



**Assessment of Awareness Among Medical Students Regarding Effective Oral Hygiene Based on WHO Guidelines:**

**A Cross-Sectional Study**

<sup>1</sup>Dr. Rupali Saroshe, Resident, Department of Periodontology, Government College of Dentistry, Indore

<sup>2</sup>Dr. Satish Saroshe, Associate Professor, Department of Community Medicine, MGM Medical College, Indore

<sup>3</sup>Dr. Deepankar Mathur, Resident, Department of Community Medicine, MGM Medical College, Indore

<sup>4</sup>Dr. Vijay Khare, Resident, Department of Community Medicine, MGM Medical College, Indore

**Corresponding Author:** Dr. Deepankar Mathur, Resident, Department of Community Medicine, MGM Medical College, Indore

**How to citation this article:** Dr. Rupali Saroshe, Dr. Satish Saroshe, Dr. Deepankar Mathur, Dr. Vijay Khare, “Assessment of Awareness Among Medical Students Regarding Effective Oral Hygiene Based on WHO Guidelines: A Cross-Sectional Study”, IJMACR- September - 2024, Volume – 7, Issue - 5, P. No. 01 – 08.

**Open Access Article:** © 2024, Dr. Deepankar Mathur, et al. This is an open access journal and article distributed under the terms of the creative common’s attribution license (<http://creativecommons.org/licenses/by/4.0>). 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.

**Type of Publication:** Original Research Article

**Conflicts of Interest:** Nil

**Abstract**

**Introduction:** The World Health Organization (WHO) provides comprehensive guidelines on effective oral hygiene practices, emphasizing the significance of proper brushing techniques and regular dental care. Medical students, as future practitioners, are expected to have a thorough understanding of health practices, including oral hygiene, which is essential for both their personal health and their ability to educate others. This study aims to assess the level of awareness among medical students regarding effective oral hygiene practices based on WHO guidelines.

**Methodology**

**Study Design Type:** Cross-sectional study

**Setting:** M.G.M Medical College, Indore,

**Participants Population:** Medical students of M.G.M Medical College

**Sampling Method:** Simple random sampling

**Sample Size:** 400 students

**Results:** Most students correctly identified the recommended brushing frequency and duration, but only 66% use fluoride toothpaste.

A considerable percentage (60%) of students were aware of using a tongue scraper, yet a significant portion still used less effective methods.

Despite a positive attitude towards oral hygiene, with 94% recognizing its importance, only 55% of students adhered to a complete brushing routine.

**Conclusions:** While medical students generally have a strong foundation of knowledge regarding basic oral hygiene practices, there are critical gaps in specific

techniques and adherence. Addressing these gaps through enhanced education and targeted interventions can better prepare future healthcare professionals to advocate for and practice effective oral hygiene, ultimately benefiting public health outcomes

**Keywords:** Awareness, Oral Hygiene, WHO Guidelines

## Introduction

World Health Organization has defined Oral Health as Oral health is the state of the mouth, teeth and orofacial structures that enables individuals to perform essential functions such as eating, breathing, and speaking, and encompasses psychosocial dimensions such as self-confidence, well-being, and the ability to socialize and work without pain, discomfort and embarrassment. [1] Oral hygiene is a crucial component of not only oral health but overall health, influencing not only dental and periodontal conditions but also broader systemic health outcomes[2]. Despite its importance, adherence to effective oral hygiene practices often varies, even among healthcare professionals[3]. Medical students, as future practitioners, are expected to have a thorough understanding of health practices, including oral hygiene, which is essential for both their personal health and their ability to educate others.

The World Health Organization (WHO) provides comprehensive guidelines on effective oral hygiene practices, emphasizing the significance of proper brushing techniques and regular dental care[4]. These guidelines recommend brushing teeth twice daily for two minutes, using fluoride toothpaste, and employing specific brushing techniques to ensure thorough cleaning[4]. However, there is a notable concern that even among medical students, there may be gaps in awareness and adherence to these established guidelines[3].

This study aims to assess the level of awareness among medical students regarding effective oral hygiene practices based on WHO guidelines. By evaluating their knowledge of proper brushing techniques, identifying factors influencing their adherence to these practices, and examining differences based on demographic and educational variables, this research seeks to provide a clearer picture of the current state of oral hygiene awareness in this crucial population. Understanding these aspects will help identify areas for improvement and inform the development of targeted educational interventions[5]. Such interventions could enhance the knowledge base and practices of future healthcare professionals, ultimately contributing to better oral health outcomes in the community[10].

## Methodology

### 1. Study Design

- **Type:** Cross-sectional study
- **Setting:** M.G.M Medical College, Indore

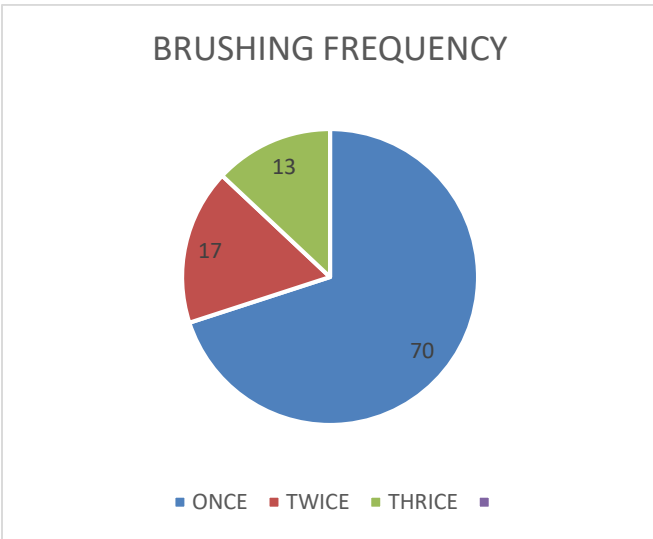
### 2. Participants

- **Population:** Medical students of M.G.M Medical College.
- **Sampling Method:** Simple random sampling
- **Sample Size:** 400 students

## Observations

1. How many times a day should you brush your teeth according to WHO guidelines?

S. No.	Frequency	Percentage
1.	Once	17%
2.	Twice	70%
3.	Thrice	13%

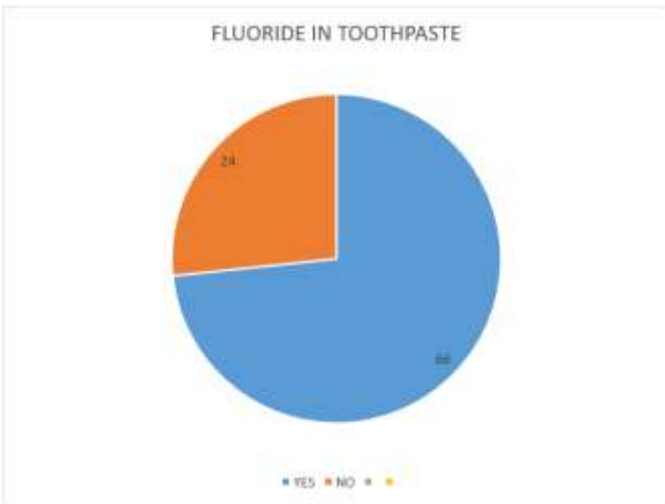


2. What is the recommended duration for brushing your teeth?

S.No.	Frequency	Percentage
1.	30 Seconds	12%
2.	1 Minute	18%
3.	2 Minutes	70%

3. Should fluoride be used in toothpaste?

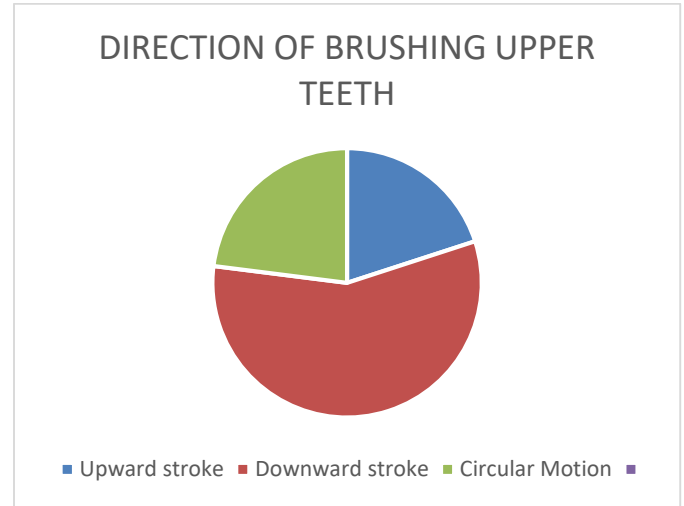
S.No.	Fluoride	Percentage
1.	Yes	66%
2.	No	24%



### Specific Brushing Techniques

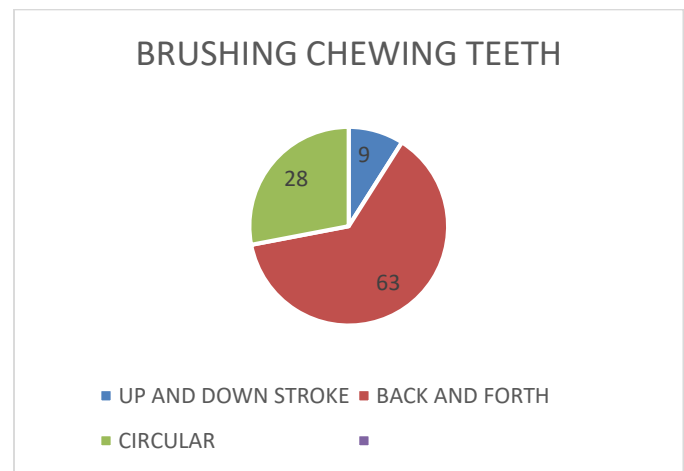
1. Which direction should you brush the upper teeth according to effective oral hygiene guidelines?

S.No.	Direction	Percentage
1.	Upward Strokes	20%
2.	Downward Strokes	57%
3.	Circular Motions	23%



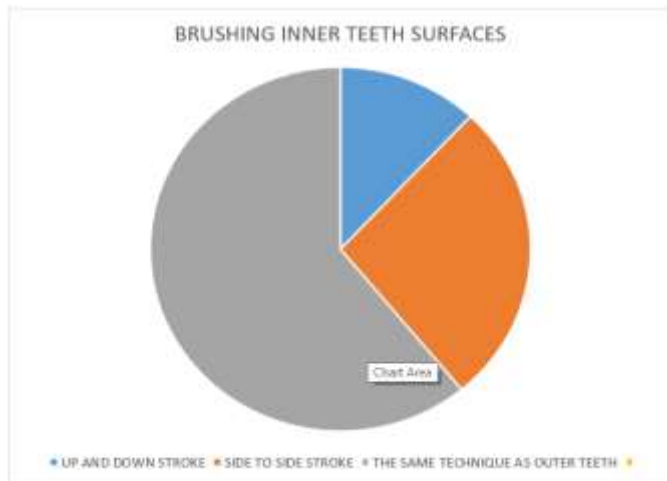
2. How should you brush the chewing surfaces of your teeth?

S.No.	Direction	Percentage
1.	Up-And-Down Strokes	9%
2.	Back-And-Forth Strokes	63%
3.	Circular Motions	28%



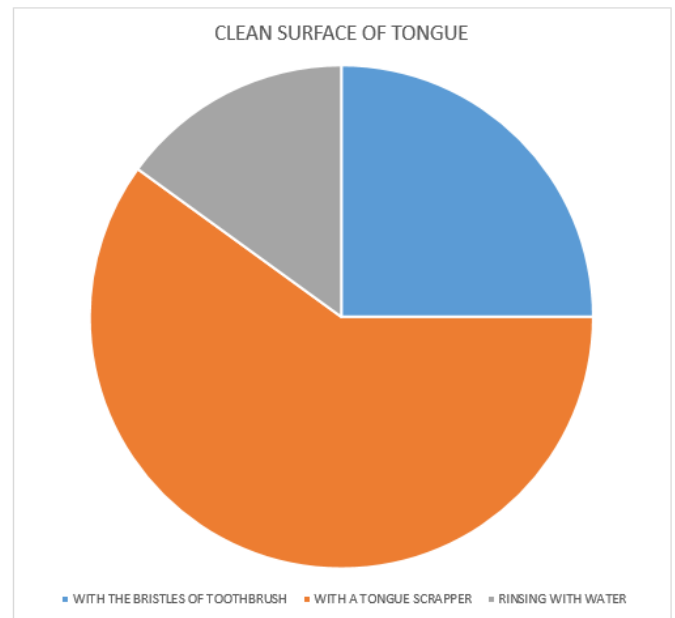
3. What is the recommended brushing technique for the inner surfaces of teeth?

S.No.	Direction	Percentage
1.	Up-and-down strokes	12%
2.	Side-to-side strokes	27%
3.	The same technique as outer surfaces	61%



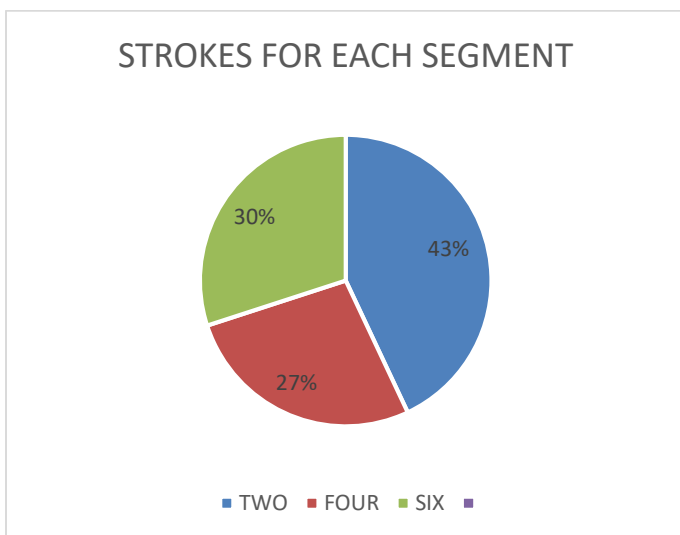
5. How should you clean the surface of your tongue?

S.No.	Cleaning of Tongue	Percentage
1.	With the bristles of the toothbrush	25%
2.	With a tongue scraper	60%
3.	Rinsing with water	15%



4. How many strokes should you use for each segment of your teeth?

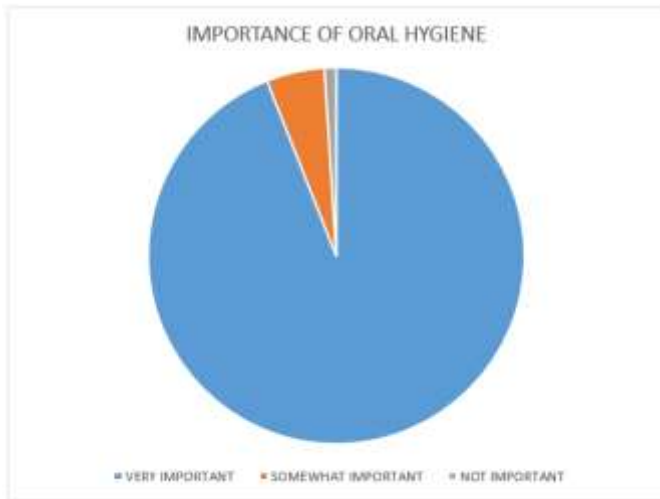
S. No.	Frequency	Percentage
1.	Two strokes	43%
2.	Four strokes	27%
3.	Six strokes	30%



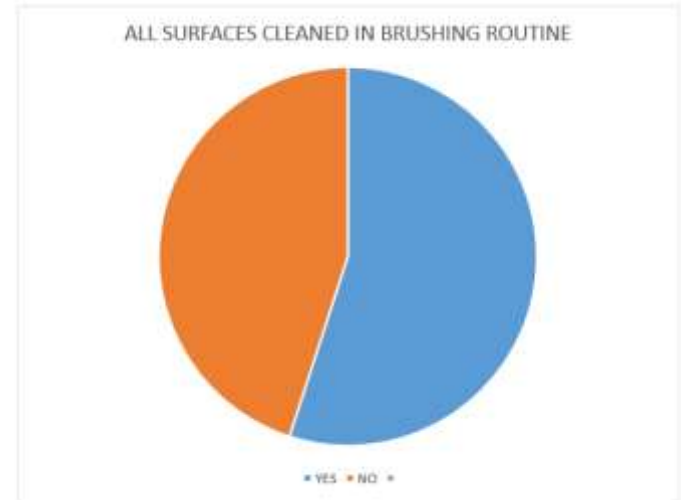
**Attitudes and Beliefs**

1. How important do you think oral hygiene is for overall health?

S.No.	Importance of Oral Hygiene	Percentage
1.	Very Important	94%
2.	Somewhat Important	5%
3.	Not Important	1%



S.No.	All Surfaces Included	Percentage
1.	Yes	55%
2.	No	45%



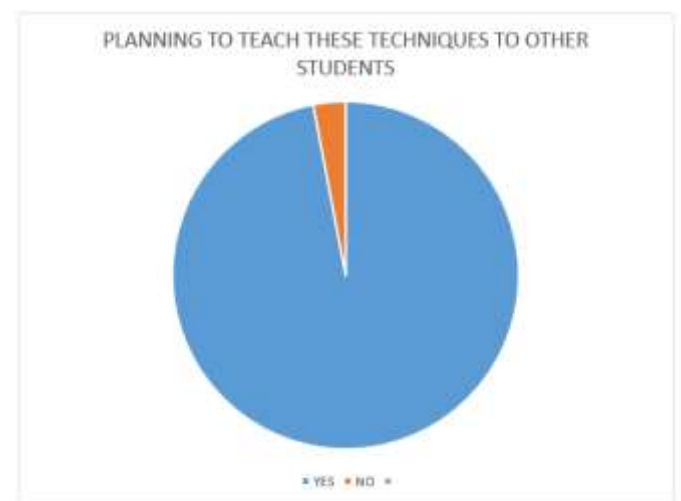
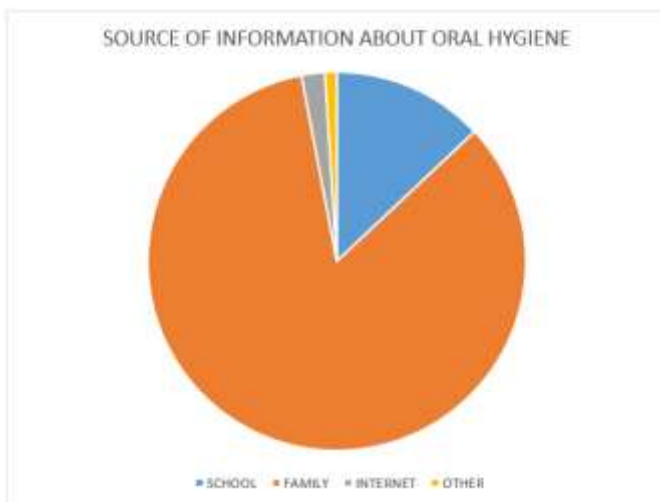
**Sources of Information**

1. Where did you learn most of your oral hygiene practices?

S.No.	Source of Information	Percentage
1.	School Education	13%
2.	Family	84%
3.	Internet	2%
4.	Other	1%

1. Do you teach or plan to teach effective oral hygiene practices to children?

S.No.	Teaching Oral Hygiene	Percentage
1.	Yes	97%
2.	No	3%



**Adherence to Guidelines**

1. Do you currently follow a brushing routine that includes cleaning all surfaces of your teeth and tongue?

**Result**

The results of this study reveal that while a significant majority of medical students are aware of the basic WHO-recommended oral hygiene practices, there are

notable gaps in specific techniques and adherence. Most students correctly identified the recommended brushing frequency and duration, but only 66% use fluoride toothpaste. Knowledge regarding specific brushing techniques for different parts of the mouth varied, with gaps in understanding how to effectively brush different surfaces of the teeth.

A considerable percentage (60%) of students were aware of using a tongue scraper, yet a significant portion still used less effective methods. Despite a positive attitude towards oral hygiene, with 94% recognizing its importance, only 55% of students adhered to a complete brushing routine. The reliance on family rather than formal education or online resources for learning about oral hygiene practices highlights a potential area for educational improvement.

The high percentage (97%) of students expressing an intention to teach effective oral hygiene practices to children suggests a commitment to improving oral health awareness in future generations.

### **Discussion**

This study provides an assessment of the awareness among medical students regarding effective oral hygiene practices, as outlined by WHO guidelines. It offers valuable insights into the state of knowledge and adherence to oral hygiene practices within this population, revealing both strengths and areas for improvement.

### **Brushing Frequency and Duration**

The majority of medical students correctly identified the WHO-recommended brushing frequency (twice daily) and duration (2 minutes), with 70% of students demonstrating an understanding of these fundamental guidelines (WHO, 2022). This aligns with recommendations from global health authorities

emphasizing the importance of these practices for maintaining oral health. However, the fact that a segment of students still does not fully adhere to these guidelines suggests that foundational education, while generally effective, may need reinforcement. This finding is consistent with the findings concluded by Kumar et al Further emphasis on oral health is necessary in undergraduate training to improve oral health knowledge, attitude, and practice among dental and medical students as they will act as role models for oral health education among individuals and community at large.<sup>6</sup>

### **Specific Brushing Techniques**

The study identified gaps in knowledge regarding specific brushing techniques. While general brushing practices were understood, only a portion of students demonstrated accurate knowledge of techniques for brushing the upper teeth, chewing surfaces, and inner surfaces. This aligns with findings from a study by Shah et al. (2007), which highlighted that even among healthcare professionals, there can be significant variations in the application of oral hygiene techniques. The need for detailed education on specific techniques is crucial, as improper brushing methods can compromise the effectiveness of oral hygiene practices.<sup>4</sup>

### **Tongue Cleaning**

The study found that 60% of students were aware of the use of a tongue scraper for cleaning the tongue surface, while others relied on less effective methods. This is in line with the findings of Paramjit Singh et al who found that the tongue cleaning efficiency was most in Tongue scraper group followed by Toothbrush group, Neem stick group and least was in Back side of toothbrush group. They have recommended people with halitosis should be advised to repeat the tongue cleaning

procedure several times during the day. Dentists should consider patients' oral characteristics and needs when advising them about tongue cleaning frequency.<sup>7</sup>

### **Adherence to Guidelines**

With only 55% of students following a complete brushing routine, this study highlights a significant area of concern. This figure indicates that nearly half of the students might not fully implement the recommended practices. Factors influencing adherence could include personal habits, time constraints, or gaps in detailed knowledge. This aligns with broader concerns about the vast difference in health status including the oral health between urban and rural population of India.<sup>8</sup>

### **Attitudes and Beliefs**

There is a positive attitude towards oral hygiene in the present study, with 94% of students recognizing its importance for overall health, which is a promising finding. This positive disposition suggests that students are likely to value and potentially adopt recommended practices if provided with sufficient information and support. On similar lines Babitha et al in their study on law students concluded that law students have satisfactory knowledge about good oral hygiene practices and oral health care. However, the knowledge acquired must be transferred into daily practice. This can be achieved by a change in their attitude toward oral hygiene maintenance. The inclusion of oral health-oriented education programs in their curriculum would improve their knowledge along with behavior, and they would be a good model to the community.<sup>9</sup>

### **Sources of Information**

The study found that the majority of students learned about oral hygiene from family rather than formal education or online resources. This reliance on family-based education reflects a significant variability in

knowledge and practices, as family-based information may not always align with current guidelines. H Das et al have concluded that the Indian health education system urgently needs a curriculum for oral health that is well planned and scheduled.<sup>10</sup>

### **Teaching Oral Hygiene to Children**

The high percentage of students (97%) expressing an intention to teach effective oral hygiene practices to children is a positive outcome. It reflects a commitment to promoting good oral health practices, which is crucial for long-term public health outcomes. This inclination highlights the potential for medical students to become effective advocates for oral health, aligning with broader goals of improving oral health education and practice.

### **Implications and Recommendations**

The study highlights several areas for improvement in oral hygiene education among medical students:

**Enhanced Curriculum Integration:** Medical schools should integrate detailed oral hygiene practices into their curricula, including practical demonstrations and training on specific brushing techniques.

**Workshops and Training:** Targeted workshops and continuing education sessions focused on effective brushing techniques and comprehensive oral hygiene practices can help address identified knowledge gaps and reinforce adherence

**Educational Resources:** Basic educational expertise and skills, including fundamental knowledge, reasoning ability, emotional self-regulation, and interactional abilities, are critical components of health. Moreover, education is a fundamental social determinant of health – an upstream cause of health.

**Promotion of Evidence-Based Practices:** Encouraging reliance on evidence-based sources for oral hygiene information, rather than informal channels, can improve



the accuracy of knowledge and adherence to WHO guidelines.

In **Conclusion**, while medical students generally have a strong foundation of knowledge regarding basic oral hygiene practices, there are critical gaps in specific techniques and adherence. Addressing these gaps through enhanced education and targeted interventions can better prepare future healthcare professionals to advocate for and practice effective oral hygiene, ultimately benefiting public health outcomes. The findings of this study underscore the need for comprehensive oral health education and the integration of best practices into medical training.

### References

1. Oral Health, World Health Organization Oral Health factsheets [https://www.who.int/health-topics/oral-health#tab=tab\\_1](https://www.who.int/health-topics/oral-health#tab=tab_1) accessed on 27 August 2024
2. Johnson NW, Glick M, Mbuguye TN. Oral health and general health. *Adv Dent Res.* 2006;19(4):118–121.
3. Meurman J.H., Sanz M., Janket S.J. Oral health, atherosclerosis, and cardiovascular disease. *Crit Rev Oral Biol Med.* 2004;15(6):403–413.
4. Shah N., Pandey R.M., Duggal R., Mathur V.P., Parkash H., Sundaram K.R. Director General of Health Services, Ministry of Health and Family Welfare, Government of India and WHO collaborative programme; 2007. Oral Health in India. A Report of Multicentric Study.
5. Chavan S, Kemparaj U, Baghele ON, Rajdha A. Public-private partnership to enhance oral health in India. *J Interdiscip Dentistry* 2012;2:135-7
6. Kumar H, Behura SS, Ramachandra S, Nishat R, Dash KC, Mohiddin G. Oral Health Knowledge, Attitude, and Practices Among Dental and Medical Students in Eastern India - A Comparative Study. *J Int Soc Prev Community Dent.* 2017 Jan-Feb;7(1):58-63. doi: 10.4103/jispcd.JISPCD\_30\_17. Epub 2017 Feb 21. PMID: 28316951; PMCID: PMC5343685.
7. Dr. Paramjeet Singh, Dr. Prateek Jain, Dr. Nikhil Purohit, Dr. Gaurav Agarwal, Dr. Sandeep K Swarnkar, Dr. Priyanka Yadav. Assessing tongue cleaning efficiency of tongue scraper, tooth brush, back side of tooth brush head and neem stick. *Int J Appl Dent Sci* 2021;7(3):302-304. DOI: <https://doi.org/10.22271/oral.2021.v7.i3e.1315>
8. Gambhir RS, Gupta T. Need for Oral Health Policy in India. *Ann Med Health Sci Res.* 2016 Jan-Feb;6(1):50-5. doi: 10.4103/2141-9248.180274. PMID: 27144077; PMCID: PMC4849117.
9. Babitha, GA; Holla, KS; Patel, B<sup>1</sup>; Prashant, GM<sup>2</sup>; Prakash, S. Knowledge, Attitude, and Oral Hygiene Practices among Law Students in Davangere City: A Cross-sectional Study. *Journal of Indian Association of Public Health Dentistry* 21(1):p 17-21, Jan–Mar 2023. | DOI: 10.4103/jiaphd.jiaphd\_205\_21
10. Das H, Janakiram C, Ramanarayanan V, Karuveettil V, Kumar V, Balachandran P, Varma B, John D. Effectiveness of an oral health curriculum in reducing dental caries increment and improving oral hygiene behaviour among schoolchildren of Ernakulam district in Kerala, India: study protocol for a cluster randomised trial. *BMJ Open.* 2023 Feb 20;13(2):e069877. doi: 10.1136/bmjopen-2022-069877. PMID: 36806129; PMCID: PMC9944638.