

Curriculum of basic B.Sc. Nursing undergraduate course in India as per nursing council guidelines is comprised of four years of training. The Nursing Council of India has no specific recommendations for teaching oral health care in the undergraduate curriculum.

Based on the clinical education literature and the resources available, the purpose of this article is to describe the implementation of a course on oral health awareness that was offered for the first time to third year, first-term nursing undergraduate students of the JSS Nursing School, Mysore during the academic year 2012-13 at JSS Dental College and Hospital, Mysore, India. Therefore the purpose of this article is to highlight the significance and importance of prioritizing the training of nursing students for oral health care and to describe the implementation of a course on oral health awareness to the second-year nursing undergraduate students.

Kern's six-step approach to curriculum development [16] guided the development of this course. The research question addressed in conjunction with this course development was: Do third year nursing undergraduate students who attended a course on oral health awareness demonstrate more effective oral health care skills?

METHOD

Training needs analysis

In planning the present course, it was necessary to begin by identifying the training needs of the student, though on anecdotal evidence, students had difficulty

organizing their nursing oral care interviews with patients and difficulties in accessing the patients' perceptions of their oral health care needs. A questionnaire survey was designed and distributed among nursing faculty in different dental specialties at our institution to determine their experiences of, and attitudes towards teaching and evaluating oral health care needs of the patients. The responses strongly supported the need for oral health care training for the nursing students.

Course participants

A cohort of 42 third year nursing students were solicited for the study as the third year nursing curriculum deals with developing proficiency in nursing management of patients. Informed consent was obtained from all the participants in the study. Attendance and participation in the course was mandatory for all students. Approval by the Institutional Review Board was obtained.

Course format

A 3 hour module that included lecture, video demonstration and chair side patient demonstration that included the knowledge and skills required for the routine oral health care needs of inpatients for all dental disciplines was included. The effectiveness of the course was ascertained with a pretest and posttest

30-item questionnaire with all the second-year nursing undergraduate students (n=42). The questionnaire was related to the content of the course and included twenty six close ended questions and four open ended questions. The questionnaire was piloted with ten of the nursing faculty of our institution before presenting it to the course students.

Data analysis

The data was analyzed for percentage differences in the scores on the 30 item questionnaire between the pretest and the post test scores for the groups before and after intervention. Frequencies and percentages were used for descriptive statistics. McNemar test was used for before and after intervention comparison.

RESULTS

The subjects in the study ranged in age from 21 to 22 years. The groups did differ significantly at the post-test with 24 out of 30 questions yielding highly significant results ($p < 0.001$). Differences between the pretest and posttest scores and for each item are summarized in Table 1 and Figure 1. Question no.30 was analyzed to find the percentage of students interested in further training in oral health care. 95% students intended to pursue further training at posttest as compared to 21% at the pretest.

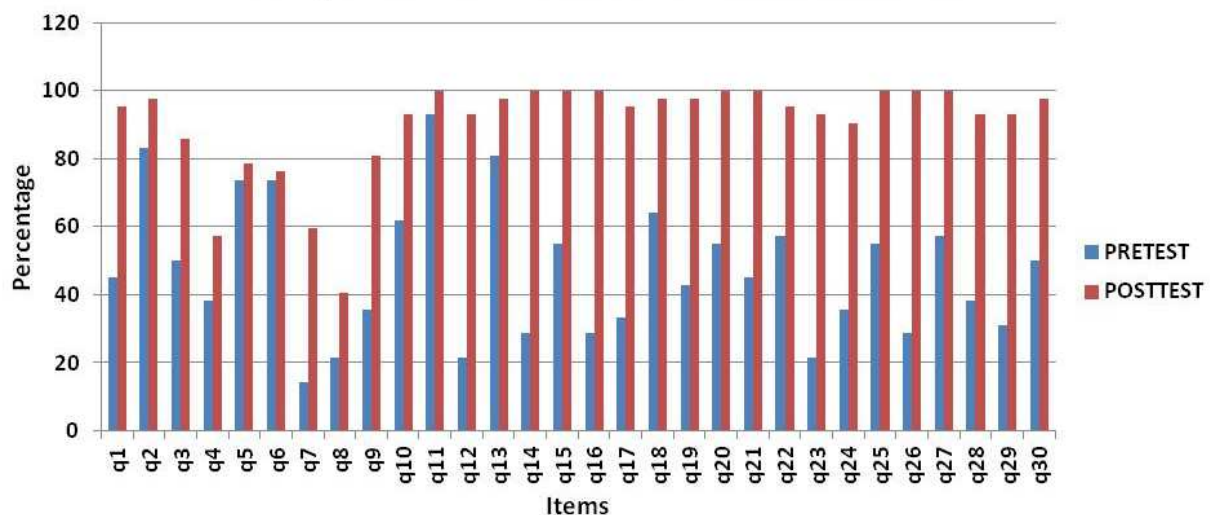


Figure 1. Comparison of the pretest and posttest scores for each item

Table 1. Differences between the pretest and posttest scores and for each item

Item	Pretest		Post test		p-value
	Correct Scores(%)	Incorrect Scores(%)	Correct Scores(%)	Incorrect scores(%)	
Oral care as daily nursing activities					
Q1 Regarding Oral health check on patients admission	19 (45.2)	23(54.8)	40 (95.2)	2 (4.8)	0.001**
Q2 Regarding Examination of patients mouth on admission	35 (83.3)	7 (16.7)	41 (97.6)	1 (2.4)	0.070 NS
Q3 Regarding Mouth care protocol	21 (50)	21(50)	36 (85.7)	6 (14.3)	0.001**
Q4 Regarding Ease in regular oral health care for ward patients	16 (38.1)	26 (61.9)	18 (57.1)	24 (42.9)	0.824 NS
Importance of detection of signs symptoms of oral disease and cavity prevention techniques					
Q5 Regarding Examination of oral cavity for Assessing oral health	31(73.8)	11(26.2)	33 (78.6)	9 (21.4)	0.804 NS
Q6 Regarding Signs for suspicion of oral disease	31 (73.8)	11 (26.2)	32 (76.2)	10 (23.8)	1.000 NS
Q7 Regarding Causes for plaque formation	6 (14.3)	36 (85.7)	25 (59.5)	17 (40.5)	0.001**
Q8 Regarding Causes for tooth decay/cavities of teeth	9 (21.4)	33 (78.6)	17 (40.5)	25 (59.5)	0.077 NS
Q9 Regarding Advise for patients about the risk factors for oral disease	15 (35.7)	27 (64.3)	34 (81.0)	8 (19.0)	0.001**
Q10 Regarding daily intake of sugar	26 (61.9)	16 (38.1)	39 (92.9)	3 (7.1)	0.004**
Q11 Regarding recommended times of brushing everyday	39 (92.9)	3 (7.1)	42 (100)	0 (00)	0.250 NS
Q12 Regarding recommended brushing technique	9 (21.4)	33 (78.6)	39 (92.9)	3 (7.1)	0.001**
Q13 Regarding replacement of toothbrush	34 (81.0)	8 (19.0)	41 (97.6)	1 (2.4)	0.016*
Vital aspects to provide children with the benefits of multidisciplinary health care by nurses					
Q14 Regarding Frequency of cleaning of gum pads	12 (28.6)	30 (71.4)	42 (100)	0 (00)	0.001**
Q15 Regarding Water feed after every night feed of infant	23 (54.8)	19 (45.2)	42 (100)	0 (00)	0.001**
Q16 Regarding Method of cleaning gum pads	12 (28.6)	30 (71.4)	42 (100)	0 (00)	0.001**
Q17 Regarding brushing with eruption of first teeth	14 (33.3)	28 (66.7)	40 (95.2)	2 (4.8)	0.001**
Q18 Regarding harmful effects of prolonged bottle feeding	27 (64.3)	15 (35.7)	41 (97.6)	1 (2.4)	0.001**
Q19 Regarding amount of toothpaste to be used by a child below 5 years	18 (42.9)	24 (57.1)	41 (97.6)	1 (2.4)	0.001**
Q20 Regarding topical fluoride application by the dentist to prevent dental decay	23 (54.8)	19 (45.2)	42 (100)	0 (00)	0.001**
Q21 Regarding filling for milk/primary teeth if tooth decay	19 (45.2)	23 (54.8)	42 (100)	0 (00)	0.001**
Q22 Regarding Root Canal Treatment (RCT) for abscessed primary or permanent teeth	24 (57.1)	18 (42.9)	40 (95.2)	2 (4.8)	0.001**
Q23 Regarding planning of clip treatment as early as 6 years	9 (21.4)	33 (78.6)	39 (92.9)	3 (7.1)	0.001**
Q24 Regarding staining of teeth due to consumption of certain drugs during pregnancy & childhood	15 (35.7)	27 (64.3)	38 (90.5)	4 (9.5)	0.001**
Factors associated with denture care to maintain oral hygiene					
Q25 Regarding rinsing and brushing with a soft brush to remove debris after every meal	23 (54.8)	19 (45.2)	42 (100.0)	0 (00)	0.001**
Q26 Regarding soaking of dentures in a denture cleaning solution at night	12 (28.6)	30 (71.4)	42 (100.0)	0 (00)	0.001**
Q27 Regarding rinsing and brushing of dentures under cold water before putting them back in the mouth	24 (57.1)	18 (42.9)	42(100.0)	0 (00)	0.001**
General information regarding dentistry and interest for further training					
Q28 Regarding number of specialities in dentistry	16 (38.1)	26 (61.9)	39 (92.9)	3 (7.1)	0.001**
Q29 Regarding specialities and service areas in dentistry	13 (31.0)	29 (69.0)	39 (92.9)	3 (7.1)	0.001**
Q30 Regarding further training with regards to oral health care at nursing school	21 (50.0)	21 (50.0)	41 (97.6)	1 (2.4)	0.001**

*-- SIGNIFICANT, **-- HIGHLY SIGNIFICANT, NS--NOT SIGNIFICANT

DISCUSSION

The responsibility of providing oral care in health care settings lies with all the health professionals involved in the patients' care. Nurses have a major role to provide the daily oral care of inpatients. Greater awareness among care givers can do a lot to provide the patients with good oral health care.

The results from this study show that the intervention did improve the nursing students' oral health care skills. The great majority of students rated the course as highly effective. These results are consistent with those from previous nursing studies that documented favorable evaluations of oral health care skills programs. The oral health care skills in the present course emphasized a skills-based approach, the use of realistic clinical scenarios and demonstrations with videos and patients.

Nursing staff working with patients need to be better educated in oral health care and should be seen by themselves and others as part of a team, where oral health care is clearly defined and included among other daily nursing activities [2]. This study emphasized the need of the ward to have a mouth care protocol.

Nurses need to specifically add inspection of the teeth and gingiva (gums) to their admission assessment, quickly looking for signs of poor oral hygiene, obvious decay, or infection [3]. Nursing areas that might need to be covered include cavity prevention techniques, such as brushing and limiting sugar in the diet; practicing routine oral health care practices regular dental visits; and oral injury prevention. This study emphasized the importance of detection of signs and symptoms of oral disease and cavity prevention techniques.

A proposed plan for hospitals, which can contribute to oral health improvement in children, includes three very basic components: assessment, oral care, and education. The AAPD recommends brushing twice daily with fluoridated toothpaste for all children. Using a "pea sized" amount of paste, the recommended size for children 2 to 5 years of age [7], contributes to the prevention of ingesting too much fluoride during enamel development and maturation. Fluorosis (excessive fluoride ingestion) can cause demineralization and discoloration of the teeth [7]. Young children unable to spit are likely to swallow toothpaste. The AAPD further recommends that only minimal rinsing, if any, be done after brushing to prolong the beneficial topical effect of fluoride. The third component of an oral health program should be education for the child and/or caregiver. If assessment reveals no problems with oral health care practices, the nurse should praise the child and caregiver for evidence of this positive health behavior. However, if deficits in oral health care are noted, the nurse should attend to the

need for oral health education. They should be familiar with dental development in children, causes of decay, assessing for common oral/dental health problems, providing preventive oral health education, and the general availability of community resources for dental care. Our study aimed at the knowledge and attitude for collaboration between nursing and dentistry that is vital to provide children with the benefits of multidisciplinary health care.

Old age directly or indirectly increases the risk of oral diseases and tooth loss, and added to this is the fact that older people are not getting adequate oral health care. Nursing staff working with geriatric patients need to be better educated in oral health care and should be seen by themselves and others as part of a team, where oral health care is clearly defined and included among other daily nursing activities [10]. There is significant increased risk of infection from poorly fitted dentures, which can chafe the gums and harbor debris [17]. Once-daily cleansing by toothbrush is effective for cleansing dentures using toothpaste. Soaking overnight or when not worn in commercial denture cleaners will help prevent infection [18]. Daily replacement of cleansing fluids is necessary to prevent contamination by bacteria such as *Pseudomonas*. Drying dentures before reinsertion helps to reduce yeast infections such as *Candida*. Therefore nurses should be aware of these risk factors associated with poor denture care and be able to help patients maintain oral hygiene. This study provided the nursing students knowledge and skills to effectively meet the oral care needs of the elderly along with the care for dentures

This study also sets out to establish the rationale for assessment in all contexts of patient oral care. ICU nurses undeniably require rigorous research studies in order to inform their practice in the provision of oral hygiene for critically ill patients.

The module utilized a variety of educational methods and materials such as lectures, videos & live demonstrations on models and patients to facilitate and encourage both individual and group learning. The evaluation and the experience of facilitating this module showed that an oral health promotion module of short duration can sensitize nurses to the importance of oral health and increase oral health knowledge and skills.

The pre and post-training cycle enabled the observers to evaluate the effect of the proposed dental educational research intervention on nursing students' observable oral health care management skills. The use of realistic clinically based scenarios introduced the students to the dynamics of the factors relevant to oral disease processes and their level of management by the nurses. Students gained confidence and expertise as the course

progressed, which helped make the transition to a clinical setting with real patients easier. 95% of students intended to pursue further training in oral health care at posttest as compared to 21% at the pretest.

When the aim is for students to learn, teaching has to be considered as a series of activities that stimulate, facilitate, and guide the learning process [19]. Inclusion of more dental topics in the nursing curriculum would further improve their oral health behavior and knowledge, so as to be a good model to patients and the community [20].

The limitation of this study was that it did not include a control group and we did not determine the relationship between patient satisfaction and students' skills score because patient feedback was not obtained. Also, multiple opportunities to observe practice with feedback may be required for students to retain the skills needed to manage the full scope of nursing oral care practice and the varied psychological, ethical and cultural issues.

To conclude, nursing care is provided for oral health needs of people with widely diverse health and sick care needs in multiple contexts worldwide. The knowledge and competence to meet such a wide variety of oral care needs may be daunting for the student unless trained. Implementation of a course on oral health awareness, in a limited resources setting did improve the competence of the nursing students. Introducing the teaching of the essential components of oral health care into the nursing curriculum is a prerequisite for good practice. Recognizing the importance of sensitizing nursing students to the need for oral health care management skills in a nursing curriculum is highly needed in Indian nursing schools.

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