

Oral Hygiene Practices and Awareness among Pharmacy Students of R. P. Shaha University in Bangladesh: A Retrospective Study

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ABSTRACT

Oral health is a fundamental component of overall well-being, yet it remains a neglected aspect of personal care among many populations. Pharmacy students, as future healthcare providers, are expected to possess both knowledge and personal practices. This retrospective cohort study involved undergraduate pharmacy students from various academic years at R. P. Shaha University in Narayanganj, Bangladesh. Using a structured paper-based questionnaire, the research assessed student's awareness and practices related to oral hygiene, focusing on their knowledge, behaviors, and influencing factors. A representative sample of students revealed that 65.4% brush their teeth twice daily, with a predominant use of toothpaste (97.44%) over traditional methods like meswak (2.56%). The study reveals a concerning trend, with 82.1% of students neglecting preventive dental care, yet 83.3% are mistakenly satisfied with their oral health. Notably, 25.6% of students reported never having visited a dentist, and only 3.8% sought dental care annually, indicating a reactive rather than proactive approach to oral health. Furthermore, Herbal toothpaste is less favored, with only 24.4% usage, and only 33.3% use mouthwash, highlighting a gap in comprehensive oral hygiene practices.

Gender differences were evident, with female students more likely to use mouthwash (38.6%) than male students (19.0%). Findings highlight the need to promote awareness for better oral health.

1. Introduction

Maintaining optimal dental well-being involves ensuring the mouth and its adjacent components are free from disease (Fox, 2010). It is a fundamental aspect of overall health and well-being (Gift & Atchison, 1995; Dolan et al., 2006; Sabbah et al., 2007). Proper dental care is crucial for maintaining healthy teeth and gums, as well as for preserving oral functionality (Abdollahi & Radfar, 2003; Puy, 2006). While there is limited data on oral health status among pharmacy students in Bangladesh, a study on teeth status and oral health-related quality of life among the elderly in Bangladesh revealed significant oral health issues impacting their overall quality of life. (Eusuf Zai, 2013). Introducing oral health education into the pharmacy curriculum could help address these gaps and better equip pharmacy students to care for their future patients. Dental caries is widespread in Bangladesh, presenting challenges for pharmacy students who need to understand its implications when providing medication counseling. Consequently, pharmacy students require a solid grounding in oral health education to identify potential risks and offer appropriate recommendations. Unfortunately, there is evidence that oral health education is frequently overlooked in pharmacy curriculum worldwide, leading to inadequate knowledge and preparedness among pharmacy students (Ogunbodede et al., 2015).

According to multiple studies, young people in Bangladesh show a high prevalence of dental problems (Ahmed et al., 2021; Islam et al., 2019). Poor oral hygiene practices and dietary habits, such as consuming junk food, exacerbate the issue (Karim & Hossain, 2020). Investing in young people's oral health through targeted interventions can foster positive behaviors and improve overall health outcomes (AlGhamdi & Burnett, 2018).

While no specific studies have focused on oral health education among Bangladeshi pharmacy students, evidence from neighboring countries indicates the urgency of addressing this issue. For instance, a study evaluating oral health knowledge and behaviour among Pakistani pharmacy students discovered significant deficiencies (Fida et al., 2017). Participants showed limited understanding of the oral health complications arising from long-term medication use, emphasizing the need for enhanced oral health education in the pharmacy curriculum. Addressing this gap requires collaborative efforts between pharmacy institutions, regulatory bodies, and healthcare professionals.

Integrating oral health components within pharmacy courses would facilitate greater exposure to relevant topics and foster improved student comprehension. Ultimately,

investing in oral health education for pharmacy students benefits individual learners and future patients. Improved knowledge and practices contribute significantly to holistic patient care, reducing dental caries and other oral health concerns.

2. Methods and materials

2.1 Study Design

This retrospective investigation was conducted in January 2024 at R. P. Shaha University in Narayanganj-1400, Bangladesh. The study's primary objective was to assess the awareness and practices related to oral hygiene among undergraduate pharmacy students. Specifically, the study aimed to evaluate the students' knowledge of oral hygiene, identify the oral hygiene practices they follow, and explore the factors influencing their awareness and practices. This study's results are expected to enhance educational strategies on oral hygiene, particularly for future healthcare professionals.

2.2 Study Population

The study was conducted exclusively with students from the Department of Pharmacy at the university campus. Due to time and logistical constraints, a representative sample was selected for the study. As stated by Zikmund (2003), the sample size (n) can be calculated using the formula $n = p(1 - p) (Z / E)^2$. For this study, assuming maximum variability with a proportion of 0.50, a 95% confidence level ($Z = 1.96$), and a margin of error of 11.1% ($E = 0.111$), the sample size was calculated as $n = 0.5(1 - 0.5) (1.96 / 0.111)^2 = 0.25 \times 311.9 = 77.98$, which rounds to 78. Hence, a sample size of 78 is deemed sufficient for the study.

2.3 Data Collection Procedure

A structured, paper-based questionnaire was developed through an extensive review of relevant literature to assess participant's oral hygiene knowledge and practices. The study adhered to ethical guidelines and received approval from the Institutional Research Review Committee of R. P. Shaha University. Informed consent was obtained verbally from all participants to ensure voluntary participation and confidentiality of their responses.

2.4 Data Analysis

The data were entered into IBM SPSS Statistics (Version 25) for statistical analysis. Descriptive statistical methods were employed to summarize the data, with frequency

distributions, pie charts, and bar graphs used to represent student's oral hygiene knowledge and practices.

3. Results

The study sample consisted of individuals across various age groups, with 33.3% aged between 18-20 years, 62.8% aged between 21-23 years, and 3.8% aged between 24-26 years. Gender distribution was predominantly male, comprising 73.1% of the participants, while females comprised 26.9%. Regarding academic years, the distribution shows that 41.0% of participants were in their 1st year, 30.8% in their 2nd year, 24.4% in their 4th year, and 3.8% in their 3rd year (Table 1). This breakdown reflects the distribution of student engagement in this study.

Table 1: Demographic characteristics of the sample population (n=78).

Variable	Total Number	%
Age group (in years)		
18-20	26	33.3%
21-23	49	62.8%
24-26	3	3.8%
Gender		
Male	57	73.1%
Female	21	26.9%
Academic Years		
1 st Year	32	41.0%
2 nd Year	24	30.8%
3 rd Year	3	3.8%
4 th Year	19	24.4%

While our study focused on general oral hygiene behaviors, further results show that circular brushing 88.46% is the most common technique among students, 7.69% of respondents use a horizontal brushing technique, and 3.85% use a mixed technique, highlighting a potential area for improvement. Additionally, while toothpaste dominates as the cleaning product 97.44%, Meswak usage, only 2.56%, indicates a cultural influence on oral hygiene routines that warrants further exploration (Figure 1a; b).

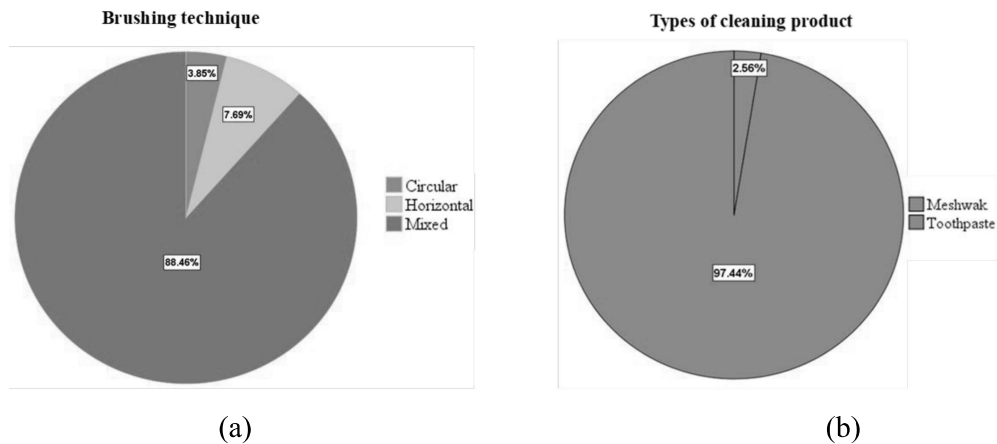


Figure 1: (a) Brushing Technique; (b) Types of cleaning method.

Afterward, the study investigated the oral hygiene practices of participating students (Table 2). It shows most students brush their teeth twice daily, accounting for 65.4%, while 29.5% brush once daily. A smaller fraction, 5.1%, brushes more than twice a day. Regarding brushing timing, 75.6% of students brush before breakfast and after dinner, whereas 15.4% brush after meals. Only 1.3% brush before breakfast and after dinner, and 7.7% do not maintain a consistent brushing schedule. Regarding the duration of each brushing session, 55.1% of students spend approximately 2 minutes brushing their teeth, 20.5% brushing for 1 minute, and 24.4% brushing for more than 4/5 minutes. Regarding regularity, 70.5% brush both in the morning and at night, while 29.5% brush only in the morning. Toothbrush replacement habits show that 66.7% of students change their toothbrush monthly, 30.8% replace it only when it is broken, and 2.6% change their toothbrush yearly. Lastly, the type of products used for brushing indicates a preference for chemical products among 75.6% of students, whereas 24.4% use herbal products. These findings highlight the diverse oral hygiene practices among the student population, emphasizing the need for consistent and effective oral health education.

Table 2: Oral-health-related practice among the students (n=78).

Questions	n	n %
How many times a day do you brush your teeth?		
More than two times	4	5.1%
Once Daily	22	29.5%
Twice Daily	51	65.4%

Brushing time (in the morning/ night)		
After the morning meal and after the night meal	12	15.4%
Before the morning meal and after the night meal	1	1.3%
Before Morning Meal and after Night Meal	59	75.6%
Does not maintain time	6	7.7%
How much time do you take for each brushing?		
1 min	16	20.5%
2 mins	43	55.1%
More than 4/5 mins	19	24.4%
Brushing time		
Both at night & and in the morning	55	70.5%
Only at morning	23	29.5%
How often do you change the toothbrush?		
Change when broken	24	30.8%
Monthly	52	66.7%
Yearly	2	2.6%
What kind of product do you use for brushing?		
Chemical	59	75.6%
Herbal	19	24.4%

Our further investigation provides insights into oral-health-related awareness among students, focusing on their dental visit frequency (Table 3); the data reveal that 25.6% of students have never visited a dentist, and only 3.8% visit annually. Notably, 26.9% of individuals go to the dentist only when they have a dental problem, while 43.6% visit as needed. Regarding scaling procedures, the majority, 82.1%, have never undergone one, with only 7.7% having the procedure in the past year and 9.0% within the last six months. Just 1.3% reported a recent scaling procedure. Despite the infrequent dental visits and lack of preventive care, 83.3% of students are satisfied with their oral health, while 16.7% are not. Despite limited engagement in routine dental care, this high satisfaction rate indicates a potential gap in awareness about the importance of regular dental visits and preventive procedures like scaling.

Table 3: Oral-health-related awareness among the students (n= 78).

Question	n	n %
How often do you visit the dentist?		

Never	20	25.6%
Once a year	3	3.8%
When you have a dental Problem	21	26.9%
When necessary	34	43.6%

The most recent time you underwent a scaling procedure?		
In 1 Year	6	7.7%
In 6 months	7	9.0%
Never	64	82.1%
Recently	1	1.3%

Do you think you are satisfied with your oral health?		
No	13	16.7%
Yes	65	83.3%

We also collected responses from students regarding the last time they visited a dentist. The data in (Figure 2) reveals that a significant proportion, 37.18%, reported never having visited a dentist, indicating a potential gap in regular dental care. Another 5.13% of the students had their last visit within the past year, and another 5.13% either stated "None" or visited one year ago. Smaller groups of students reported varying times since their last dental visit: 2.56% each for timeframes such as two months ago, three months ago, six months ago, and ten years ago. The remaining responses were more dispersed, with 1.28% each reporting a visit at numerous other intervals, ranging from one week to several years ago, including specific occasions like birthdays or vague timeframes such as "once upon a time."

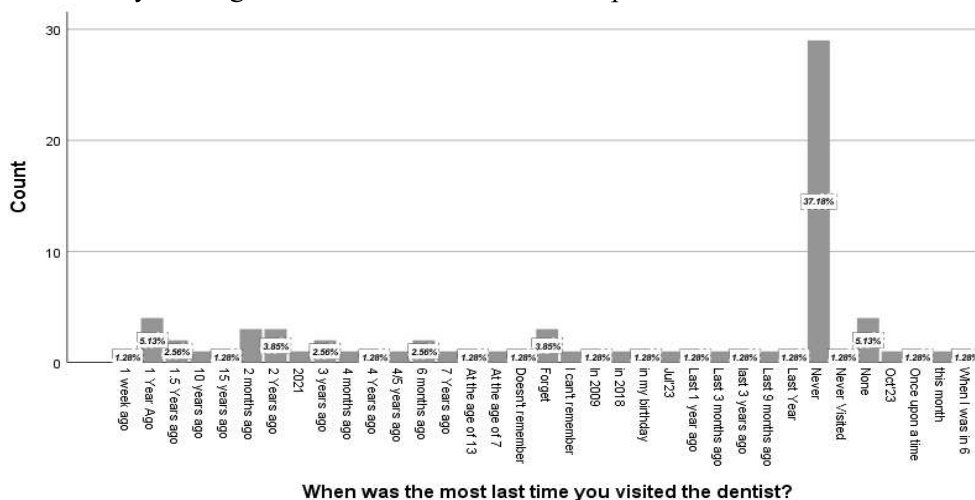


Figure 2: The student's most recent visit for a dental checkup

Oral habits among students were also observed, with comparisons made between responses from female and male students in (Table 4); regarding the use of mouthwash solution, a higher percentage of male students, 81.0%, reported not using mouthwash compared to female students, 61.4%. Conversely, 38.6% of female students use mouthwash, significantly more than 19.0% of male students. In total, the majority of students, 66.7%, do not use mouthwash, while 33.3% do.

Most students practice cleaning their tongues, with 89.5% of female and 85.7% of male students reporting doing so. Only a tiny percentage, 10.5% of female and 14.3% of male students do not clean their tongues.

In terms of experiencing toothaches, 73.7% of female and 76.2% of male students reported not suffering from toothaches. Overall, 25.6% of the students are dealing with this issue. Regarding tooth loss, a higher percentage of male students, 90.5% have not lost any teeth compared to female students, 84.2%. Only 14.1% of the students reported experiencing tooth loss.

Table 4: Oral-health-related hygiene habits among the students. (n = 78)

Question	Response	Female (n %)	Male (n %)	Total (n) %
Do you use a mouthwash solution?	No	35 (61.4 %)	17 (81.0 %)	52 (66.7 %)
	Yes	22 (38.6 %)	4 (19.0 %)	26 (33.3 %)
Do you clean your Tongue?	No	6 (10.5 %)	3 (14.3 %)	9 (11.5%)
	Yes	51 (89.5 %)	18 (85.7 %)	69 (88.5 %)
Do you suffer from toothache?	No	42 (73.7 %)	16 (76.2 %)	58 (74.4 %)
	Yes	15 (26.3 %)	5 (23.8 %)	20 (25.6 %)
Have you lost any of your teeth?	No	48 (84.2 %)	19 (90.5 %)	67 (85.9 %)
	Yes	9 (15.8 %)	2 (9.5 %)	11 (14.1 %)

4. Discussion

The study revealed a predominantly majority of young participants aged between 21 and 23 years, 62.8%; most % were in their first year of study, 41.0%, indicating a relatively fresh cohort in higher education settings. Oral hygiene practices among the students demonstrated a solid adherence to twice-daily brushing at 65.4%, with the majority brushing for approximately two minutes per session at 55.1%. A similar study in Bangladesh focusing on adolescents demonstrated similar trends in oral hygiene practices. A significant proportion of students brushed their teeth twice daily, and most used toothpaste (Haque et al., 2016); additionally, while toothpaste was the dominant cleaning product 97.44%, the minimal use of traditional methods like

meswak 2.56% reflects cultural influences that merit further exploration. The study revealed a concerning lack of regular dental visits among the student population. Nearly a quarter of 25.6% had never visited a dentist, and only a tiny percentage visited annually, 3.8%. This is significantly lower than the recommended guidelines for preventive care (American Dental Association, 2023). However, notable gaps in optimal oral hygiene were observed, such as the prevalent use of circular brushing technique 88.46% and the infrequent use of mouthwash 33.3%, a notable difference is observed in the use of mouthwash (Opoku et al., 2024); the Indian study reported higher usage rates compared to our findings. Despite the high self-reported satisfaction with oral health, 83.3%, the infrequent dental visits, with 25.6% never having visited a dentist and 82.1% never having undergone a scaling procedure, indicate a potential underestimation of the importance of professional dental care. Gender differences were also evident, with female students more likely to use mouthwash 38.6% compared to male students 19.0%, and a higher percentage of male students reported not having lost any teeth 90.5% compared to female students 84.2%. The data express the necessity for enhanced oral health education to promote consistent dental visits and preventive care practices, addressing behavioral and educational gaps to improve overall oral health outcomes among students. The study reveals several concerning trends regarding student's dental health practices and perceptions. A significant 25.6% of students reported never visiting a dentist, while 26.9% only sought dental care when faced with problems, indicating a reactive rather than preventive approach to oral health. Additionally, 82.1% have never undergone a scaling procedure, suggesting a lack of routine professional cleaning. Despite these gaps in preventive care, 83.3% of students expressed satisfaction with their oral health, revealing a potential disconnect between their perceived and actual dental health needs. This misalignment points to a critical need for enhanced education and awareness about the importance of regular dental check-ups and preventive measures to maintain optimal oral health.

5. Conclusion

The study indicates a mix of commendable and concerning trends in oral hygiene practices among pharmacy students at R. P. Shaha University. While daily brushing habits and awareness of proper techniques are relatively strong, the lack of routine dental visits and limited use of preventive services such as scaling and mouthwash point to significant educational and behavioral gaps. The high rate of self-reported satisfaction with oral health, despite poor professional dental engagement, suggests a disconnect between perceived and actual oral health needs. These insights indicate the critical need for targeted oral health education initiatives that emphasize the importance of preventive care, regular dental checkups, and broader oral hygiene

practices. Strengthening such awareness within future healthcare professionals is vital not only for their personal well-being but also for their role in promoting oral health within the broader community.

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Conflict of Interest: The writers do not have any competing interests.

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