

Knowledge, Attitude, and Behavior Regarding Oral Health among Students Studying Bachelor of Dental Surgery in Kolkata: A Cross-sectional Study

Sibasis Mandal¹, Aditi Ghosh², Debojyoti Das³, Amit De⁴, Anindya Priya Saha^{5*}, Rajashree Ganguly⁶

¹Former Public Health Scholar, Tata Institute of Social Science, Guwahati, Assam, India.

²Former House Surgeon, Dr R Ahmed Dental College and Hospital, Kolkata, West Bengal, India.

³Department of Conservative Dentistry and Endodontics, Guru Nanak Institute of Dental Science and Research, Kolkata, West Bengal, India.

⁴Department of Periodontics, Haldia Institute of Dental Science and Research, Haldia, West Bengal, India.

⁵Department of Periodontics, Dr R Ahmed Dental College and Hospital, Kolkata, West Bengal, India.

⁶Department of Periodontics, Guru Nanak Institute of Dental Science and Research, Kolkata, West Bengal, India.

Abstract

Background: Oral health is an integral part of systemic health. Oral diseases pose a major public health burden for several countries. India also belongs to the list. The state which was having most oral health problems reported by its people was West Bengal. Bachelor of Dental Surgery (BDS) students will enter into the oral health-care system and their awareness has an important impact on the community at large. Unfortunately, there is a dearth of the literature on the knowledge, attitude, and behavior of dental students of West Bengal as well as in India. The aims of the study were to explore the present knowledge of students of BDS, as well as their attitude and practice of oral health; and compare those among different academic years; and perform a gender disaggregated analysis. **Materials and Methods:** This cross-sectional study was conducted in a dental college of Kolkata during 2015, by administering a self-reported questionnaire among the students studying BDS. **Results:** A total 273 {137 male (50.2%) and 136 female (49.8%)} students from different academic years were participated in the study. There was weak correlation (0.234) between knowledge and attitude in Pearson's two-tailed significance test. No significant correlation (0.038) was seen between attitude and behavior, while a little correlation (0.158) was observed between behavior and knowledge. A moderate correlation (0.690) was found between knowledge and progression of academic year, while there were weak and no correlation in case of attitude (0.191) and behavior (0.062), respectively, with academic year. No significant difference was found between male and female students in this regard. **Conclusion:** BDS students' knowledge, attitude, and behavior regarding oral health were lagging and needed improvement.

Keywords: Attitude, Behaviour, Dental, Health, Knowledge, Oral.

INTRODUCTION

Health has been defined as “a state of complete physical, mental, social well-being, and not merely the absence of disease or infirmity.”^[1] Hence, oral health represents a state of being completely free from dental and orofacial pain, infection, oral cancer, developmental defects, periodontal disease, tooth decay and tooth loss, and other diseases and disorders affecting oral cavity. As oral cavity is regarded as “mirror image of body,”^[2] oral health is an integral part of general health. Many systemic diseases have correlation with oral diseases and course and severity of one influence other. In 2011, United Nations General Assembly addressed that “...oral, ... diseases pose a major health burden for many countries and that non-communicable disease shares a common risk factors

and can benefit from common response to non-communicable disease.” To accomplish this “Global Oral Health Goals, Objectives, and Targets for the Year 2020,” the FDI and WHO have set goals for oral health.^[3,4] In this goal, dental health-care workers have an immense contribution to the society and they pose a role model, because they are the first point of contact in the community to address its oral health-care needs.

Address for correspondence: Anindya Priya Saha,
RA-323, Saltlake City, Sector 4, Kolkata 700 105, West Bengal, India.
Phone: 9339771833. E-mail: dreamy.aps@gmail.com

Received: Jan. 02, 2022; **Accepted:** Mar. 03, 2022; **Published:** Apr. 04, 2022

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

How to cite this article: Mandal S, Ghosh A, Das D, De A, Saha AP, Ganguly R. Knowledge, Attitude, and Behavior Regarding Oral Health among Students Studying Bachelor of Dental Surgery in Kolkata: A Cross-sectional Study. J Res Adv Dent 2022;13(3):114-118.

Access this article online

Website:
www.jrad.co.in

DOI:
<https://doi.org/10.53064/jrad.2022.13.3.168>

Health-care workers are more educated for prevention of disease and promotion of health. As expected, dental students have better knowledge regarding oral health than students of other disciplines,^[5-8] but the change in growth of knowledge level was different in different studies. Some observed a significant improvement of knowledge,^[9-12] while few showed the improvement was not significant.^[6,13] In dental education system, students get equipped with knowledge, but it is difficult to evaluate their self-oral care practice, that indicates their attitude and behavior.^[11] Better knowledge and more trust on dental procedure and professionals provide positive influence on behavior.^[14] Their oral health knowledge contributes to a positive oral health attitude also.

Bachelor of Dental Surgery (BDS) students will enter into health-care system and will render preventive, promotive, and curative services. Thus, their knowledge, attitude, practice, and awareness have a great impact on their respondents and community at large. Hence, understanding the present scenario of knowledge, attitude, practice, and awareness among BDS students demands great attention in this field. This study attempts to probe for the knowledge, attitude, and behavior of the future oral health-care professionals.

Aims and objectives

The aims of the study were to explore the present knowledge of students of BDS, as well as their attitude and practice of oral health; and compare those among different academic years; and perform a gender disaggregated analysis.

METHODOLOGY

The cross-sectional study was conducted at Guru Nanak Institute of Dental Science and Research, Kolkata 700114; during January, 2015; among the BDS students of all academic years and internees.

The students were given with a questionnaire, and which respondents were assisted to fill up. Around 25 (+10) min were taken by each to complete the questionnaire. The purpose of the study was clearly explained to the students and the respondents signed a written consent before joining the study. The study received ethical approval from the Institutional Ethics Committee (Reff. No GN/ADMIN/14/IEC/192 dated August 05, 2014).

The study population consisted of BDS students of 4 academic years and internees, estimated around 850. The minimum required sample size was calculated as 265 (by www.surveysystem.com/sscalc.htm) with 95% confidence level, setting confidence interval 5. Total 400 questionnaires were distributed into the students and total 283 responses were collected back. Excluding the partial/unfilled responses, total 273 questionnaires were included in the study.

Hence, 273 respondents, qualifying entry and exclusion criteria, were enrolled for the study. Entry criterion was voluntary involvement of the respondents/students, while partially/unfilled questionnaires were excluded from the study.

Questionnaire

A questionnaire, developed from HU-DBI questionnaire and Saradh and Shetty's questionnaire, was designed by the researchers and validated by a panel of experts. It consisted of three demographic question and 40 questions related to knowledge, attitude, and practice; among which 16 were "multiple choice," and rest 24 were "single choice" type; and those 40 were divided into three parts, like knowledge (1–16), attitude (17–30), and practice (31–40) chronologically. Each question carried one mark, and hence total marks of the questionnaire were 40.

The questions, those belonged to knowledge segment, were on teeth and dentition (number of sets of dentitions and teeth seen in each dentition), brushing (purpose of brushing and desired frequency of change of brush), dental plaque (its meaning and consequence), periodontal disease (cause of bleeding gums and method for its prevention and cause of tooth/teeth loss in old age), dental caries (cause of dental caries and method for its prevention, topical fluoride application, and harmful effect of sweets), oral cancer (risk factors).

Questions assessing respondents' attitude included their perception toward orosystemic interconnect, impact of dentition on aesthetics, relationship of oral health and mental health, impact of tooth loss on speech, whether periodontal disease could be prevented by brushing alone, malaligned teeth could be corrected by the treatment, whether carbonated drinks affect teeth, whether they care for their teeth, whether they are happy or concerned with the color of teeth and gum, or they are worried with sticky deposits on teeth and bad breath, or they feel the need for replacing the lost tooth, or they think that girls have been more concerned about facial aesthetics.

The behavior of the students was determined with questions such as their frequency for brushing, type of toothbrush, technique of brushing, type of material used with brush, schedule for cleaning of tongue and teeth, regularity of dentist visit, and checking of teeth and tongue/mucosa in a mirror.

RESULTS

Total 273 respondents, belonging to both sex (Male: 137, 50.20% and Female: 136, 49.80%), were included in the study (Figure 1), among which 77 (28.20%) were 1st year student, 45 (16.50%) were 2nd year student, 51 (18.70%) were 3rd year student, 45 (16.50%) were final year student, and rest 55 (20.10%) were internee (Figure 2).

Table 1 presents respondents' knowledge score. Attitude was indicated by Tables 2 and 3 showed students' behavior. There was weak correlation (0.234) between knowledge and attitude in Pearson's two-tailed significance test. No significant correlation (0.038) was seen between attitude and behavior, while a little correlation (0.158) was observed between behavior and knowledge. A moderate correlation (0.690) was found between knowledge and progression of academic year (Table 4 and Figure 3), while there were weak and no

correlation in case of attitude (0.191) (Table 5 and Figure 4) and behavior (0.062), respectively, with academic year. No significant difference was found between male and female in this regard.

DISCUSSION

Based on the findings of the study, this can be stated that there was a significant increase in knowledge regarding oral health among the students with years of academics

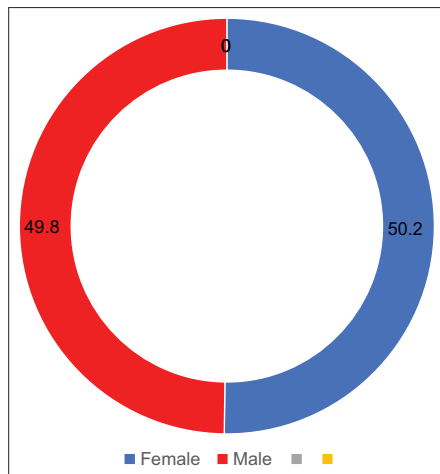


Figure 1: Distribution of sex among the respondents

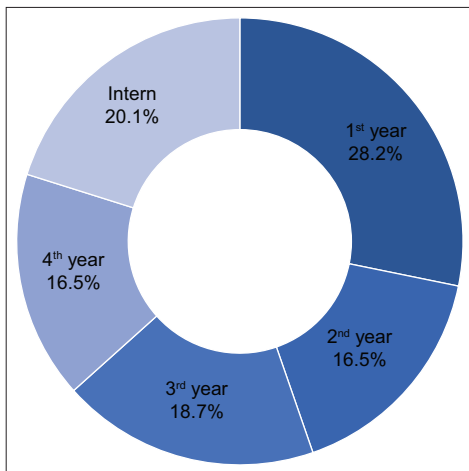


Figure 2: Respondents' distribution in academic years

(Pearson's correlation was 0.709 and 0.676 for male and female, respectively), which was equivocal with the previous studies.^[6,9-13]

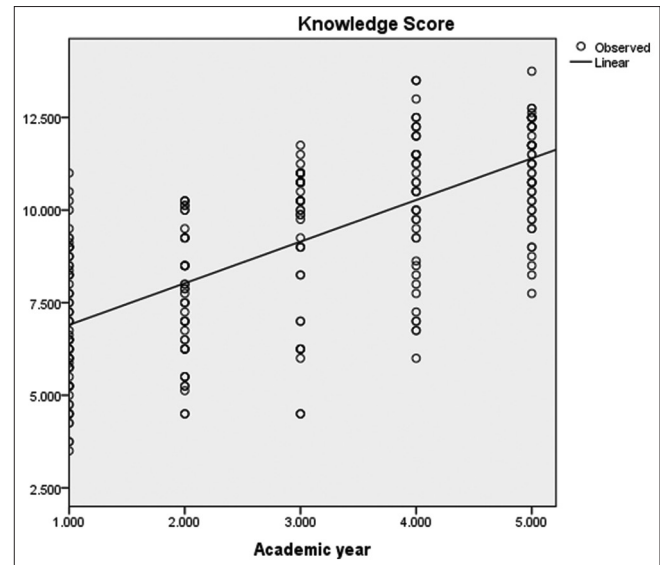


Figure 3: Pearson's correlation between academic years and knowledge level

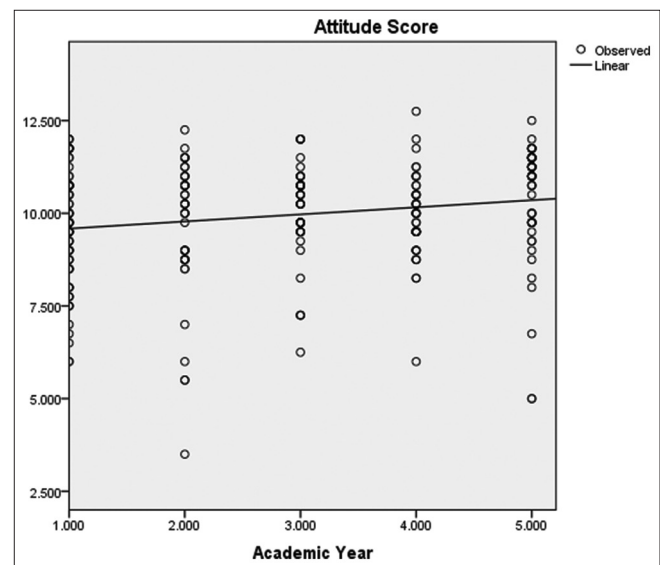


Figure 4: Pearson's correlation between academic years and attitude score

Table 1: Distribution of knowledge level among BDS students of different sex and academic years

Academic year	Male mean Score (Knowledge) with Standard Deviation (n=1 st : 28; 2 nd : 25; 3 rd : 27; 4 th : 25; and 5 th : 32)	Female mean Score (Knowledge) with Standard Deviation (n=1 st : 49; 2 nd : 20; 3 rd : 24; 4 th : 20; and 5 th : 23)	Total mean Score (Knowledge) with Standard Deviation (n=1 st : 77; 2 nd : 45; 4 th : 45; and 5 th : 55)
1 st year	6.955 (±1.508)	6.872 (±1.940)	6.903 (±1.785)
2 nd year	7.140 (±1.511)	8.231 (±1.749)	7.625 (±1.692)
3 rd year	9.190 (±2.153)	10.120 (±1.409)	9.627 (±1.882)
4 th year	10.375 (±1.952)	10.388 (±2.194)	10.381 (±2.039)
5 th year	11.309 (±1.358)	11.022 (±1.338)	11.189 (±1.345)
Total	9.070 (±2.436)	8.864 (±2.448)	8.967 (±2.439)

Table 2: Correlation between knowledge level and academic year

Equation	Model summary					Parameter estimates	
	R Square	F	df1	df2	Sig.	Constant	b1
Linear	0.476	246.514	1	271	0.000	5.778	1.123

Dependent Variable: Knowledge Score. Independent Variable: Academic Year

Table 3: Distribution of attitude score among BDS students of different sex and academic years

Academic year	Male mean Score (Attitude) with Standard Deviation (n=1 st : 28; 2 nd : 25; 3 rd : 27; 4 th : 25; and 5 th : 32)	Female mean Score (Attitude) with Standard Deviation (n=1 st : 49; 2 nd : 20; 3 rd : 24; 4 th : 20; and 5 th : 23)	Total mean Score (Attitude) with Standard Deviation (n=1 st : 77; 2 nd : 45; 4 rd : 51; 4 th : 45; and 5 th : 55)
1 st year	9.714 (±1.765)	9.592 (±1.367)	9.636 (±1.513)
2 nd year	9.620 (±1.950)	9.663 (±1.731)	9.639 (±1.835)
3 rd year	9.667 (±1.414)	10.625 (±0.663)	10.118 (±1.215)
4 th year	9.740 (±1.296)	10.113 (±0.868)	9.906 (±1.130)
5 th year	10.523 (±1.349)	10.391 (±1.837)	10.468 (±1.557)
Total	9.881 (±1.587)	9.996 (±1.411)	9.939 (±1.499)

Table 4: Correlation between attitude score and academic year

Equation	Model summary					Parameter estimates	
	R Square	F	df1	df2	Sig.	Constant	b1
Linear	0.037	10.275	1	271	0.002	9.396	0.191

Dependent variable: Attitude score. Independent variable: Academic year

Table 5: Distribution of behavior score among BDS students of different sex and academic years

Academic year	Male mean Score (Behavior) with Standard Deviation (n=1 st : 28; 2 nd : 25; 3 rd : 27; 4 th : 25; and 5 th : 32)	Female mean Score (Behavior) with Standard Deviation (n=1 st : 49; 2 nd : 20; 3 rd : 24; 4 th : 20; and 5 th : 23)	Total mean Score (Behavior) with Standard Deviation (n=1 st : 77; 2 nd : 45; 4 rd : 51; 4 th : 45; and 5 th : 55)
1 st year	6.482 (±0.863)	6.939 (±1.283)	6.773 (±1.164)
2 nd year	7.390 (±1.132)	6.575 (±1.298)	7.028 (±1.263)
3 rd year	6.694 (±1.460)	7.667 (±1.337)	7.152 (±1.473)
4 th year	6.810 (±1.242)	7.525 (±1.267)	7.128 (±1.290)
5 th year	6.938 (±1.264)	6.946 (±0.988)	6.941 (±1.147)
Total	6.856 (±1.227)	7.101 (±1.285)	6.978 (±1.260)

The knowledge generates from information, which gets converted into attitude and behavior, when it was imbibed.^[15] Knowledge regarding oral health significantly imparts positive attitude and also it renders a better oral health-care practice. The studies implied that attitude and behavior toward oral health were more positive among dental students than general population, but it was still behind the attitude toward general health.^[16]

A weak relationship was found between knowledge and attitude (Pearson's correlation: 0.234), where other researches in India^[9] showed a strong relation between attitude and knowledge. Again, a little correlation (0.158) was found between knowledge and practice from our study, but the previous studies^[17] indicated a strong relation between practice and knowledge.

Our study indicated no significant difference in attitude between male and female, which was in accordance with^[6] but in other studies^[8-10] reported that female students had a

positive attitude toward oral health than male classmates. This study indicated that boys had slightly more knowledge than girls, while^[8] reported that knowledge level was greater in girls than boys.

CONCLUSION

This study provides a picture of knowledge, attitude, and behavior status of the future oral health-care professionals, that is, the BDS students. As it was a cross-sectional study, it can only explores the possibilities. From the results of our study, it can be stated that knowledge, attitude, and practice of oral hygiene among dental under-graduate students were not meeting the global standards and it should be improved. Counter repetitive response and non-reporting of actual behavior include the limitations of this questionnaire-based study. The future in-depth research work in this field is desired for more informative and inferential results.

ACKNOWLEDGMENT

We would like to thank

1. Dr. Sohini Banerjee (Ph.D) Former faculty, Tata Institute of Social Sciences, Guwahati.
2. Santanu Sen Roy (MDS) Professor and Head, Dept. of Public Health Dentistry, Guru Nanak Institute of Dental Science and Research, Kolkata.

REFERENCES

1. WHO. Constitution; 2021. Available from: <https://www.who.int/about/who-we-are/constitution> [Last accessed on 2021 Mar 15].
2. The oral cavity and disease. J Am Med Assoc 1957;165:159.
3. WHO. Oral Health. Geneva: WHO; 2021. Available from: <https://www.who.int/news-room/fact-sheets/detail/oral-health> [Last accessed on 2021 Mar 15].
4. Basic Dental Education, FDI; 2021. Available from: <https://www.fdiworlddental.org/basic-dental-education> [Last accessed on 2021 Mar 15].
5. Bhat S, Sargod S. Oral Health Knowledge and Behavior of Clinical Medical, Dental And paramedical Students In Mangalore Article in Journal of Oral Health and Community Dentistry; 2007. Available from: <https://www.researchgate.net/publication/228746725> [Last accessed on 2021 Mar 15].
6. Dagli RJ, Tadakamadla S, Dhanni C, Duraiswamy P, Kulkarni S. Self reported dental health attitude and behavior of dental students in India. J Oral Sci 2008;50:267-72.
7. Kumar S, Busaly A, Tadakamadla J, Tobaigy F. Attitudes of dental and pharmacy students to oral health behaviour at Jazan University, Kingdom of Saudi Arabia. J Sch Dent Sci Univ Sains Malaysia Arch Orofac Sci 2012;7:9-13.
8. Al-Batayneh OB, Owais AI, Khader YS. Oral health knowledge and practices among Diverse University students with access to free dental care: A cross-sectional study. Open J Stomatol. 2014;4(3):135-42. Available from: <http://www.scirp.org/journal/ojst>; <http://www.creativecommons.org/licenses/by/4.0> [Last accessed on 2021 Mar 15].
9. Sharda AJ, Shetty S. A comparative study of oral health knowledge, attitude and behaviour of first and final year dental students of Udaipur city, Rajasthan, India. Int J Dent Hyg 2008;6:347-53.
10. Peker I, Alkurt MT. Oral health attitudes and behavior among a group of Turkish dental students. Eur J Dent 2009;3:24-31.
11. Jaramillo JA, Jaramillo F, Kador I, Masuoka D, Tong L, Ahn C, *et al.* A comparative study of oral health attitudes and behavior using the Hiroshima University-dental behavioral inventory (HU-DBI) between dental and civil engineering students in Colombia. J Oral Sci 2013;55:23-8.
12. Baseer MA, Rahman G. Oral health attitudes and behavior among a group of female Saudi dental students. Saudi J Oral Sci 2014;1:25. Available from: <https://www.saudijos.org/article.asp?issn=1658-6816;year=2014;volume=1;issue=1;spage=25;epage=29;aulast=baseer> [Last accessed on 2021 Mar 15].
13. Al-Ansari J, Honkala E, Honkala S. Oral health knowledge and behavior among male health sciences college students in Kuwait. BMC Oral Health 2003;3:2.
14. Khami MR, Virtanen JI, Jafarian M, Murtomaa H. Oral health behaviour and its determinants amongst Iranian dental students. Eur J Dent Educ 2007;11:42-7.
15. Udoye C, Aguwa E. Oral health related knowledge and behaviour among nursing students at the University of Nigeria Teaching Hospital, Enugu. Int J Med Health Dev 2007;12:13-7. Available from: <https://www.ajol.info/index.php/jcm/article/view/10554> [Last accessed on 2021 Mar 15].
16. Singh P, Bey A, Gupta N. Dental health attitude in Indian society. J Int Soc Prev Community Dent 2013;3:81-4.
17. Lian CW, Phing TS, Chat CS, Shin BC, Baharuddin LH, Che ZB. Oral health knowledge, attitude and practice among secondary school students in Kuching, Sarawak. Arch Orofac Sci 2010;5:9-16.