

Knowledge, Attitude & Practice of Pharmacological Students towards Toothbrush Hygiene – A Questionnaire Based Survey

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ABSTRACT

Introduction: Oral health means health of mouth which is vital to well-being. Most common cause of oral health disease is biofilm formation. Tooth brushing is the most easily available and recognized practice to maintain oral health.

Aims and Objectives: To evaluate the knowledge, attitude, and practices of pharmacy students regarding toothbrush hygiene. The goal is to identify awareness gaps that could be addressed through targeted oral health education.

Materials and Methods: The present study was conducted among pharmacy students residing in Lucknow city (Uttar Pradesh). A self-designed questionnaire was prepared which consists of demographic details. Total ten questions were prepared in which 4 questions were related to knowledge, 2 questions were related to attitude and 4 questions were related to practices towards tooth brush hygiene.

Results: Chi square test of significance was used to assess if gender and age group has any role in answering the questions.

Conclusion: This study underscores a crucial insight: while pharmacy students—future healthcare professionals—demonstrate a baseline awareness of oral hygiene practices, significant gaps persist in their practical application and technical knowledge regarding tooth brushing.

KEYWORDS: Pharmacist, Hygiene, Toothbrush, Knowledge, Brushing

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INTRODUCTION

Oral health means health of mouth which is vital to well-being. It is negligence towards oral health that has led to oral health disease being the most common non-communicable disease worldwide. Most common cause of oral health disease is biofilm formation. Oral cavity harbors thousands of microbial species that exist either as planktonic cells or incorporated into biofilm. [1] Biofilms that consist of pathogens are challenging to control. Dental disease can be prevented easily through simple activities like tooth brushing and routine oral check-ups. Tooth brushing is the most easily available and recognized practice to maintain oral health. However, many people are unable to inculcate this habit due to certain factors which play a critical role in prevention of oral disease. [2]

Brushing is the most affordable and readily available aid that can prevent severe complications arising from plaque buildup. If plaque is not removed, it accumulates below and above the gums leading to gum disease, discomforting the individual. Brushing prevents staining of tooth, bad breath which can affect an individual's everyday life. [3] Brushing the teeth and removal of microbial buildup and debris from the tongue is a major stepping stone in eliminating bad breath. Regular brushing of tooth can reduce a person's visit to dental which reduces his or her expenses and can limit future pain or discomfort. [4]

Pharmacy occupies an important role in healthcare using varied approach. Pharmacists are positioned to better understand the needs and requirements of people in different communities. [3, 5] Considering their position within that community, pharmacists are more easily approachable and are often the first point of contact with patient seeking medical advice. Pharmacists often consult patient about oral health, specifically for oral ulcers and toothaches since pharmacists often provide over the counter drugs. In order to accomplish appropriate knowledge on tooth brushing, the pharmacy students should have a basic understanding of basic oral hygiene. [3, 6, 7] They should be made aware of common oral ailments and the knowledge that will favor a particular individual. Not lot of studies related to tooth brush hygiene in pharmacy students have been conducted. It has been reported that pharmacy students had inadequate knowledge about oral hygiene. Pharmacy students who are building pharmacist to know about

common oral hygiene measures will eliminate minor dental ailments which can lead to severe complications. Therefore, in this study, we aim to evaluate knowledge of pharmacy student regarding oral hygiene.

MATERIALS AND METHODS

The present study was conducted among pharmacy students residing in Lucknow city (Uttar Pradesh). A cross sectional survey was conducted with multiphasic random sampling technique on 399 students. From each zone one pharmacy college was included in the study. The survey was scheduled in the pharmacy college from each zone from the month of December 2024 to February 2025.

The students available on the day of examination and the students who gave consent for participating in the survey were included. Students who were not willing to participate were excluded from the study. Ethical clearance was obtained from the Institutional Ethical Committee of Saraswati Dental College & Hospital. Oral consent was obtained from each study, explaining the aim and benefits of the study, in a language understandable to population.

A self-designed questionnaire was prepared which consists of demographic details. Total ten questions were prepared in which 4 questions were related to knowledge, 2 questions were related to attitude and 4 questions were related to practices towards tooth brush hygiene. Close ended questionnaire was used for the survey. The study was conducted on 30 participants in Pharmacy College before the start of study to determine the feasibility of study.

RESULTS

The results below show the frequency distribution of the study participants with respect to gender & age groups. Chi square test of significance was used to assess if gender and age group has any role in answering the questions. Data was analyzed using SPSS version 20.

Table 1: Gender wise frequency distribution of the study participants

Gender		Frequency	Percent
Options	Female	62	15.5
	Male	337	84.5
Total		399	100.0

Table 2: Age group wise frequency distribution of the study participants

Age groups		Frequency	Percent
Options	20 & less	168	42.1
	More than 20	231	57.9
Total		399	100.0

Table 3: Chi square test showing the association of gender (G) & age groups (A) with the questions asked in the study.

S. No	Question	P Value
1	What are the materials you use for cleaning your teeth	0.043* (G) 0.408 (NS-A)
2	How often do you brush your teeth	0.000** (G) 0.007** (A)
3	How often do you change your toothbrush	0.002** (G) 0.000** (A)
4	What type of toothbrush do you use	0.029* (G) 0.000** (A)
5	Do you know that the back side of your toothbrush has a tongue cleaner	0.008** (G) 0.000** (A)
6	After brushing do you cover the toothbrush with a cap	0.623 (NS-G) 0.000** (A)
7	What type of motion do you use while brushing	0.223 (NS-G) 0.000** (A)
8	How long do you brush your teeth	0.042* (G) 0.000** (A)

9	Do you clean your tongue	0.610 (NS-G) 0.000 (A)
10	Does a toothbrush helps in removal of plaque	0.125 (NS-G) 0.046* (A)

* $p < 0.05$ is statistically significant, ** $p < 0.01$ is statistically highly significant, NS = not significant, G- Gender (male & female), A- age groups (20 years & less, more than 20 years).

DISCUSSION

The present study aimed to evaluate the knowledge, attitude, and practices of pharmacy students in Lucknow regarding tooth brushing habits. A total of 399 students were surveyed, revealing a male predominance (84.5%), which may be attributed to gender distribution in pharmacy colleges across North India or the higher availability and willingness of male students to participate during the survey. The majority of participants reported using a toothbrush and toothpaste for cleaning their teeth, and most claimed to brush twice daily—both practices aligning with global oral hygiene recommendations and similar findings reported by Ozier et al. (2023). Brushing duration was commonly reported as five minutes, which, although acceptable, may be overestimated due to self-reporting bias. A significant number of students replaced their toothbrush only when bristles flared, a behavior consistent with basic awareness yet showing scope for improvement, as recommended guidelines suggest replacement every 2–3 months. [8,9,10] The preference for medium-bristle brushes was dominant, though current dental guidelines advocate for soft-bristled brushes to prevent abrasion, indicating a knowledge gap. [11] A substantial proportion of students were unaware that the back of the toothbrush may have a tongue cleaner, and many did not use a protective cap after brushing—practices that, if neglected, could compromise hygiene. Horizontal brushing motion was most common, despite circular or combined techniques being more effective, as demonstrated in studies by Saghiri et al. (2023) and Mato et al. (2023).

Although a majority acknowledged the role of toothbrushes in plaque removal and practiced tongue cleaning, gaps in execution and understanding were observed, particularly across gender and age groups. Statistically significant differences were evident in brushing habits and awareness levels, with older students (above 20 years) showing better compliance in almost all aspects. These findings emphasize the need for integrating structured oral health education into the pharmacy curriculum to bridge the gap between theoretical knowledge and practical behavior.

In support of these observations, Kuna, Raju, et al. (2021) documented a significant deficiency in the technical knowledge of toothbrush selection and replacement frequency among healthcare students in South India. Similarly, Hussein, Hussein, et al. (2020) reported poor awareness of ideal brushing techniques and hygiene practices in a Somali university cohort, reinforcing the global relevance of such educational interventions. [12]

Comparatively, while our results resonate with those of Usman et al. (2023) and Mato et al. (2023) regarding hygiene knowledge deficits among pharmacy students, the present study further highlights the critical need for practical demonstrations and awareness workshops. Given that pharmacists are often the first point of contact for oral health queries in the community, equipping them with accurate and comprehensive oral hygiene knowledge can have a far-reaching impact on public health. [13]

CONCLUSION

This study underscores a crucial insight: while pharmacy students—future healthcare professionals—demonstrate a baseline awareness of oral hygiene practices, significant gaps persist in their practical application and technical knowledge regarding tooth brushing. The findings reveal that although the majority brush twice daily and use standard oral hygiene materials, many lack awareness about proper brushing techniques, toothbrush replacement timelines, tongue cleaning tools, and post-use hygiene practices. Notably, age and gender influenced several key behaviors, with older students generally showing more informed habits. The predominance of male participants also reflects the demographic trends in pharmacy education within the studied region. These observations point to a vital need for structured oral health education in non-dental healthcare curricula. Integrating targeted training and awareness programs within pharmacy education can bridge this knowledge-practice gap, empowering pharmacists to not only maintain their own oral health but also to effectively guide patients. As frontline healthcare advisors, pharmacy students equipped with proper oral hygiene knowledge can significantly contribute to community-wide prevention of dental diseases. Thus, this research advocates for interdisciplinary collaboration in oral health education, reinforcing that oral hygiene is not just a dental concern but a shared healthcare responsibility. The findings collectively highlight the importance of improving the knowledge, attitude, and practice of pharmacological students towards toothbrush hygiene—the core focus of this study.

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