

# ASSESSMENT OF THE ORAL BEHAVIOUR, KNOWLEDGE, AND STATUS AMONG UNDERGRADUATES BELONGING TO MULTIDISCIPLINARY HEALTH SCIENCES AT A PRIVATE UNIVERSITY

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## ABSTRACT

**Objective:** To assess the oral health behaviour, knowledge, and status of undergraduate students studying multidisciplinary health sciences at a private university.

**Methodology:** An analytical cross-sectional study was performed among  $n=400$  undergraduate students selected through non-probability convenience sampling. The study duration was six months after approval from the ethical review committee. Data was collected by administering a self-reported questionnaire based on the domains related to oral health behaviour, knowledge, and status.

**Results:** Of  $n=400$ , 71% ( $n=284$ ) of study subjects reported tooth brushing twice a day, and 49.5% ( $n=198$ ) stated two minutes the duration of brushing. Regarding oral health knowledge, 35% ( $n=140$ ) subjects stated that increased consumption of sugar causes dental caries, 53% ( $n=212$ ) stated that hard tooth brushing leads to bleeding gums, 60.3% ( $n=241$ ) said that fluoride application prevents oral diseases like dental caries. Regarding oral health status, 25.8% ( $n=103$ ) said tooth discoloration, and 23.3% ( $n=93$ ) had tooth hypersensitivity. Oral health behaviours were statistically insignificant among all five disciplines ( $p > 0.975$ ,  $F(4, 395) = 0.120$ ). Whereas oral health knowledge was statistically significant ( $p < 0.001$ ,  $H(4) = 52.21$ ) among dental and medical study subjects as compared to study subjects belonging to nursing, pharmacy, and rehabilitation sciences.

**Conclusion:** Oral health behaviour was statistically insignificant among participants from dental, medicine, nursing, pharmacy, and rehabilitation sciences. However, oral health knowledge was statistically significant among participants in dental and medicine disciplines as compared to nursing, pharmacy, and rehabilitation sciences.

**Keywords:** Oral health knowledge, oral health behaviour, oral health status, oral health education.

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## INTRODUCTION

Oral health is the key indicator of overall health, well-being, and quality of life. WHO has added the component of well-being and expanded the idea of oral health. Since then, dental health has been thought to contribute to overall health rather than just the absence of disease<sup>1</sup>. Daily life activities such as eating, communication, smiling, and contributing creatively to society influence an individual's well-being. Hence, it is now established that dental health is essential to overall health and well-being<sup>2</sup>. Oral health is a vital component in human life; on the other hand, evidence has suggested that oral diseases have an equal impact on an individual's quality of life and can influence psycho-social and emotional consequences such as solitude, anxiety, and unemployment<sup>3</sup>.

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Systemic diseases like cardiovascular disease or diabetes mellitus are found to be associated with oral health<sup>4</sup>. A study reported a strong link between oral health and length of stay at the hospital, with more extended hospital stays leading to more significant deposition of dental plaque, gingival inflammation, and mucosal inflammation<sup>5</sup>.

The advantages of good oral health extend beyond the teeth and oral cavity to general health. Dental hygiene, in combination with nutrition, physical exercise, and healthy lifestyle choices (no smoking and restricted alcohol consumption), promotes general health and well-being, resulting in improved quality of life<sup>6</sup>. According to the WHO Global Oral Health Status Report (2022), about 3.5 billion people worldwide suffer from oral diseases, and 60% of the Pakistani population has dental caries. The estimated prevalence of dental caries in Karachi is 61.9%<sup>7-8</sup>. Brushing teeth with fluoride toothpaste twice daily and flossing once daily removes dental plaque and prevents and manages dental caries and periodontal conditions<sup>9</sup>. Oral diseases are preventable, and prevention is less expensive than cure and rehabilitation<sup>10</sup>. Utilizing dental services, regular dental screening, oral health promotion, professionally applied preventive measures, and engaging in self-care behaviours such as good oral hygiene, limiting sugar intake, and fluoride products constitute good oral health practices. Adults should brush and floss their teeth at least once daily and get frequent oral health checks to prevent oral health issues<sup>11</sup>.

Oral health knowledge has been proposed to be essential for developing healthy behaviours, and there is a positive link between enhanced learning and better oral health<sup>12</sup>. Evidence suggests that people knowledgeable about oral health have much better oral health practices and hygiene<sup>13</sup>. Maintaining good oral health enables individuals to eat, speak, and engage in social interactions effectively<sup>14</sup>. Oral health literacy has also been influential in minimizing inequities and boosting oral health<sup>15</sup>. The success of oral health policies and programs is based on oral health knowledge<sup>16</sup>.

Only a few research studies have been conducted to examine students' oral health knowledge and behaviour in health disciplines such as medicine, dentistry, pharmacy, rehabilitation, and nursing. Furthermore, students from all fields of health sciences can be trained to transmit oral health awareness and disease prevention on a large scale throughout the community. Therefore, examining students' oral health knowledge and behaviours is critical. As a result, the current study seeks to evaluate undergraduate students' oral health behaviour, knowledge, and status while studying multidisciplinary health sciences at a private institution.

## METHODOLOGY

This analytical cross-sectional study was conducted on the n= 400 participants belonging to the medical, dental, rehabilitation sciences, nursing, and pharmacy disciplines of Ziauddin University located in Clifton Karachi. The total duration of the study was six months after approval from the ethical review committee of Ziauddin University. The ERC reference number is 5440522SMCPD. The study sample was selected through a non-probability convenience sampling technique. Verbal consent was taken from the participants before administering the questionnaire. The sample size was calculated using Open Epi software by keeping prevalence at 66.3%<sup>17</sup>, confidence level at 95%, level of significance at 0.05, and the power of test at 80%. The sample calculated was n=332, adding a 20% non-response rate. The total sample size was n=398, rounded off to n=400. The inclusion criteria of the participants were that all the participants were present on the data collection day were willing to fill up the questionnaire, and participants from five selected health sciences disciplines were included. The exclusion criteria included participants who had class tests or presentations.

Data was collected using a validated structured questionnaire adopted from the study by Ke Yao et al. reported in 2019<sup>17</sup>. The questionnaire comprised four parts; the first consisted of questions about the age and gender of participants, and the second part included six items regarding oral health behaviour, duration and frequency of brushing teeth, time, dental visits, and oral hygiene products. The third part was based on six questions about oral health knowledge, such as causes of dental caries, bleeding while brushing your teeth, dental plaque, prevention of oral diseases, systemic diseases related to oral infections, and the importance of maintaining good oral health. The last part of the questionnaire was related to assessing oral health status by asking about oral diseases. This part is based on open-ended items, which will be by naming and coding the responses given by the study subjects. Data were entered using SPSS version 22. The normality of the data was assessed by using the Kolmogorov-Smirnov test. The frequencies and percentages were analyzed for qualitative variables and the mean and standard deviation for quantitative variables. Oral health behaviour and knowledge questions were summed up separately to generate two new variables consisting of numeric outcomes. Inferential statistics were performed using ANOVA among oral health behaviour and Kruskal Wallis among oral health knowledge with participants of multidisciplinary health sciences, respectively. The level of significance was kept at 0.05.

## RESULTS

The total n=400 undergraduates belonging to the multidisciplinary sciences of Ziauddin University filled

out a self-administered questionnaire. Of these, 24% (n=96) were males and 76% (n=304) were females, with the mean age being 21±1.5. The minimum score of oral health behaviour was 08, and the maximum score was 20, with the mean Oral Health Behavior being 13.18 ±2.4. Similarly, the minimum score for oral health knowledge was 07, and the maximum score was 26, with the mean Oral Health Knowledge being 14.49±3.8.

The oral health behaviour of participants in multidisciplinary health sciences was found to be statistically insignificant  $F(4, 395)=0.020$ , p-value = 0.975.

The oral health knowledge of study subjects in multidisciplinary health sciences was statistically

significant  $H(4) = 52.21$ ,  $p<.001$ . (Table 5a) In this equation, 4 is a degree of freedom, and 52.1 is the Chi-square value among participants with oral health knowledge. Further, upon the pairwise comparison of health science disciplines, we found a statistically significant difference in oral health knowledge among dentistry students versus nursing, pharmacy, and rehabilitation sciences. Also, there was a statistically significant difference in oral health knowledge among medical sciences students versus nursing, pharmacy, and rehabilitation sciences. (Table 5b)

**DISCUSSION**

This current study found a statistically significant

TABLE 1: DESCRIPTIVE STATISTICS OF ORAL HEALTH BEHAVIOR OF STUDY SUBJECTS BELONGING TO MULTIDISCIPLINARY HEALTH SCIENCES

Variable	Frequency n= 400	Percentage %
Time of tooth brushing		
Once or less	99	24.8
Twice	284	71.0
Three times or more	17	4.3
Duration of Tooth brushing		
1 minute or less	137	34.3
2 mins	198	49.5
3 minutes or more	65	16.3
Duration toothbrush replacing		
3 months or less	295	73.8
About a half-year	87	21.8
Never until it can be used	18	4.5
Dental Visits		
Regularly	28	7.0
Once suffer from oral diseases	231	57.8
After an oral disease lasts for a long time	68	17.0
Until life quality is greatly impacted by oral disease	73	18.3
Brushing Technique		
Vertical Scrub	54	13.5
Horizontal scrub	106	26.5
Modified Bass Technique	60	15.0
Fones' Technique	120	30.0
Irregular	60	15.0
Oral hygiene methods besides tooth brushing		
Dental Floss	64	16.0
Mouth wash	175	43.8
Sugar-free chewing	36	9.0
Toothpick	55	13.8
None	70	17.5

TABLE 2: DESCRIPTIVE STATISTICS OF ORAL HEALTH KNOWLEDGE OF STUDY SUBJECTS BELONGING TO MULTIDISCIPLINARY HEALTH SCIENCES

Variable	Frequency N=400	Percentage %
Causes of Dental Caries		
Toothpaste without fluoride	78	19.5
Frequent Ingestion of sugar	140	35.0
Dysbiosis oral microflora	30	7.5
Inadequate tooth brushing	87	21.8
Don't know	65	16.3
Causes of bleeding during tooth brushing		
Natural physiological phenomenon	31	7.8
Periodontal Disease	118	29.5
Brushing too hard	212	53.0
Excessive Internal heat	3	.8
Systemic Disease	36	9.0
Influence of Dental Plaque		
Affecting appearance	86	21.5
Inducing Dental Caries	149	37.8
Inducing Periodontal Disease	69	17.3
No big deal	9	2.3
Don't know	87	21.8
Measures that can prevent oral diseases		
Application of fluoride	241	60.3
Pits and Fissure Sealing	61	15.3
Don't know	98	24.5
Systematic disease that may be related to oral diseases		
Heart disease	26	6.5
Diabetes Mellitus	163	40.8
Hypertension	27	6.8
Cancer	57	14.3
None of above	48	12.0
Other diseases	79	19.8
Important for keeping good oral health: self-administration or dentist		
Self-administration of oral hygiene	314	78.5
Regular visits to the dentist	86	21.5

TABLE 3: DESCRIPTIVE STATISTICS OF THE ORAL HEALTH STATUS OF STUDY SUBJECTS BELONGING TO MULTI-DISCIPLINARY HEALTH SCIENCES

Variable	Frequency N=400	Percentage %
Oral problems		
Bad Breath	37	9.3
Bruxism	15	3.8
Dental Caries	46	11.5
Gingival Bleeding	51	12.8
Tooth discoloration	103	25.8
Oral Ulcer	10	2.5
Toothache	45	11.3
Tooth Hypersensitivity	93	23.3



difference in oral health knowledge of participants in medicine and dentistry as compared to those in nursing, pharmacy, and rehabilitation sciences. Although knowing oral health does not necessarily translate to better health behavior, individuals who possess such knowledge and feel in control of their oral health are more likely to adopt self-care practices. In this study, participants demonstrated a high level of knowledge regarding oral health but showed insignificant oral health behavior and status.

In this research, participants belonging to medical and dental specialties demonstrated a high level of knowledge regarding the cause of dental caries, bleeding gums, the role of plaque, and preventive measures. Many of the respondents acknowledged that poor dental care can lead to many systematic diseases in comparison to their peers. These findings are consistent with findings from a study conducted among dental patients in Saudi Arabia<sup>18</sup>.

Concerning the importance of fluoride toothpaste many medical and dental school participants were in strong agreement that it was essential. Furthermore, more than half of the respondents recognized that inadequate tooth brushing can cause Dental Caries, which is in agreement with the results from the previous study<sup>19</sup>. This advanced level of knowledge could be attributed to privileged academic exposure resulting from their course of study.

According to the findings of this study, 90.6% of respondents belonging to medical and dental schools reported periodontal disease and hard brushing is the main cause of gum bleeding. However, the results were slightly lower in another group of respondents the possible reason medical and dental students, have more knowledge than the average non-dental student. The results of these studies are in agreement with the study of Yusuf AU et al. 2021<sup>20</sup>.

Regarding the influence of plaque, a significantly larger proportion of respondents from both groups in this study reported that it affects appearance and initiates dental caries. On the other hand, concerning oral hygiene and oral disease with systematic disease, only a small proportion of respondents knew that maintaining oral health is effective in preventing many systematic diseases. These results are in agreement with the results of LEE T<sup>21</sup> who suggest that oral healthcare inter-professional education should be given to all students working in healthcare to develop knowledge and inter-professional collaboration in oral healthcare.

Furthermore, most respondents in this study believed that visiting the dentist was necessary, compared to participants in a study conducted in Ibadan. This suggests that with increased age and educational level,

the practice of visiting the dentist may improve<sup>22</sup>.

The limitation of this study was that we used a non-probability sample technique. In addition, the participants were not chosen in equal numbers from all disciplines because of the varying enrollment of the total number of students across the disciplines. The strength of this study is it reported the oral health behavior, knowledge, and status of participants belonging to multidisciplinary health sciences.

## CONCLUSION

The conclusion drawn from the current study is as follows:

Oral health behaviour was statistically insignificant among participants in dental, medicine, nursing, pharmacy, and rehabilitation sciences. However, oral health knowledge was statistically significant among students from dental and medicine disciplines compared to nursing, pharmacy, and rehabilitation sciences.

There is a need to perform intervention research among students from all the health sciences disciplines so that they can be involved later as oral health promoters and able to disseminate oral health education at the community level.

## REFERENCE

- 1 World Health Organization. 2023 Oral Health 22 August 2023 [https://www.who.int/health-topics/oral-health#tab=tab\\_1](https://www.who.int/health-topics/oral-health#tab=tab_1)
- 2 Su S, Lipsky MS, Licari FW, Hung M. Comparing oral health behaviours of men and women in the United States. *Journal of Dentistry*. 2022 Jul 1;122:104157
- 3 Baniyasi K, Armoon B, Higgs P, Bayat AH, Mohammadi Ghareghani MA, Hemmat M, Fakhri Y, Mohammadi R, Fatah Moghaddam L, Schroth RJ. The Association of Oral Health Status and Socioeconomic Determinants with Oral Health-Related Quality of Life among the elderly: A systematic review and meta-analysis. *International Journal of Dental Hygiene*. 2021 May;19(2):153-65.
- 4 Mayo Clinic Staff. Oral Health: A Window to Your Overall Health. Mayo Clinic. 2018.
- 5 Philip P, Villarosa A, Gopinath A, Elizabeth C, Norman G, George A. Oral health knowledge, attitude and practices among nurses in a tertiary care hospital in Bangalore, India: a cross-sectional survey. *Contemporary Nurse*. 2019 May 4;55(2-3):261-74.
- 6 ALVAREZ NE. Healthy Teeth, Healthy Body.
- 7 World Health Organization. 2022 Global status report on oral health 9 June 2023 <https://www.who.int/team/noncommunicable-diseases/global-status-report-on-oral-health-2022>
- 8 Siddiqui AA, Alshammery F, Mulla M, Al-Zubaidi SM, Afroz E, Amin J, Amin S, Shaikh S, Madfa AA, Alam MK. Prevalence of dental caries in Pakistan: a systematic review and meta-analysis. *BMC Oral Health*. 2021 Dec; 21:1-2.
- 9 Fijačko N, Gosak L, Cilar L, Novšak A, Creber RM, Skok P, Štiglic G. The effects of gamification and oral self-care on oral hygiene in children: systematic search in app stores and evaluation of apps. *JMIR mHealth and uHealth*. 2020 Jul 8;8(7):e16365.
- 10 Nepaul P, Mahomed O. Influence of parents' oral health knowledge and attitudes on oral health practices of children (5–12

- years) in a rural school in KwaZulu-Natal, South Africa. *Journal of International Society of Preventive & Community Dentistry*. 2020 Sep;10(5):605.
- 11 Al-Qahtani SM, Razak PA, Khan SD. Knowledge and practice of preventive measures for oral health care among male intermediate schoolchildren in Abha, Saudi Arabia. *International Journal of Environmental Research and Public Health*. 2020 Feb;17(3):703.
  - 12 Yadiki JV, Alruwaili FA. Oral health knowledge and practices among healthcare students of Al-Jouf province, Saudi Arabia. *Journal of Cancer Research and Therapeutics*. 2022 Dec 1;18(Suppl 2):S233-8.
  - 13 Parveen S, Awan S, Khan A, Shabbir A, Shabbir M, Shafique U. Awareness of personal oral health and oral hygiene practices among patients with coronary artery disease. *Pakistan Armed Forces Medical Journal*. 2022 Feb 25;72(1):30-34.
  - 14 Bashirian S, Khoshravesh S, Ayubi E, Karimi-Shahanjari A, Shirahmadi S, Solaymani PF. The impact of health education interventions on oral health promotion among older people: a systematic review. *BMC geriatrics*. 2023 Sep 11;23(1):548.
  - 15 Baskaradoss JK. Relationship Between Oral Health Literacy and Oral Health Status. *BMC Oral Health*. 2018;18(1):1-6.
  - 16 Selvaraj S, Naing NN, Wan-Arfah N, Karobari MI, Marya A, Prasad S. Development and validation of oral health knowledge, attitude, and behaviour questionnaire among Indian adults. *Medicina*. 2022 Jan;58(1):68.
  - 17 Yao K, Yao Y, Shen X, Lu C, Guo Q. Assessment of the oral health behaviour, knowledge and status among dental and medical undergraduate students: a cross-sectional study. *BMC Oral Health*. 2019 Dec;19(1):1-8.
  - 18 Almas K, Albaker A, Felembam N. Knowledge of dental health and diseases among dental patients, a multicentre study in Saudi Arabia. *Indian J Dent Res*. 2000 Oct-Dec;11(4):145-55. PMID: 11307638.
  - 19 Peltzer K, Pengpid S. Dental health status and oral health behavior among university students from five ASEAN countries. *Nagoya Journal of Medical Science*. 2017 May;79(2):123.
  - 20 Yusuf AU, Iqbal SS, Hussain M, Butt F, Adnan ST. Assessment of Oral Health Behaviour & Self Practice among Hazrat Bari Sarkar Medical & Dental Students using the Hiroshima University-Dental Behavioral Inventory (HU-DBI). *Annals of Abbasi Shaheed Hospital and Karachi Medical and Dental College*. 2021 Sep 14;26(2):57-64.
  - 21 Lay, T.; Nurchasanah, F.; Wanda, D.; Wardhany, I.I.; Agustin, R.; Haresaku, S.; Wimardhani, Y.S.; Mandasari, M. Awareness, Attitudes, and Perceptions of Oral Healthcare among First Year Dental, Medical, and Nursing Students. *Dent. J.* 2023, 11, 169. <https://doi.org/10.3390/dj11070169>
  - 22 Tunde JO, Oyediran EO, Oluwole OD: Dental care knowledge and practices among secondary school adolescent in Ibadan north local government area of Oyo state. *Eur J General Dentistry*. 2015, 4:68-73.

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