

Research Article

## Knowledge, awareness and attitude of oral health and root canal treatment among medical professionals

Ankita Chugh<sup>1</sup>, Radhika Rastogi<sup>2</sup>, Ashish Choudhary<sup>1</sup>, Surjit Singh<sup>3</sup>, Vinay Kumar Chugh<sup>1</sup>, Arun Kumar Patnana<sup>1</sup>

Departments of <sup>1</sup>Dentistry and <sup>3</sup>Pharmacology, All India Institute of Medical Sciences, Jodhpur, Rajasthan, <sup>2</sup>Department of Dentistry, One Smile Dental Care, Lucknow, Uttar Pradesh, India.



**\*Corresponding author:**  
Dr. Arun Kumar Patnana,  
Senior Resident, Department of  
Dentistry, All India Institute of  
Medical Sciences,  
Jodhpur - 342 005,  
Rajasthan, India.  
[arun0550@gmail.com](mailto:arun0550@gmail.com)

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### ABSTRACT

**Background:** Oral health is also considered as an integral part of the overall health of individuals where it acts as a mirror of the body and general health. Medical professionals have an early opportunity to diagnose the signs of oral disorders and can help dental professionals for timely intervention.

**Materials and Methodology:** After taking an informed consent, a standard questionnaire was asked to be filled by a total of three hundred and twenty seven participants (Doctors, Medical and Nursing students). Analyses were done with regard to knowledge, practice and awareness of oral dental health of the participants. The data was analyzed using chi-square test for categorical data.

**Results:** Regarding the knowledge of oral health, 92% of the participants were aware that brushing prevents tooth decay and periodontal diseases. Regarding the attitude towards oral health, 81% of the participants were aware that dental check-up is necessary during pregnancy. Regarding awareness about oral health, 83% knew that oral and general health were related. Regarding root canal treatment, only 57-73% participants correctly responded to the given questionnaire. However, a statistically significant difference was observed between medical and nursing professionals regarding knowledge pertaining to oral health and root canal treatment. The oral health knowledge, attitude and awareness was limited to very few areas like importance of brushing, the importance of maintaining oral health during pregnancy and relation of oral and general health. However, knowledge about preserving the grossly decayed tooth by root canal treatment and its success was very limited in medical professionals.

**Conclusion:** Medical professionals have better knowledge, awareness and attitude about oral health than nursing students and faculty.

**Keywords:** Oral health education, Oral health knowledge, Dental education, Medical education

### INTRODUCTION

Oral health is defined as the status of oral cavity that is free of diseases, esthetically competent and maintaining normal masticatory functioning of the individual.<sup>[1]</sup> The Federation Dentaire Internationale (FDI) redefined oral health as multifaceted to include the ability to speak, smile, smell, taste, touch, chew, swallow, and convey a range of emotions through facial expressions with confidence and without pain, discomfort, and disease of the craniofacial complex.<sup>[2]</sup> Oral health is also considered as an integral part of the general health where it acts as a mirror to the body and general health.<sup>[3]</sup> It was also reported that oral cavity acts as a screening aid and helps

in diagnosing multiple systemic abnormalities.<sup>[4]</sup> The oral cavity shows early signs of many systemic conditions which may not be observed in the body, and thus, it acts as a pro-inflammatory condition to different systemic diseases.<sup>[5]</sup> In a similar way, the systemic diseases might also be responsible for initiating and developing the signs and symptoms in the oral cavity as well.<sup>[6]</sup>

Although the oral cavity was an important part of general health, it was always the most neglected area for the people.<sup>[7]</sup> Oral diseases such as the periodontitis and dental caries are still considered as most commonly observed oral diseases that affect the overall health of the individuals.<sup>[8]</sup> Considering the importance of oral health in maintaining good overall health, there is a need of combined efforts from dentists and clinicians to improve people's health. Indeed, the etiologic and pathologic aspects of dental diseases needs to be incorporated as a part of curriculum in the medical education as well.<sup>[9]</sup>

In addition, this knowledge and insight into oral preventive practices will have a very high impact in delivering good oral practices for the patients by dental professionals.<sup>[10]</sup> Similarly, incorporating knowledge of dental care and preventive measures in the medical professionals would make a huge impact in maintaining good overall health of the individuals.<sup>[11]</sup> Coalition of Professions also states that public health outcomes would be better served by better understanding between the various branches of health sciences.<sup>[12]</sup>

Medical professionals are best positioned to spot the first signs of oral disorders and timely referral to dental professionals could help with treatment of dental diseases in the early stages itself. In such a process, the United Nations Political Declaration in 2011 recognized the importance of oral health in maintaining overall general health.<sup>[13]</sup> However, early reports have mentioned that medical professionals lack awareness of oral diseases and also the interrelationship between oral health and poor general health.<sup>[14,15]</sup>

Although numerous studies were conducted in the Indian subcontinent to know about the oral health status of medical and paramedical professionals, no studies have been conducted towards evaluating the knowledge and awareness in medical and nursing students regarding the treatment of the most common disorder (dental caries) of the oral cavity. The aim of the present study was to evaluate the knowledge, awareness, and attitude towards oral health and root canal treatment among doctors, nurses, medical, and nursing students in a tertiary care hospital.

## MATERIALS AND METHODS

A cross-sectional study was conducted in the Department of Dentistry at AIIMS, Jodhpur, in accordance with ICH-GCP and ICMR guidelines after getting approval from the Institute Ethics Committee. A total of 327 participants including the

doctors, medical, and nursing students were included in the present study. After explaining the study design, written consent was taken from each participant. Participation was entirely voluntary in nature and participants who were not willing to get involved in the study were excluded from the study. A standard questionnaire in paper form including the questions relating to knowledge, attitude, and awareness about the oral health and root canal treatment [Tables 1-3] was given to the doctors, medical, and nursing students in all clinical and non-clinical departments. Responses to the questions were recorded followed by their detailed analysis. Confidentiality and anonymity of the participants was assured as no personal information was recorded in the questionnaire.

## Statistical analysis

The responses to the questionnaire were analyzed using Chi-square test.  $P < 0.05$  was considered statistically significant. Data analysis was done using the SPSS version 21 (IBM Armonk, NY: IBM Corp).

## RESULTS

The responses with regard to knowledge of oral health among medical and nursing professional are shown in

**Table 1:** Questionnaire regarding the knowledge of oral health.

Questions	Knowledge of oral health	
	Yes	No
1. Brushing teeth daily prevents		
a. Oral cancer		
b. Oral ulcer		
c. Tooth decay and periodontal disease		
d. Proclination of teeth		
2. Important factors causing tooth decay		
a. Brushing once daily		
b. Using tooth powder		
c. Sugar-contained foods consumed per day		
d. Smoking		
e. Carbonated drinks		
3. Factors causing loss of tooth structure		
a. Vigorously toothbrushing		
b. Gastroesophageal reflux disorder/hiatal hernia		
c. Oral prophylaxis/scaling		
d. Alcohol		
4. Factors responsible for gingival/periodontal disease		
a. Dental caries		
b. Plaque and calculus		
c. Teeth with fractured restoration		
d. Inflammation of the tongue		
5. What is root canal treatment?		
a. Removal of teeth		
b. Is filling of teeth		
c. Is removal of the nerves and vessels of the tooth		

**Table 2: Questionnaire regarding the attitude of oral health.**

Attitude of oral health		
Questions	Yes	No
1. What should be the frequency of brushing?		
a. Once daily		
b. Twice daily		
c. After every meal		
2. Rinsing with mouthwash can substitute brushing?		
3. In how much duration should you visit the dentist?		
a. At least once in 6 months		
b. Once in 2 months		
c. Only if in pain		
d. Once in every 2–5 years		
4. When the tooth is aching and you visit the dentist, you would prefer?		
a. A root canal treatment		
b. An extraction		
c. Extraction and dental implant		
5. Have you had any root canal treatment done before?		
a. 1		
b. 2		
c. 3		
6. Would you recommend your friend to undergo a root canal treatment?		
7. Do you think root canal treatment is successful procedure?		
8. Do you think the price you were charged for root canal was worth it?		
Had free treatment		
9. Do dental treatments improve quality of life?		
10. Do pregnant women need dental check-up?		

Figure 1. Around 92% of the participants have correctly responded that brushing prevents tooth decay and only 57% have responded correctly regarding root canal treatment. The responses with regard to attitude of oral health among medical and nursing professional are shown in Figure 2. Around 81% of the participants have correctly responded regarding the relation between oral health and overall quality of life and the importance of maintaining oral health during pregnancy. However, only 56% of the participants knew that root canal treatment prevents toothache. Responses with regard to awareness of oral health among medical and nursing professional are shown in Figure 3. About 83% of the participants have responded that oral health and general health are related and only 56% have responded correctly regarding indications for root canal treatment.

The comparison of the knowledge of oral health between medical and nursing professionals is shown in Figure 4. A statistically significant difference was observed between medical and nursing professionals regarding questions like factors causing tooth decay, factors causing tooth surface

**Table 3: Questionnaire regarding the awareness of dental health.**

Awareness of dental health		
Questions	Yes	No
1. What are dental caries?		
a. Bacterial process		
b. Small worms stick on the teeth		
c. Deposits and stains on teeth		
2. When is root canal treatment done?		
a. Every time the tooth pains		
b. When the tooth has cavity		
c. When the pulp of the tooth is infected		
d. Trauma to the teeth leading to pulp exposure		
3. Can a tooth with large cavity be saved by root canal treatment?		
4. Is crown required after root canal treatment of posterior teeth?		
5. Is there any relationship between oral and general health?		
6. Which system is commonly affected resulting in oral manifestations?		
a. Gastrointestinal		
b. Respiratory		
c. Cardiovascular		
d. Renal		

loss, factors responsible for gingival and periodontal diseases, and the process of root canal treatment with  $P$  values of 0.003, 0.012, <0.001, and <0.001, respectively. However, no significant difference was observed regarding knowledge of brushing and prevention of tooth decay between medical and nursing professionals ( $P = 0.245$ ). Regarding knowledge, attitude, and awareness of root canal treatment, only one question regarding the success of root canal treatment was accurately answered by 74% of the participants. All other questions regarding the etiology, indications, and process of root canal treatment were correctly answered by 57–62% of the participants only.

The comparison of the attitude of oral health between medical and nursing professionals is shown in Figure 5. Except for questions regarding the brushing frequency ( $P = 0.002$ ), no statistically significant difference was observed between medical and nursing professionals regarding other questions in the section dealing with attitudes towards oral health [Figure 5]. The comparison of the awareness of oral health between medical and nursing professionals is shown in Figure 6. A statistically significant difference was observed between medical and nursing professionals regarding questions such as etiology of caries and indication of root canal treatment with  $P$  values of <0.001 and 0.043, respectively. No statistically significant difference was observed between medical and nursing professionals regarding other questions in the awareness of oral health category [Figure 6].

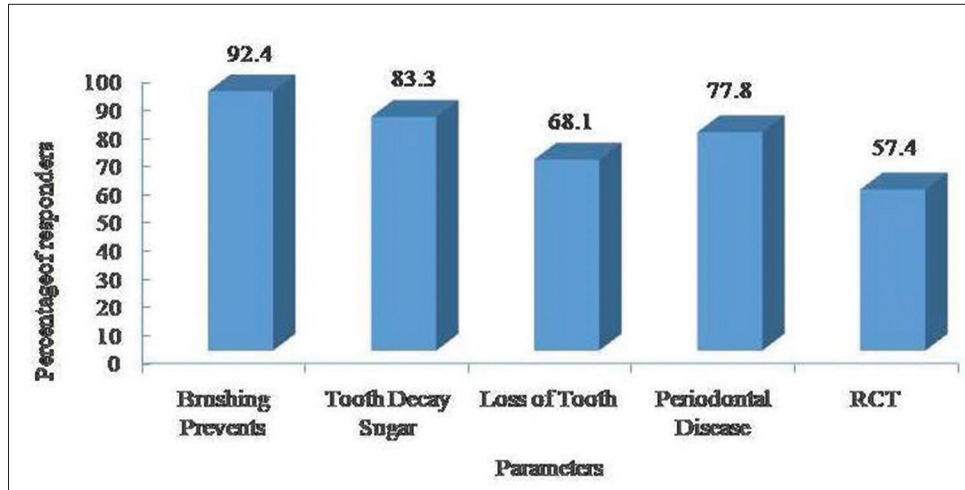


Figure 1: Knowledge among undergraduate and postgraduate doctors and nurses with regard to oral dental health.

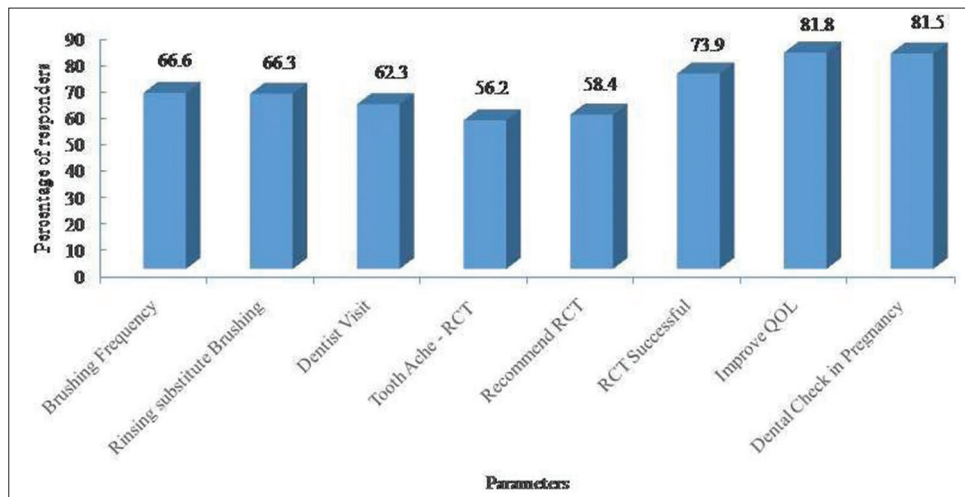


Figure 2: Attitude among doctors with regard to oral dental health.

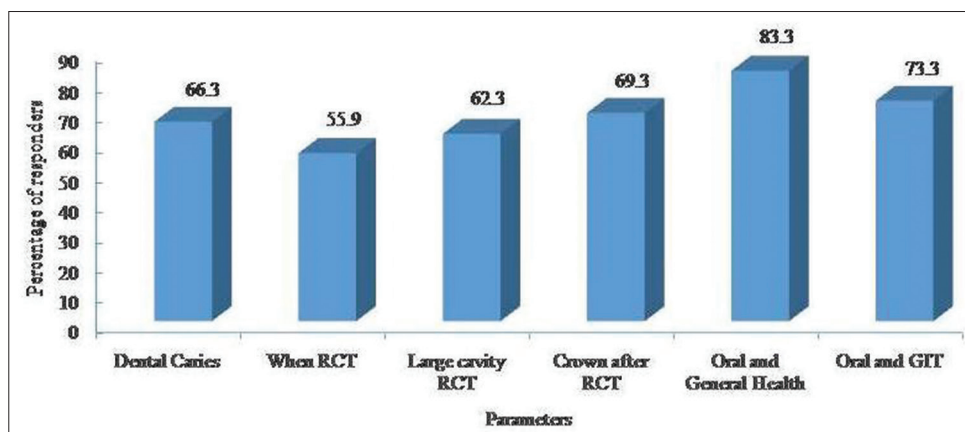


Figure 3: Awareness among doctors with regard to oral dental health.

## DISCUSSION

Prevention is better than cure always, but early detection of oral diseases at least makes them more amenable to

treatment and allows the greatest chance of cure. Poor oral conditions may adversely affect general health and certain medical conditions may have a negative impact on oral health.<sup>[7]</sup> Many systemic diseases such as diabetes mellitus,



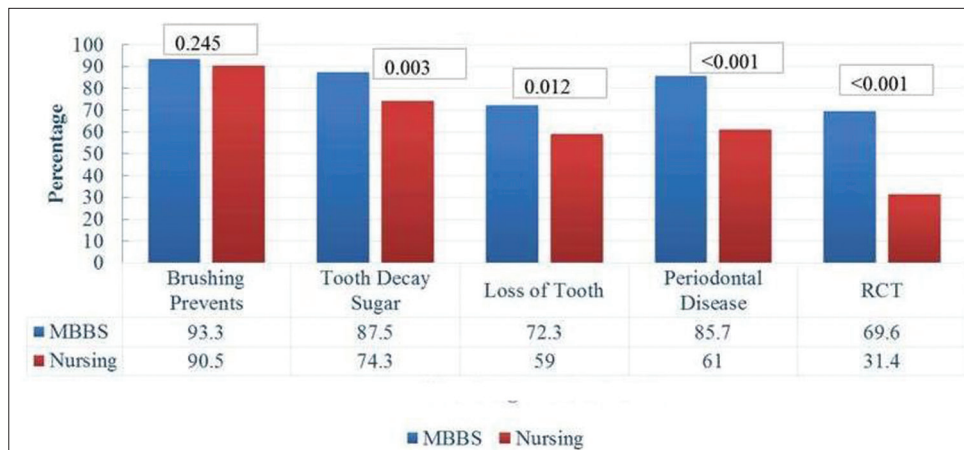


Figure 4: Comparison of doctors and nursing students with regard to knowledge of oral dental health.

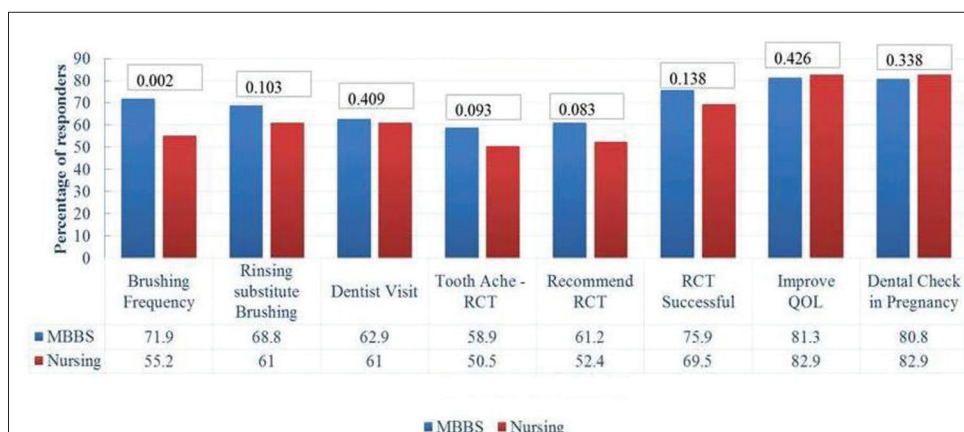


Figure 5: Comparison of doctors and nursing students with regard to awareness of oral dental health.

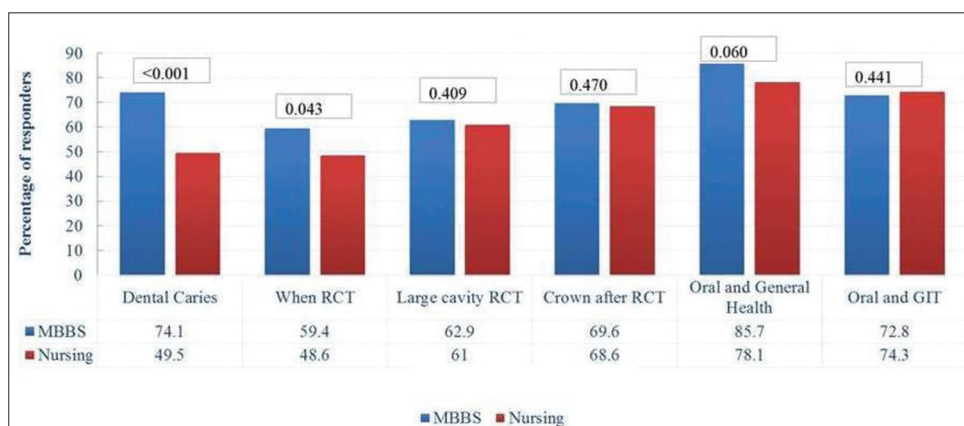


Figure 6: Comparison of doctors and nursing students with regard to attitude of oral dental health.

COPD, cardiovascular diseases, and endocarditis can be linked to poor oral health. Mouth lesions may be the first signs of HIV infection, pale, and bleeding gums can be a marker for blood disorders, bone loss in the lower jaw can be an early indicator of skeletal osteoporosis or oral aphthous ulcers can be an initial presentation of celiac

disease or Crohn's disease. The relationship between oral and general health practices was increased in the past two decades.

In this era of super specializations, integrated treatment approach and cross-referrals, a lack in general medical practitioners knowledge of oral disease can be

detrimental as good oral health is now well established as fundamental requisite for overall quality of life. Adequate understanding is required between medical and dental health professionals to ensure qualitative healthcare delivery in day-to-day practice. Medical doctors are the primary caregivers, especially in rural or far off areas for the vast majority of health-related complaints and so they are also expected to play active roles in oral health promotion.

With the advances in dental treatment and shift toward conservation of tooth over removal, RCT is the most commonly sought and done dental OPD procedure. This study aimed to evaluate the knowledge and awareness of all levels of medical and nursing professionals including students, residents, and faculty of an institute of national repute about oral health and root canal treatment. This is especially important when the department of dentistry is actively involved in rendering patient care and promoting awareness and prevention related to oral diseases.

In terms of the prevention of dental caries, more than 83% of medical and allied professionals were aware that sugar-containing foods enhance decay while brushing properly prevents decay. However, only 68% were aware that too hard or vigorous brushing itself can lead to loss of tooth structure and hence lead to pain. Around 30% of them had notion that brushing prevents oral cancer while 36% believed that brushing cannot prevent oral cancer. Almost half of them reported that brushing prevents oral ulcers. Only one-fourth of them knew that brushing cannot prevent proclination of teeth and that the two are not related. While 6% of them knew that brushing at least two times a day is required for caries prevention, 30% of them were not aware of the brushing frequency and timing of brushing in a day. More than half were aware that caries is a bacterial process. Relationship between gastrointestinal system and oral health has been reported by majority while only one-third of them were aware that cardiovascular diseases and oral health are interrelated.

However, if we compare medical and nursing professionals, there is a statistically significant difference between their knowledge of dental diseases such as cause of caries, what is periodontal disease, or what is RCT. They were less aware that even vigorous or excessive brushing can be detrimental. This is largely due to little or no exposure to dental education during the nursing course unlike MBBS curriculum which has at least few postings in dental OPD during their training. However, in terms of awareness and practices related to oral health, there was no significant difference between medical and nursing professionals. Therefore, inclusion of dental education into the medical and nursing curriculum will go a long way in improving dental knowledge and skills among medical practitioners as suggested by many studies.<sup>[16,17]</sup> This

is of importance in developing countries like ours where nurses are still the first responders at primary health centers or in peripheral villages.

A similar study conducted on medical practitioners in Kanpur revealed that medical practitioners had good knowledge of dentistry where 91% had said that the most important factor resulting in dental caries is the consumption of sugar contained foods.<sup>[16]</sup> The present study results regarding the prompt response regarding dental caries and consumption of sugar-containing foods was in accordance with another study by Srinidhi *et al.*, where 90% of medical professionals identified that the sugar-contained food acts as the major etiologic factor for tooth decay.<sup>[17]</sup>

Similar to the present study, Sujatha *et al.*<sup>[18]</sup> showed that only 25% of the medical students had good oral health awareness. As the students are in training during their course, there will be compromised responses regarding oral health awareness. Despite the increased oral health campaign in the community at large, it appears that there has not been much of a positive change in attitude and knowledge of people toward dentistry. It was also observed that only 38% of the participants had ever visited dentist for dental treatment, which is similar to the reports of Bashiru *et al.*,<sup>[19]</sup> who noted that 72% of undergraduate students in Southern Nigeria had never visited a dentist before. This could be due to lack of awareness and emphasis on oral health as such which is a usual pattern in developing nations.

#### Limitations and future directions

Although every effort was taken to conduct an ideal cross-sectional trial, inclusion of more participants thus increasing the sample size would have given more accurate and decisive results. The future trials were recommended evaluating the knowledge, attitude, and awareness of oral health before and after conducting educational programs for medical and nursing professionals.

#### CONCLUSION

The medical and nursing professionals failed to answer accurately a majority of the questionnaire regarding oral health and root canal treatment. The medical professionals have better knowledge and awareness regarding oral health and root canal treatment than nursing professionals. The inclusion of oral health awareness programs in the study curriculum of medical and nursing students would improve the quality of dental health in medical and nursing professionals.

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## Conflicts of interest

There are no conflicts of interest.

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