

# A comparative evaluation of oral hygiene practices, oral health status, and behavior between graduate and post-graduate dentists of North India: An epidemiological survey

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## Abstract

**Objectives:** The present study was carried out to compare oral hygiene practices, oral health status and behavior of graduate and postgraduate dentists of North India. **Materials and Methods:** The study was carried out among 727 dentists (446 graduate i.e., Group A and 281 post graduate i.e., Group B) through an online questionnaire. The questionnaire covered oral hygiene regimen, adverse oral habits, information regarding dental visits and dental treatment. **Results:** Results showed less than adequate oral hygiene practices among both the groups with more so in the graduate group ( $P \leq 0.05$ ). Very few dentists in both the groups reported any adverse oral habit. A more positive ( $P \leq 0.05$ ) attitude towards regular dental check up and dental treatment was seen in post-graduate dentists when compared to graduates. **Conclusion:** Very few dentists in both the groups followed ideal dental hygiene regimen. Dentists are the role models for the society as far as oral health is concerned; hence they need to be more responsible and lay more stress on their daily regimen and improve the scenario.

**Key words:** Dentists, graduate, oral habits, oral hygiene, post-graduate

## INTRODUCTION

Periodontal disease and dental caries are the two most common oral diseases affecting mankind since the dawn of civilization.<sup>[1]</sup> Oral health as an essential component of general health can be defined as “a standard of health of oral and related tissues which enable an individual to eat, speak and socialize without active disease, discomfort or embarrassment and which contributes to general well-being.”<sup>[2]</sup> Mechanical methods of plaque

control such as the use of toothbrush and dental floss, when applied effectively can promote oral health and decrease the incidence of dental caries and gingival inflammation.<sup>[3,4]</sup> Oral hygiene promotion involves a combination of educational, organizational, economic and environmental support for behavior conducive to oral health.<sup>[5]</sup>

By virtue of their profession, dentists play a pivotal role in health promotion and dissemination of preventive information among their patients, family and society. It is therefore important that their own health knowledge is good and their oral health behavior conforms to the expectation of the population.

Hence, with this in consideration, the study was designed to investigate oral hygiene practices, dental service utilization patterns and attitude toward dental treatment among dentists with varying qualification.

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## MATERIALS AND METHODS

A total of 727 dentists from different dental colleges and cities of North India participated in the survey. A structured questionnaire was prepared online and mailed to the dentists. The questionnaire inquired about dentist's qualification, oral hygiene regimen, adverse oral habits, and attitude toward dental treatment.

727 dentists who participated in the survey were divided into two groups on the basis of their qualification; Group A, which included graduates (446 dentists) and Group B, which included post-graduates (281 dentists). Male:female for Group A and Group B was 182:264 and 105:176 respectively.

The data, thus, collected was compiled and put to statistical evaluation.

### Statistical analysis

The data was analyzed using SPSS 14 software. Pearson's Chi-square test was used for comparison between the groups and  $P < 0.0001$  statistically highly significant.

## RESULTS

A total of 727 dentists participated in the survey and the results were statistically analyzed and compared group wise.

### Oral hygiene practices

#### *Frequency, duration and technique of tooth brushing*

Majority of dentists in both groups brushed their teeth for 1-2 min twice daily and the difference between them was statistically significant.

However, it was found that 67% of the dentists in Group A used modified Bass technique as compared to 53% in Group B [Table 1].

### Oral hygiene aids

Majority of the dentists in both the groups (69% in Group B and 58% in Group A) used fluoridated toothpaste and toothbrushes with soft bristles (around 69% in Group B and 48% in Group A). A few dentists in both the groups reported the use of non-fluoridated and herbal toothpaste. However, none of the participants in either group reported use of any toothpowder or any indigenous method for cleaning teeth [Table 1].

Majority of dentists in both the groups did not report the use of any interdental cleaning aid. However, a few dentists in both the groups reported use of interdental floss and toothpick [Table 2].

### Adverse oral habit

Majority of the dentists in both the groups did not report any adverse habit. However, smoking was reported by 11.2% and 4% of dentists in Group A and B respectively [Table 3].

### Present oral problem

Significantly more dental problems were reported by Group A as compared to Group B [Table 4].

### Regular dental check-up and oral prophylaxis

Significantly more number of Group B dentists had regular dental checkups than Group A.

Majority of the dentists in Group B had regular oral prophylaxis in 6 months, whereas once a year in Group A dentists [Table 5].

## DISCUSSION

Good oral health is essential to improve an individual's overall health and well-being.<sup>[1]</sup> The dental community, who supposedly are the role models as far as oral health is concerned, play a pivotal role in promoting behavioral change in the society. Keeping this in mind, the study was conducted to provide an insight about the oral hygiene status, behavior and concepts among dental professionals.

It has been seen that health practices of physicians determine what they tell their patients. A similar trend can be anticipated among dental practitioners as well. Dental health practices are learned from a number of sources of which professional learning is an important component.<sup>[5]</sup> Does the difference in the level of educational qualification as in the case of a graduate and a post-graduate also have an influence on their oral health practices?

A total of 727 dentists of which 446 were graduate and 281 post-graduates participated in the survey. The study groups were of unequal numbers owing to the larger number of graduates as compared to post-graduates.

The dentists were questioned about their daily oral hygiene regimen, adverse oral habits, oral health problems and attitude towards dental treatment.

**Table 1: Brushing habits group A and group B**

	Group A N (%)	Group B N (%)	Chi-square	P value
Frequency				
Once	149 (33.4)	50 (17.8)	21.14	<0.0001
Twice	297 (66.6)	226 (80.4)	16.35	<0.0001
Thrice	0	5 (2)		0.0084
Duration				
30-60 s	18 (4)	5 (1)	2.18	0.1398
1-2 min	258 (57.8)	176 (62.6)	176	1.64
2-5 min	143 (32)	89 (32)	0.01	0.9203
Variable	27 (6)	16 (4)	0.04	0.8415
Technique				
Bass	298 (66.8)	149 (53)	13.81	0.0002
Scrub	22 (4)	33 (11.7)	11.44	0.0007
Variable	126 (28.3)	99 (35.2)	3.93	0.0474
Bristles				
Soft	215 (48.2)	193 (68.7)	29.35	<0.0001
Medium	209 (46.7)	83 (29.5)	21.83	<0.0001
Hard	22 (6.1)	5 (2)	4.79	0.0286
Replacement of brush				
>3 months	215 (48.2)	175 (62.3)	13.73	0.0002
>6 months	121 (27.1)	62 (22.1)	0.82	0.3652
After bristles fray	110 (24.7)	44 (15.6)	8.37	<0.0001
Dentifrice				
Fluoridated	259 (58)	193 (68.7)	8.25	0.0041
Non-fluoridated	44 (9)	26 (9)	0.07	0.7913
Herbal	28 (6)	7 (2)	5.39	0.0202
Variable	115 (25.8)	55 (19.6)	3.71	0.0541

$P < 0.05$  = Statistically significant,  $P < 0.0001$  = Statistically highly significant

**Table 2: Interdental aids used by dentists in group A and group B**

Interdental cleaning aids	Group A N (%)	Group B N (%)	Chi-square	P value
Floss	75 (16.8)	60 (21.4)	2.35	0.1235
Toothpick	92 (20.6)	16 (6)	30.4	<0.0001
Interdental brush	5 (1)	6 (2)		0.3519
Water irrigation device	10 (2)	5 (2)	0.18	0.6714
None	264 (59.2)	194 (69.4)	7.17	0.0074

$P \leq 0.05$  = Statistically significant,  $P < 0.0001$  = Statistically highly significant

**Table 3: Adverse oral habits of group A and group B dentists**

Adverse oral habits	Group A N (%)	Group B N (%)	Chi-square	P value
Smoking	50 (10.2)	12 (4)	10.64	0.0011
Tobacco chewing	0	0		1
Caffeine	204 (46)	25 (6)	108.45	<0.0001
Others	0	22 (11)	33.39	<0.0001
None	202 (45.3)	222 (79)	80.6	<0.0001

$P < 0.05$  = Statistically significant,  $P < 0.0001$  = Statistically highly significant

### Oral hygiene practices

Tooth brushing is considered as the primary mechanical means of removing substantial amounts of plaque in order to prevent oral disease, including gingivitis and dental caries and halitosis while also maintaining dental esthetics. It is also used as a means of delivering chemotherapeutic agents via dentifrice.<sup>[6,7]</sup>

### Frequency/technique/duration of tooth brushing

Greater percentages (80% in Group B and 67% in Group A) were recorded in our study who brushed their teeth twice in comparison to the studies of Anwar (59%) and Gopinath (55.9%),<sup>[5]</sup> However, the results were in accordance with the studies of Ghasemi *et al.* (73%),<sup>[8]</sup> Tseveenjav *et al.* (81%),<sup>[9]</sup> and

**Table 4: Existing dental problem in group A and group B dentists**

Present dental problem	Group A N (%)	Group B N (%)	Chi-square	P value
Caries	176 (39.5)	33 (12)	64.66	<0.0001
Bleeding gums	28 (6)	12 (4)	1.34	0.2470
Halitosis	44 (10)	6 (2)	16.08	<0.0001
Other	17 (4)	50 (18)	40.28	<0.0001
Don't know	56 (12.5)	5 (1)	0.38	0.5376
None	125 (28)	181 (63)	18.26	<0.0001

$P < 0.05$  = Statistically significant,  $P < 0.0001$  = Statistically highly significant

**Table 5: Dental service utilization patterns in group A and group B dentists**

Regular dental check up	Group A N (%)	Group B N (%)	Chi-square	P value
3 months	33 (11.7)	60 (21.4)	30.09	<0.0001
6 months	72 (16.1)	77 (27.4)	13.41	<0.0001
≥1 year	148 (56)	105 (38)	47.88	<0.0001
In problem	120 (27)	50 (18)	7.99	
Oral prophylaxis				
3 months	99 (22.2)	78 (28)	1.12	0.2899
6 months	110 (25)	143 (51)	52.26	<0.0001
≥1 year	215 (48.4)	60 (21)	16.35	<0.0001

$P < 0.05$  = Statistically significant,  $P < 0.0001$  = Statistically highly significant

Almas *et al.*<sup>[10]</sup> Though these studies did not take into consideration the qualifications of the dentists.

Majority of the dentists used modified Bass method for removing plaque, which is probably the most popular method taught today.

Brushing methods including Bass, Stillman's, Fones, Charter's, horizontal, vertical, scrub etc., have been taught for decades, with Bass and Roll method most commonly recommended. However, no one method of brushing has been found superior to others.<sup>[6]</sup> Poyato-Ferrera *et al.* observed in a 3 min comparison between modified Bass and the normal brushing technique that the modified Bass method removed more supra gingival plaque for all sites and at all times examined, especially on the lingual surfaces which commonly show high plaque scores.<sup>[11]</sup>

However, the best method is one that suits the individual needs and abilities and it is the responsibility of the dentist to instruct the patient on performing the task thoroughly.

Brushing duration is another important variable in plaque removal efficacy.<sup>[12]</sup> Investigations regarding duration of brushing have been confusing. While it is believed that increased brushing time does result in more plaque removal, the brushing technique could confound study comparisons. Ashley has recommended 3 min as the ideal duration for manual brushing.<sup>[13]</sup>

It has been reported that individuals typically brush for about 1 min or less but most people significantly over estimate this duration. Studies have shown ranges of brushing times from 56.7 s to 83.5 s, whereas estimated brushing times by these subjects range from 134.1 s to 154.6 s.<sup>[14,15]</sup>

### Oral hygiene aids

Majority of the dentists in both the groups used brushes with soft bristles. It is believed that filament stiffness can contribute to the traumatic potential of the toothbrush, but the influence of this factor is unclear. However, hard bristled brushes have been shown to be more effective in plaque removal than one with medium bristles.<sup>[6]</sup>

Dentifrices are adjuncts to tooth brushing and vehicles for various chemotherapeutic agents to inhibit calculus, reduce plaque, prevent caries, whiten enamel and desensitize exposed root surfaces.<sup>[4]</sup>

The present study revealed that all the respondents used toothpaste along with a tooth brush for cleaning their teeth and the majority of them used fluoridated toothpaste. In a study by Gopinath,<sup>[5]</sup> it was reported that 55% of the dentists used fluoride containing toothpaste on a daily basis. Tseveenjav *et al.* revealed in their study that 62% of the Mongolian dentists were using fluoridated toothpaste always or almost always.<sup>[9]</sup> Around 74% of the Iranian dentists were found to use fluoridated toothpaste regularly.<sup>[8]</sup>

Similar results were reported by Doshi *et al.*<sup>[16]</sup> and Vaish *et al.*<sup>[1]</sup>

The removal of interproximal plaque is considered to be important for the maintenance of gingival health, prevention of periodontal disease and the reduction of caries. Unfortunately, the toothbrush is relatively ineffective at removing interproximal plaque, and therefore, patients need to resort to additional techniques. Floss, wood sticks, rubber tips and interdental brushes currently represent the primary methods available for interproximal cleaning. Floss is the most widely used method of interdental cleaning and the American Dental Association reports that up to 80% of interdental plaque may be removed by this method.<sup>[17]</sup>

Very few dentists in both the groups used any interdental device with significantly more number of dentists in Group B as compared to Group A. Gopinath 2010; however, in his study reported that quite a low number i.e., around 9.2% of the Indian dentists used floss.<sup>[5]</sup> 54% of the Iranian dentists were found to use floss at least once a day.<sup>[8]</sup>

### Adverse habits

Very few dentists in both the groups reported any adverse habits. The results of this study were in accordance with the results of various other studies, which also reported very few percentage of dentists having any adverse habits.<sup>[5,8,18,19]</sup> Vaish *et al.* 2010, also reported that 93% of the dental students did not follow any adverse habit. This high percentage of Indian dentists not consuming tobacco could be attributed to their knowledge regarding the consequences of tobacco consumption.<sup>[1]</sup>

### Oral health problems

In the present study, significantly more number of dentists in Group A, reported about dental diseases such as dental caries, bleeding gingiva and halitosis. The results of this study are in accordance with the study of Almas *et al.*,<sup>[10]</sup> who observed that with an increase in age, that is from high school to dental college, there was a decrease in the prevalence of bleeding gingiva and dental caries. Halitosis, caries and bleeding gingiva were reported by 78%, 57% and 26% of the population respectively. Also, it was observed that the dental diseases were more prevalent in females in comparison to males.

A more positive attitude and adherence to good oral hygiene behavior was observed in Group B dentists

as compared to Group A. In Group A, majority of the participants visited the dental clinic only in case of any dental ailment, whereas dentists in Group B went in for regular dental checkups. Gopinath,<sup>[5]</sup> Ghasemi *et al.*,<sup>[8]</sup> Tseveenjav *et al.*<sup>[9]</sup> and Al-Wahadni,<sup>[20]</sup> *et al.* reported in their studies that approximately 40% of the South Indian dentists, 41% of Iranian dentists, 75% of the Mongolian dentists respectively visited dental clinic at least once a year.

Sharda and Shetty 2009 stated that a positive attitude and adherence to good oral hygiene behavior is associated with better oral health.<sup>[21]</sup>

Maatouk *et al.* (2006) emphasized that dental students achieved better oral health practices and status at the end of their 5 years of their course, highlighting the importance of dental studies on motivation and attitude towards treatment.<sup>[22]</sup>

Thus, similar studies with a larger study sample should be undertaken to give a broader perspective of the current scenario. In the current study, age was not considered as a demographic variable because of the wide age difference among the dentists in the same group. This could have affected the overall result distribution. Also, there could have been over reporting of oral hygiene behavior.

## SUMMARY AND CONCLUSION

Due to their profession, dentists are expected to exhibit meticulous oral hygiene procedures as compared to the general public. However, the results of the present study reveal that the oral hygiene practice of dentists in both groups is far from ideal. Also, the graduates oral health status and attitude towards dental treatment lag in comparison to the post-graduates. Thus, it is recommended that dentists should contemplate changes in their attitude so that they practice, what they preach.

We, as dentists, should realize our role in disseminating positive oral health concepts to their patients and the general public but before this, we ourselves should follow the ideal regimen and act as role models for the society.

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