

# Evaluation of Knowledge, Attitude and Practice about Oral Hygiene Aids among Dental Hygienists in Western Maharashtra, India

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## ABSTRACT

**Introduction:** Everyday use of oral hygiene aids and annual or biannual oral prophylaxis by dental professionals (Dentists, Dental hygienists, Dental assistants) are two effective ways of maintaining good oral hygiene. The present study was conducted to assess the knowledge, attitude, and practice about oral hygiene among working dental hygienists in Western Maharashtra, India.

**Materials and methods:** A questionnaire study was conducted among 52 working dental hygienists from different areas of Western Maharashtra. The structured, self-administered, close-ended questionnaire was designed to collect the data which consist of two parts and comprised 31 questions. Statistical analysis was done using descriptive statistics.

**Results:** In this study, more than 50% of participants were known the importance of oral hygiene maintenance and different types of oral hygiene aids and correct methods of using those oral hygiene aids. About 96% participants thought that proper brushing technique is necessary to maintain good oral hygiene.

**Conclusion:** The study participant's overall knowledge, attitude and practise regarding oral hygiene aids were seen at average level.

**Keywords:** Dental Auxiliary; Dental Hygienists; Oral Hygiene Aids; Oral Hygiene Oral Prophylaxis

## INTRODUCTION

Oral hygiene is the practice of keeping one's mouth clean and free of disease and other problems (e.g., bad breath) by regular and proper brushing of the teeth and cleaning between the teeth which serves to maintain a good dental hygiene [1]. It is important that oral hygiene be carried out on a regular basis to enable prevention of dental disease and bad breath. Oral health care practices have been proved to be an effective preventive measure for maintaining good oral health as part of general health [2]. Cleaning between the teeth is called interdental cleaning and is as important as tooth brushing [3]. This is because a toothbrush cannot reach between the teeth and therefore only removes about 50% of

plaque from the surface of the teeth [4]. There are many tools to clean between the teeth, including floss, tongue cleaner, mouthwash and interdental brushes [5]. Along with this, according to patient's oral hygiene index, annual or biannual oral prophylaxis by professionals is necessary. In Maharashtra, oral prophylaxis is done by dental professionals such as dentist, dental hygienist, dental assistant. Among these a dental hygienist is an operating auxiliary licensed and registered to practice dental hygiene under the laws of appropriate state, province, territory or nation who works under the supervision of dentist [6]. There is a two-year diploma course to become dental hygienist. The programme focuses on preventive dentistry, oral hygiene, dental radiography, periodontal treatment, basic restorations

and extracting of deciduous teeth, etc [7]. In 1990, there were 3000 registered hygienists in India, which implies that the service of one hygienist was available to seven dentists whereas it should ideally be a 1:1 ratio [8]. The competencies of dental hygienists focus on disease prevention and oral health promotion; thus referral to a dentist would only become necessary in the event of a failure in the preventive program where disease cannot be controlled [9]. Dental hygienist does oral prophylaxis (scaling and root planning), gives instruction in oral hygiene and preventive dentistry, and assists the dental surgeon in chair side work. A major role of a dental hygienist is to perform periodontal therapy which includes things such periodontal charting, periodontal debridement, prophylaxis (preventing disease) or periodontal maintenance procedures for patients with periodontal disease [10]. The use of therapeutic methods assists their patients in controlling oral disease, while providing tailored treatment plans that emphasize the importance of behavioural changes. Thus, the aim of this study was to establish working patterns and preferences of dental hygienist for oral hygiene awareness, attitude and practices about the use of oral hygiene aids.

## MATERIALS AND METHODS

A questionnaire study was conducted among the working dental hygienists from Western Maharashtra, India. The objectives of the study were to assess the knowledge, find out the attitude and evaluate practices regarding the use of oral hygiene aids by working Dental Hygienists. The study duration was three months. The participants were selected based on the following inclusion criteria:

- Working dental hygienist in Western Maharashtra,
- Diploma or degree certificate in dental hygienist,
- Those hygienists who were willing to participate.

The input parameters for sample size calculation were as follows: 80% power of the

study, alpha error 0.05, effect size 0.8, and degree of freedom as 5. The calculated sample size was 42 using G\*Power software version 3.1.9.2 (Heinrich Heine University, Düsseldorf). The final considered sample size was around 52. The convenient sampling techniques were used in the study. A questionnaire was pretested and validated among 20 subjects to check reliability and variability and these subjects were not included in the final analysis. The structured, self-administered, close-ended questionnaire was designed to collect the data which consisted of two parts and comprised of 31 questions. The first part consists of demographic data such as name, age, gender, education, occupation. The second part consists of questions based on knowledge, attitude, and practices of use of oral hygiene aids. The reliability statistics were calculated and Cronbach's Alpha was 0.613. The questionnaire was designed on Google forms (Google LLC, Mountain View, California, United States) and the link was distributed among the dental hygienists through email, whatsapp number and other social media platforms (Instagram, Telegram, etc.). Participants were given brief introduction about the study. Data collected was entered in a spreadsheet (Microsoft Excel 2018). Statistical analysis was done using descriptive statistics using Statistical Package for the Social Science (SPSS) 23.0 version software (IBM Chicago, Illinois, United States). The p-value was set at 5%.

## RESULTS

In table 1, there were a total of 52 participants aged between 20 to 55 years old. Out of these 52 participants, 37 were females and 15 were males. Majority of the participants had diploma in dental hygiene and a very few had a degree in oral hygienist. In table 2, more than 50% of participants were known the importance of oral hygiene maintenance and different types of oral hygiene aids and correct methods of using those oral hygiene aids. About 78% of the participants knew the different components of toothpaste, mouthwash and their uses and

**Table 1:** Demographic details of study participants (N=52).

Sr. No.	Demographic Details	Response	Number (N)	Percentage (%)	Total N (%)
1	Age (in years)	20-25	12	23.1	52 (100%)
		26-30	14	26.8	
		31-35	16	30.8	
		36-40	6	11.5	
		41-45	1	1.9	
		46-50	2	3.8	
2	Gender	Male	15	28.8	52 (100%)
		Female	37	71.2	
3	Education	Diploma in dental hygiene	49	96.2	52 (100%)
		Degree in dental hygiene	3	5.8	
4	Occupation	Dental hygienist	52	100	52 (100%)

their advantages, disadvantages. Only 50% participants were aware about both methods of using dental floss while about 40% participants were aware about only one method. In table 3, about 46% participants thought that cleaning of tongue daily is important while 46% thought

**Table 2:** Knowledge related questions' responses of study participants (N=52).

Sr. No.	Questions	Responses	Number (N)	Percentage (%)	Total N (%)
1	What is the main purpose of tooth brushing?	Prevention of tooth decay and gum disease	50	96.2	52 (100%)
		To remove stains on teeth	0	0	
		Achievement of cleaner and brighter teeth	2	3.8	
		Don't know	0	0	
2	Ideally how many times teeth should be brushed?	Once in a day	1	1.9	52 (100%)
		Twice in a day	51	98.1	
		Thrice and more	0	0	
		As per once convince	0	0	
3	Which according to you is ideal brushing material?	Toothpaste and Finger	2	3.8	52 (100%)
		Toothpaste and toothbrush	50	96.2	
		Neem stick	0	0	
		Any other	0	0	

4	How dental plaque looks clinically?	Discoloration of teeth	5	9.7	52 (100%)
		Soft deposits on teeth	43	82.7	
		White patches on teeth	4	7.7	
		Don't know	0	0	
5	How long after brushing mouthwash should be used?	Immediately	5	9.6	52 (100%)
		After half hour	27	51.9	
		After 10 min	14	26.7	
		Whenever you wish	4	7.7	
		Don't know	2	3.8	
6	What is the proper technique used for using mouthwash?	Pour, take into mouth, swish for 30 sec, spit, Rinse	7	13.5	52 (100%)
		Pour, Dilute, take into mouth, swish for 30 sec, spit	20	32.7	
		Pour, take into mouth, swish for 30 sec, spit	8	38.5	
		Pour, Dilute, take into mouth, swish for 30 sec, spit, Rinse	17	15.5	
7a	Do you know the difference between therapeutic and cosmetic components of toothpaste and mouthwash?	Yes	38	73.1	52 (100%)
		No	14	26.9	
7b	If yes, which is the component used for tooth whitening?	Fluorides	8	16.3	52 (100%)
		More amount of abrasives	18	36.7	
		Surfactants	16	32.7	
		Don't know	7	14.3	
8	What is the adverse effect of tooth whitening toothpaste?	Gum diseases	6	11.5	52 (100%)
		Tooth sensitivity	41	78.8	
		No adverse effects	3	5.8	
		Don't know	2	4.85	
9	What is the effect of fluorides on teeth?	Prevention of gum diseases	3	5.8	52 (100%)
		Prevention of tooth decay	46	88.5	
		Cleaning of teeth decay	3	5.8	
		Don't know	0	0	
10	Choose the antiplaque component in toothpaste from following?	Sodium lauryl sulphate	26	50	52 (100%)
		Sodium fluoride	22	42.3	
		Menthol	2	3.8	
11	When do you give the interproximal instructions?	To every patient	29	55.8	52 (100%)
		When you assume that patient will comply	3	5.6	
		Halitosis	2	3.8	
		To patients undergoing orthodontic treatment	18	38.6	

12	Do you know the correct technique of using dental floss?	Yes	50	96.2	52 (100%)
		No	2	3.8	
13	If yes, which of the following are you aware of?	Spool method	9	17.3	52 (100%)
		Loop method	12	23.1	
14	Which of the following types of dental floss are you aware of?	Waxed/unwaxed	7	13.5	52 (100%)
		Monofilament/multifilament	5	9.6	
		Bonded/non-bonded	1	5.8	
		All of the above	37	91.1	
	Don't know	2	5.8		

**Table 3:** Attitude and practice related questions' responses of study participants (N=52).

Sr.	Questions	Responses	Number (N)	Percentage (%)	Total (%)
1	According to you can health of teeth and mouth affect health of body?	Strongly Agree	25	48.1	52 (100%)
		Agree	21	40.4	
		Neutral	5	9.6	
		Disagree	2	1.9	
		Strongly Disagree	0	0	
2	Proper brushing of teeth is possible without toothpaste and toothbrush?	Strongly Agree	3	5.8	52 (100%)
		Agree	3	5.8	
		Neutral	4	7.7	
		Disagree	20	38.5	
		Strongly Disagree	22	42.3	
3	Do you think toothbrush with hard bristles causes abrasion?	Strongly Agree	21	40.4	52 (100%)
		Agree	29	55.8	
		Neutral	1	1.9	
		Disagree	1	1.9	
		Strongly Disagree	0	0	
4	Cleaning of tongue daily is important?	Strongly Agree	24	46.2	52 (100%)
		Agree	24	46.2	
		Neutral	4	7.7	
		Disagree	0	0	
		Strongly Disagree	0	0	
5	Using mouthwash daily causes staining of teeth?	Strongly Agree	11	21.2	52 (100%)
		Agree	18	34.6	
		Neutral	19	36.5	
		Disagree	3	5.8	
		Strongly Disagree	1	1.9	
6	Do you think use of 1cm thick layer of toothpaste is necessary?	Strongly Agree	6	18.8	52 (100%)
		Agree	13	40.6	
		Neutral	5	15.6	
		Disagree	6	18.8	
		Strongly Disagree	2	6.3	

7	Do you think appropriate brushing technique is essential?	Strongly Agree	36	69.2	52 (100%)
		Agree	14	26.9	
		Neutral	1	1.9	
		Disagree	1	1.9	
		Strongly Disagree	0	0	
8	Do you believe packaging, advertisement or cost has nothing to do with quality of toothpaste?	Strongly Agree	11	21.2	52 (100%)
		Agree	25	48.1	
		Neutral	8	15.4	
		Disagree	7	13.5	
		Strongly Disagree	1	1.8	
9	Do you think chemical toothpastes or mouthwashes are better than herbal ones?	Strongly Agree	3	5.8	52 (100%)
		Agree	13	25	
		Neutral	25	48.1	
		Disagree	11	21.2	
		Strongly Disagree	0	0	
10	Will you refer the patient to dentist if patient has periodontal disease?	Strongly Agree	29	55.8	52 (100%)
		Agree	21	40.4	
		Neutral	2	3.8	
		Disagree	0	0	
		Strongly Disagree	0	0	
11	Which of the following interdental aids will you highly recommend to your patients?	Water rinses	8	15.4	52 (100%)
		Interdental brush	12	23.1	
		Dental floss	31	59.6	
		Toothpick	1	1.9	
12	Do you demonstrate appropriate brushing technique according to patient clinical scenario?	Always	30	57.7	52 (100%)
		Often	18	34.6	
		Rarely	3	5.8	
		Never	1	1.9	
13	Do you give prophylactic mouth rinse to patient before starting scaling?	Always	26	50	52 (100%)
		Often	19	36	
		Rarely	6	11.5	
		Never	1	2	
14	Do you advice floss holders for orthodontic patients?	Always	15	28.8	52 (100%)
		Often	15	28.8	
		Rarely	12	23.1	
		Never	10	19.2	
15	Do you advice use of dental floss and tongue cleaner after brushing to your patients?	Always	30	57.7	52 (100%)
		Often	16	30.8	
		Rarely	5	9.6	
		Never	1	1.9	
16	Do you advice use of mouthwash to your patients?	Always	12	23.1	52 (100%)
		Often	30	57.7	
		Rarely	9	17.3	
		Never	1	1.9	
17	Do you advice use of disclosing agent after brushing to evaluate cleaning of teeth to your patients?	Always	12	23.1	52 (100%)
		Often	10	19.2	
		Rarely	16	30.8	
		Never	14	26.9	

[11], there is a consensus in the literature that (meticulous) tooth brushing once per day is sufficient to maintain oral health and prevent periodontal diseases [11]. Whereas, 98.1% of hygienists included in the survey felt that brushing teeth twice daily is necessary. This may be due to the fact that brushing just once a day is not sufficient for effective plaque control. Tooth brushing is also regarded as an important vehicle for application of anti-caries agents (fluorides). In the study, 36.7% of subjects were aware of the whitening component in toothpaste and 78.8% thought that tooth hypersensitivity is also an adverse effect of whitening toothpastes. Tooth hypersensitivity may be caused by acidic pH of whitening toothpastes. When the pH falls below 5.2, enamel demineralization and root resorption have been reported [12]. Most of the hygienists in the study agree with the correlation of oral health to general health. Tatikonda A, et al. (2014) [13] concluded that herbal dentifrice was as effective as chemical dentifrice in the control of plaque and gingivitis [13]. However, in our study, 48.1% of hygienists are neutral with regards to chemical toothpastes being better herbal toothpastes. About 25% think that chemical toothpastes are better than herbal once while 21.2% subjects disagree. According to Westfelt E, et al. (1996) [14], the patient should be advised to use appropriate aids and technique to achieve optimum plaque control [14]. Hygienists involved in the study also feel the same and more than half of them are aware of both the techniques of using dental floss. The responses gathered were received through social media platforms via Google form links sent to individual participants. There is a possibility of bias as dental hygienists working in rural areas were not approached for participation in the study. The limitation of the study was the small sample size. The study could have been done using large sample size and different variables in different regions in India.

### Recommendations

1. More orientation programmes should be arranged for dental hygienists in Maharashtra.

2. Arrange dental camps for hygienist to update knowledge and practice of oral hygiene maintenance.

### Conclusions

The overall knowledge, attitude and practise of study participants regarding oral hygiene aids were found average level. Therefore, more comprehensive awareness programmes are needed in the population.

### Resource of Funding

None.

### Conflict of Interest

Nil.

### A Statement of All Authors

A manuscript had been read and was approved by all the authors.

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#### RESUMEN

Introducción: El uso diario de ayudas para la higiene oral y la profilaxis oral anual o semestral por parte de los profesionales de la odontología (dentistas, higienistas dentales, asistentes dentales) son dos maneras efectivas de mantener una buena higiene oral. El presente estudio se llevó a cabo para evaluar el conocimiento, la actitud y la práctica sobre higiene bucal entre higienistas dentales que trabajan en el oeste de Maharashtra, India. Materiales y métodos: se realizó un estudio de cuestionario entre 52 higienistas dentales en activo de diferentes áreas del oeste de Maharashtra. Se diseñó un cuestionario estructurado, cerrado autoadministrado para recopilar los datos que constaba de dos partes y comprendía 31 preguntas. Se hizo un análisis estadístico utilizando estadísticas descriptivas. Resultados: En este estudio, más del 50% de los participantes conocían la importancia del mantenimiento de la higiene bucal y los diferentes tipos de ayudas para la higiene bucal y correctos métodos de uso de esas ayudas para la higiene oral. Alrededor del 96% de los participantes pensaba que la técnica de cepillado adecuada es necesaria para mantener una buena higiene bucal. Conclusión: El conocimiento general, la actitud y la práctica de los participantes del estudio con respecto a las ayudas para la higiene bucal se observaron en un nivel promedio.

**Palabras clave:** Auxiliar Dental; higienistas dentales; Ayudas para la higiene bucal; Higiene bucal Profilaxis bucal