

# Comparison of Oral Hygiene Practices Among Male and Female Students of A Medical Sciences Institute In Peshawar

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## Abstract

**Aims:** To determine and compare oral hygiene practices among male and female students in Ghazali Institute Peshawar.

**Methodology:** Cross sectional study conducted in Ghazali Institute of Medical Sciences Peshawar with duration of six months and the sample size was 285 participates to investigate the oral hygiene practices.

**Result:** This study investigates oral hygiene practices among 285 undergraduate students at Ghazali Institute of Medical Sciences Peshawar, focusing on gender oral hygiene practices differences. Results reveal a high frequency of tooth brushing (97.9%) among all students, but females showed a higher adherence than male. Soft toothbrushes are predominant among both gender of students. One to two minutes given by both gender for brushing while variations in technique, male were using vertical and females were using combination of all technique for brushing. Other than toothbrush, miswak was mostly used by both genders.

**Conclusion:** The study highlights a predominant reliance on tooth brushing, particularly with soft toothbrushes, among the students. Gender differences and regional variations underscore the importance of tailored interventions for promoting consistent oral hygiene practices.

**Keywords:** Miswak, tooth brush, oral hygiene

## Introduction

Oral hygiene refers to the maintenance of oral cleanliness to prevent diseases and related issues, such as halitosis, achieved through consistent dental brushing and interdental cleaning<sup>1</sup>. The World Health Organization (WHO) characterizes oral health as "a condition devoid of mouth and facial discomfort, oral and throat malignancies, oral infections and ulcers, periodontal (gum) ailments, dental cavities, loss of teeth, and irregularities that restrict an individual's ability to bite, chew, smile, speak, and experience psychosocial welfare."<sup>2,4</sup>

Oral hygiene tools which are used for teeth cleaning i-e toothbrushes and toothpaste<sup>5</sup> are widely used, accompanied by options like dental floss<sup>6,7</sup>, wooden sticks, interspace and interproximal brushes.<sup>8</sup> Individuals typically choose these based on personal preference or advice from oral health professionals. The selection process is influenced by factors including socioeconomic status, exposure to media advertisements, and sensory characteristics like taste, flavor,

color, and appearance.<sup>9</sup> These factors collectively shape decisions in choosing oral hygiene aids.<sup>3,10</sup>

There is no such study regarding oral hygienic practices at Ghazali Institute of Medical Sciences Peshawar. This study will help to investigate and compare the oral hygiene practices of male and female students of Ghazali Institute. It will also help to generate the base line data for further studies and help in prevention from oral diseases. Objectives of the study were to determine oral hygiene practices among male and female students of Ghazali Institute of Medical Sciences and to compare oral hygiene practices among male and female students of Ghazali Institute of Medical Sciences, Peshawar.

## Material and Methods

This cross sectional study was carried in all four branches of Ghazali institute of medical sciences i-e BS campus, Nursing campus, Diploma boys and Girls campus. Sample size came out to be 285 with the population size of Ghazali students 1100 and anticipated frequency 50% by using Open Epi software. All male and female students of all campuses of Ghazali Institute, BS Allied Health Sciences, Diploma boys and girls campus, and BS Nursing were included. Uncooperative participants/ students, administration and staff members of Ghazali Institute were not included in the study. All Legal and ethical permission was obtained from the ethical committee of institution. Permission was taken from all campuses of head of institute regarding data collection.

An informed consent was taken from every participant or student who fulfilled the inclusion criteria of study.

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Data was collected through questionnaire i-e include demographics of participant and variables about oral hygiene practices.

Data was analyzed through SPSS version 27. Continuous variables were calculated in the form of mean and standard deviation. Categorical variables were calculated in the form of frequency and percentages.

**Results & Analysis**

The total 285 student's data was collected in which 195(68.4%) were male students and 90(31.6%) were female students with the mean age and standard deviation 20.28±1.98. The first section include data about their demographics include age group, marital status, educational status, and discipline. The second section include oral hygiene practices i-e about brushing, brushing technique, other methods used for teeth cleaning, changing tooth brush and how often brush was changed, type of brush, and brushing duration.

Table 1: Demographics of Participants

Variables	Categories	Frequency	Percentages
Age in categories	16 - 20 years	164	57.5%
	21 – 25 years	118	41.4%
	26 years and above	3	1.1%
Gender	Male	195	68.4%
	Female	90	31.6%
Marital Status	Married	18	6.3%
	Unmarried	267	93.7%
Educational status	Diploma first year	45	15.8%
	Diploma second year	28	9.8%
	BS first year	131	46.0%
	BS second year	41	14.4%
	BS third year	32	11.2%
	BS fourth year	8	2.8%
Discipline	Anesthesia	35	12.3%
	Dental	37	13.0%
	Cardiology	18	6.3%
	Nursing	33	11.6%
	Surgical	16	5.6%
	Radiology	49	17.2%
	MLT	16	5.6%
	LHV	15	5.3%
	DPT	9	3.9%
	Emergency(ICU)	18	6.3%
	Health	36	12.6%
Pharmacy	3	1.1%	

Table 1: showed that the total participants in the study are 285. Among Age categories, most of the participants were between the age group of 16 to 20 years (57.5%). Most of the participants were unmarried (93.7%).

About Educational status, many participants were first year of BS programs 131 (46%). The rest were in different years of their educational programs.

According to their Disciplines, majority of students were in the Radiology 49(17.2%) followed by dental 37 (13%).

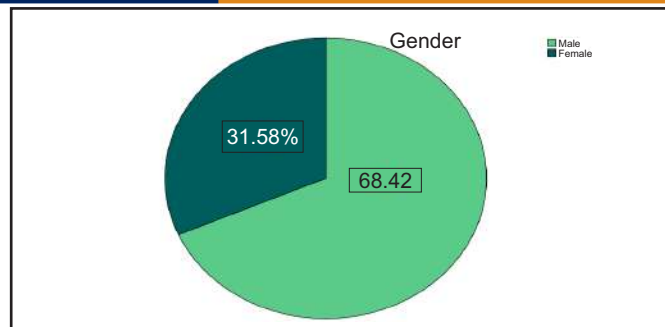


Figure 1: Gender Distribution

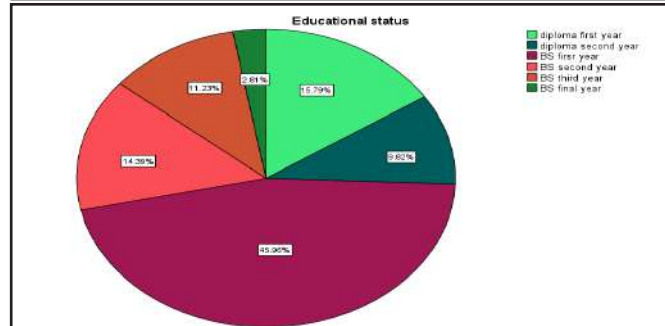


Figure 2: Educational Status

Table 2: Frequency of Tooth Brushing Cleansing Duration and Brushing Technique

Variable	Categories	Frequency	Percentages
Do you brush your teeth?	Yes	279	97.9%
	No	6	2.1%
Which type of brush do you use?	Ultra Soft	14	4.9%
	Soft	141	49.5%
	Medium	111	38.9%
	Hard	3	1.1%
	Never notice	16	5.6%
How often do you clean your teeth?	One time daily	128	44.9%
	Two time daily	128	44.9%
	Three time daily	19	6.7%
	More than three time	1	0.4%
	Weekly	5	1.8%
	Monthly	4	1.5%
Cleaning duration of teeth?	One to two minutes	146	51.2%
	Three to four minutes	118	41.4%
	Five and more than five minutes	21	7.4%
Brushing technique?	Horizontal	65	22.8%
	Vertical	83	29.1%
	Circular	59	20.7%
	Combination	78	27.4%
Do you change your tooth brush?	Yes	257	90.2%
	No	28	9.8%
If yes how often?	No change	28	9.8%
	When useless	75	26.3%
	Once in three months	164	57.5%
	Every six months	7	2.5%
	Once a year	11	3.9%
	Other methods to clean your teeth?	Floss	14
Miswak	158	55.4%	
Manjhan	19	6.7%	
Mouthwash	54	18.9%	
Don't use	40	14.0%	
How do you clean your teeth?	Tooth paste	271	95.1%
	Powder	1	.4%
	Others	5	1.8%
	Sodium bicarbonate	3	1.1%
	Don't use anything	5	1.8%

Table 2 showed 279 (97.9%) participants brush their teeth. In which majority of participants 141 (49.5%) used soft brush for cleaning.

According to frequency of brushing, majority of participants clean their teeth once and twice daily and majority of students (51.2%) spend 1-2 minutes for brushing 29.1% used vertical technique.

More than 50% students changed their brush, among them 57.5% do it after every three months.

Majority of them used (55.4%) miswak for cleaning other than brushing.

Table 3: Comparison of male and female student's oral hygiene practices

Gender	Do you brush your teeth?		Total
	Yes (%)	No(%)	
Male	189 (66.3%)	6 (2.1%)	195 (68.4%)
Female	90 (31.5%)	0 (0%)	90 (31.6%)
Total	279 (97.8%)	6 (2.1%)	285 (100%)

Table 3 showed that all female students brush their teeth while 66.3% male students brush their teeth.

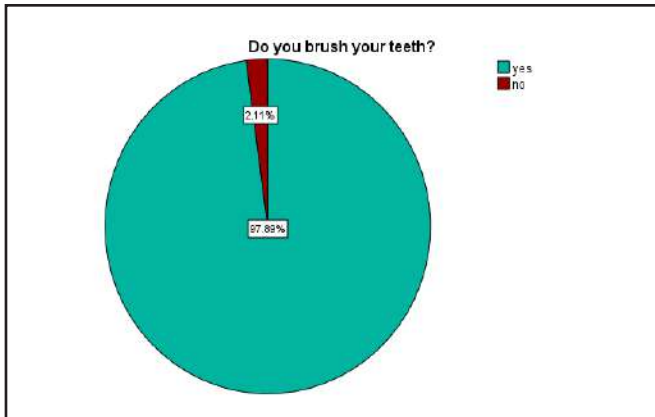


Figure 3: Do you brush your teeth

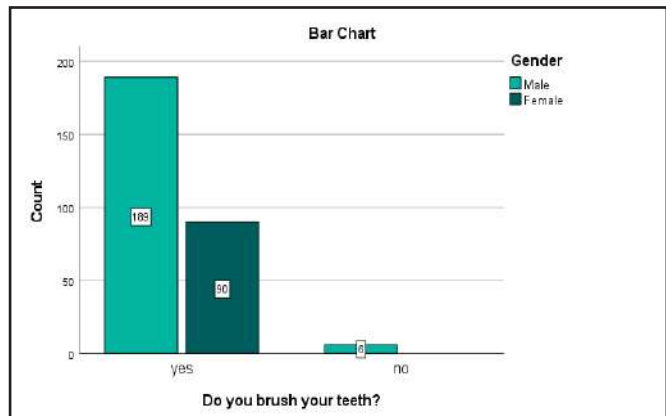


Figure 6: Do you brush your teeth

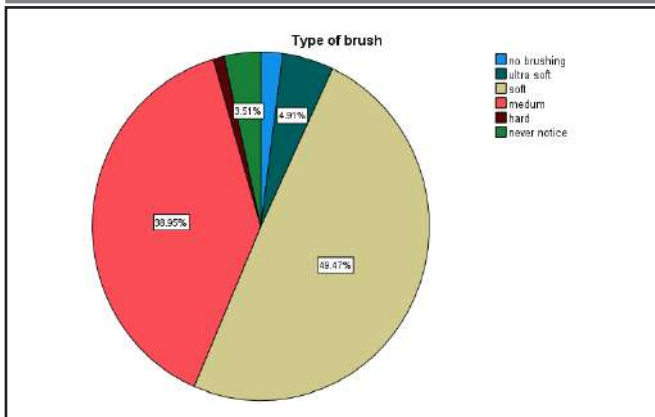


Figure 4: Types of brush

Table 4: Gender and type of Brush

Gender	Which type of brush do you use?						Total
	No brushing	Ultra soft	Soft	Medium	Hard	Never notice	
Male	6 (2.1%)	9 (3.2%)	96 (33.7%)	76 (26.7%)	2 (0.7%)	6 (2.1%)	195 (68.4%)
Female	0 (0.0%)	5 (1.8%)	45 (15.8%)	35 (12.3%)	1 (0.4%)	4 (1.4%)	90 (31.6%)
Total	6 (2.1%)	14 (4.9%)	141 (49.5%)	111 (38.9%)	3 (1.1%)	10 (3.5%)	285 (100.0%)

Table 4 showed that majority of male and female students used soft brush for teeth cleaning.

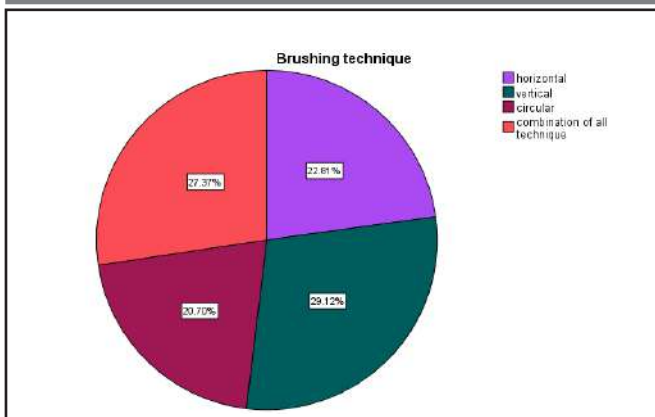


Figure 5: Brushing technique

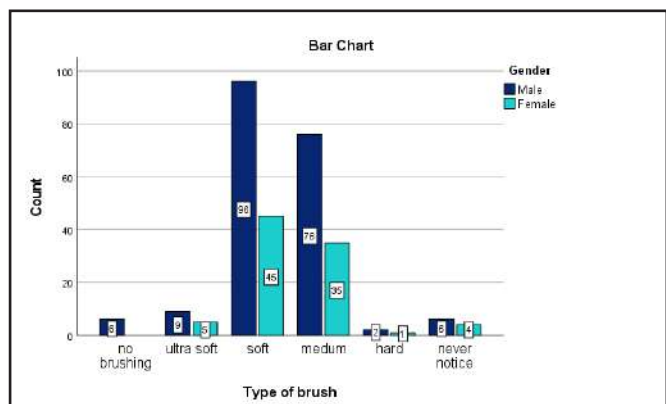


Figure 7: Type of Brush

Table 5: Gender and Cleaning Duration

Gender	Cleaning duration of teeth			Total
	One-two minutes	Three-four minutes	Five and more than five	
Male	98 (34.4%)	78 (27.4%)	19 (6.7%)	195 (68.4%)
Female	48 (16.8%)	40 (14.0%)	2 (0.7%)	90 (31.6%)
Total	146 (51.2%)	118 (41.4%)	21 (7.4%)	285 (100.0%)

Table 5 showed that more than 50% both male and female took 1-2 minutes for cleaning.

A significant portion of the participant (41.1%) reported cleaning their teeth for three to four minutes.

Female participant of the study showed smaller percentage (16.8%) spent 1-2 minutes for cleaning their teeth, and a similar proportion (14.0%) spent three to four minutes.

Table 6: Gender and Brushing Technique

Gender	Brushing techniques				Total
	Horizontal	Vertical	Circular	Combination	
Male	43 (15.1%)	59 (20.7%)	42 (14.7%)	51 (17.9%)	195 (68.4%)
Female	22 (7.7%)	24 (8.4%)	17 (6.0%)	27 (9.5%)	90 (31.6%)
Total	65 (22.8%)	83 (29.1%)	59 (20.7%)	78 (27.3%)	285 (100.0%)

Table 6 showed that among male students, majority used vertical brushing technique while among female students, majority used combination technique for brushing technique.

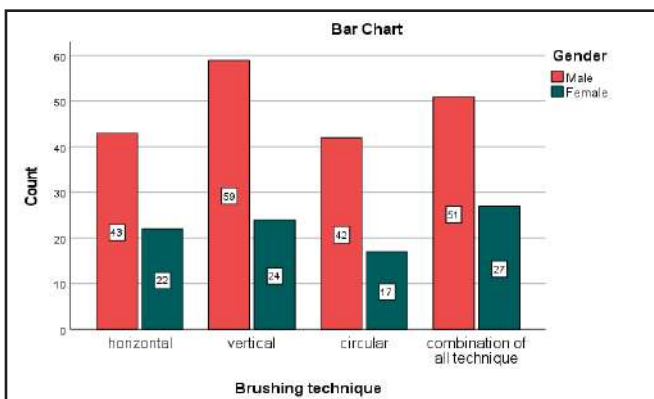


Figure 8: Brushing Technique

Table 7: Gender and Change Brush

Gender	Do you change your brush?		Total
	Yes (%)	No (%)	
Male	168 (58.9%)	27 (9.5%)	195 (68.4%)
Female	89 (31.2%)	1 (0.4%)	90 (31.6%)
Total	257 (90.2%)	28 (9.8%)	285 (100.0%)

Table 7 showed that more than 50% of the female students change their brush than male.

Table 8: Gender and how often Brush Change

Gender	If yes, how often do you change your brush?					Total
	No change	When useless	Once in three months	Every six months	Once a year	
Male	26 (9.1%)	52 (18.2%)	104 (36.5%)	5 (1.3%)	3 (2.8%)	195 (68.4%)
Female	1 (0.4%)	24 (8.4%)	60 (21.1%)	2 (0.7%)	3 (1.1%)	90 (31.6%)
Total	27 (9.5%)	76 (26.7%)	164 (57.5%)	7 (2.5%)	11 (3.9%)	285 (100.0%)

Table 8 showed that majority of male and female students (57.5% of the total participants) change their brush once in three months.

Among the male participant (36.5%) reported changing their toothbrush once in three months, and (18.2) changing their toothbrush when useless.

Female participants of the study (21.1%) changed their tooth brush once in three months, and (8.4%) changed them when useless.

The study show that significant portion of the participants follow recommended toothbrush replacement every three months.

Table 9: Gender and other methods to Clean Teeth

Gender	Others methods to clean your teeth					Total
	Floss	Miswak	Manjhan	Mouth wash	Use nothing	
Male	8 (2.8%)	128 (44.9%)	7 (2.5%)	26 (9.1%)	26 (9.1%)	195 (68.4%)
Female	6 (2.1%)	30 (10.5%)	12 (4.2%)	28 (9.8%)	14 (4.9%)	90 (31.6%)
Total	14 (4.9%)	158 (55.4%)	19 (6.7%)	54 (18.9%)	40 (14.0%)	285 (100.0%)

Table 9 showed that majority of male and female students used miswak for teeth cleaning other than brushing.

Table 10: Gender and Cleaning Medium

Gender	How do you clean your teeth?					Total
	Tooth paste	powder	Others	Sodium bicarbonate	Don't Use anything	
Male	182 (63.9%)	0 (0.0%)	5 (1.8%)	3 (1.1%)	5 (1.8%)	195 (68.4%)
Female	89 (31.2%)	1 (0.4%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	90 (31.6%)
Total	271 (95.1%)	1 (0.4%)	5 (1.8%)	3 (1.1%)	5 (1.8%)	285 (100.0%)

Table 10 showed that majority of male and female students used tooth paste for teeth cleaning.

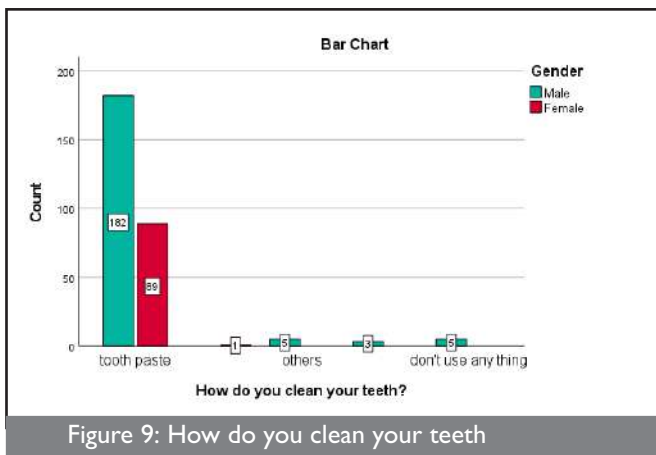


Figure 9: How do you clean your teeth

## Discussion

The study conducted on the prevalence of oral hygiene practices and halitosis among undergraduate students enrolled at King Saud University, specifically within the College of Dentistry. A self-administered questionnaire was disseminated to a total of 481 students, comprising 263 males and 218 females.<sup>11</sup>

Bashiru BO, et al was conducted the study of Oral self-care practices among university students in Port Harcourt, Rivers State, Nigeria. A total of 360 young adults, 188 males and 172 females, aged 18-33 years participated in the study. Brushing habits of the study population were at least once a day (90%), 8.1% twice a day and 1.9% more than twice a day. Approximately half (52.5%) of the samples used medium sized bristles, 30% hard bristles and 17.5% soft bristles tooth brush. About 28.8% of the students replaced their toothbrush every 3 months, 45% replaced their toothbrush after 6 months and 26.2% replaced at more than 12 months. Regarding oral hygiene aids, all the students used toothbrush and paste for cleaning their teeth. Few students, 5.8% and 4.2% used dental floss and mouthwash, respectively, as oral cleaning aid.<sup>12</sup>

The correlational study conducted in Riyadh city of Saudi Arabia, reported that females had a higher chances of engaging in oral hygiene habits, including tooth brushing, mouthwash use, and regular dental check-ups, as compared to their male counterparts similar to present study because females are more concerned about their hygienic practices.<sup>13</sup>

Umezudike KA, et al conducted study in Nigeria, reported only 42.7% of individuals adhered to the practice of brushing twice or more daily similar to present study in which all individuals once and twice daily used toothbrush for cleaning teeth because longer cleaning durations may have associated with more thorough oral hygiene practices. Their study showed 11.9% incorporated interdental floss for the removal of interproximal plaque while present study showed only 4.9% flossing among individuals because of less sample size and lack of awareness towards floss.<sup>14</sup>

Another study conducted in Uttarakhand state, to assess oral hygiene knowledge and practices among rural community, which showed poor hygiene below age 19 years while present study showed good oral hygiene at age of 18 years and above.

Their daily brushing practices was 67% while present study daily brushing with 44.9% because of less sample size.<sup>15</sup>

In present study, a smaller percentage of students reported using other methods like mouthwash, Manjhan, and floss. Some students mentioned that they don't use any other method besides toothbrushes for teeth cleaning.

In a pilot study conducted by Kumar S et al. among two non-professional college student populations in Chennai, India, the brushing habits of the participants varied. A significant majority (85.3%) reported brushing at least once a day, while 14.6% brushed twice a day, and a minimal 0.9% brushed thrice a day. The study revealed that 45% of the participants used toothbrushes with medium-sized bristles, 27% opted for hard bristles, and 24% preferred soft bristles. In terms of oral hygiene products, 51% of the participants used toothpaste, while 38% opted for tooth powder, and an unconventional 10% utilized brick powder. Among the toothpaste users, 49% reported using fluoridated toothpaste. Interestingly, the study found variations in the amount of toothpaste used during brushing, with 42% using more than half of the toothbrush, 33% using exactly half, and 16.4% using less than half. These findings provide insights into the diverse oral care practices within this student population in Chennai.<sup>16</sup>

## Limitations

The study's limitations include a relatively small sample size, potentially affecting the generalizability of findings. Self-reporting bias is a concern, and future studies could incorporate observational methods.

## Recommendation

To improve oral health practices among the student especially male students, which need to improve their oral hygiene practice. Targeted educational programs should be implemented, emphasizing consistent brushing, flossing, and regular dental check-ups. Tailored interventions, accounting for gender-specific preferences, should be designed to address variations observed in practices. Cultural sensitivity in oral health promotion is essential, recognizing and respecting diverse cultural practices while promoting evidence-based methods. Providing on-campus dental check-up facilities could further encourage students to prioritize their oral health.

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### Author Contributions

1. Taskin Ullah- Literature review, Methodology of study and Manuscript review
2. Aniqā Salim- Manuscript writing and Data Analysis
3. Irfan Salim- Conceptualization and data interpretation