Turkish Journal of Dental Hygiene
2024, Volume 4, Page No: 8-14
Copyright CC BY-NC-SA 4.0
Available online at: www.tsdp.net

ISSN: 3062-3472

Original Article

A Study of Oral and Dental Health Status of Primary School Students and Some Factors Related to It

Manh Tuan Vu[1], Van Tuong Luu[2], Quoc Hoan Nguyen[1], Van Toan Ngo[3], Minh Bau Trinh[1], Cong Son Dang[4], Viet Da Do Nguyen[1], Kim Loan Hoang[1], Duc Long Duong[1*]

[1]School of Dentistry, Hanoi Medical University, Hanoi, Viet Nam.
[2]Department of Odonto-Stomatology, University of Medicine and Pharmacy, Vietnam National University, Hanoi, Viet Nam.
[3]School of Preventive Medicine and Public Health, Hanoi Medical University, Hanoi, Viet Nam.
[4]Institute for Medicine, Pharmacy Science, Technology and Community Health, Hanoi, Viet Nam.

***E-mail** ✉ duongduclong@hmu.edu.vn

Received: 09 December 2023; **Revised:** 05 March 2024; **Accepted:** 06 March 2024

ABSTRACT

Oral health is an important branch of public health that has a significant impact on individual health and affects the quality of life and general condition of the body. This study was conducted to investigate the oral health status of female students and some related factors. In this descriptive-analytic study, 416 students were examined using a random cluster sampling method in terms of oral health. The data collection tool was a researcher-made questionnaire whose validity and reliability were confirmed. The data were analyzed using SPSS version 23 software. 55.3% of students reported that they brushed their teeth less than twice a day. 22.4% used dental floss at least once a day, and 23.1% visited the dentist for an examination once every six months. The majority of students (38.7%) stated that they obtained most of their oral health information from teachers, and 24.5% of them stated that health educators were the most important source of information about oral health. The average score of students' knowledge and performance in the field of oral health care was moderate, 41.21 ± 22.30 and 53.33 ± 19.6, respectively. Performance was positively and significantly correlated with parental education and family income ($P < 0.01$), but knowledge was only correlated with parental education ($P < 0.05$). Based on the results of the present study, moderate knowledge and performance were observed among female students regarding oral health, and with increasing parental education, the level of knowledge and performance of students increased. Since students mentioned teachers and health educators as their most important source of information, it seems that teacher-centered educational interventions can be effective.

Keywords: Oral health, Dental health, Student, Individual health

How to Cite This Article: Vu MT, Luu VT, Nguyen QH, Ngo VT, Trinh MB, Dang CS, et al. A Study of Oral and Dental Health Status of Primary School Students and Some Factors Related to It. Turk J Dent Hyg. 2024;4:8-14. https://doi.org/10.51847/nfKcKITJvt

Introduction

Oral health is an important branch of public health that has a significant impact on individual health. The normal functioning of the organs inside the mouth, without any symptoms of disease, is called oral health [1-4]. The World Health Organization (WHO) defines oral health as oral health that enables individuals to speak, socialize, and eat without any disease or concern. Oral health is the foundation of health and affects the quality of life and general condition of the body [5]. Oral health goes beyond having healthy teeth and is an integral part of general health so the mouth is a mirror of health or disease [6-8]. Studies show that social variables can play an important role in oral health [9-11].

Research results have shown that dental caries, as a multifactorial infectious disease, is strongly influenced by several factors such as education, economic status,

© 2024 Turkish Journal of Dental Hygiene

household size, and the level of oral hygiene [12-15]. Freddo *et al*. confirmed that poorer socioeconomic status is associated with poorer oral health behaviors, such as less frequent brushing, less daily flossing, and visits to the dentist for pain, decay, or broken teeth [16]. More than fifty million hours of school are lost each year due to oral health problems that can affect children's performance in school and their future success. Although there have been general improvements in children's dental health in recent decades, dental caries remains highly prevalent in childhood [17-19]. Students are of particular importance because they are the future leaders of society are considered human resources of any society and have a special role in transmitting health concepts and, consequently, maintaining and promoting health. Therefore, in most countries, addressing the health of students is a matter of great health importance [20, 21]. Schools can provide an important and effective context for promoting oral health, especially among children and adolescents with lower socioeconomic status, as they reach more than one billion children worldwide [22, 23]. In short, oral diseases lead to tooth loss, a condition that affects appearance, quality of life, nutritional intake, and consequently growth and development of children. Therefore, the need to address oral health among children under 12 years of age is becoming increasingly important [24, 25].

Oral health has been considered in ensuring and promoting the health of society to the extent that it is now recognized as one of the eleven major goals of the 21st century. The World Health Organization considers attention to oral health as a necessity and part of public health throughout life and states that poor oral hygiene and untreated oral diseases can have a profound impact on the quality of life [26, 27]. Given the obvious impact of oral health on the physical and mental health of individuals and the controllability of these diseases, several behaviors have been taken to prevent these diseases, including the widespread use of fluoride in various forms, brushing teeth correctly and regularly twice a day, flossing at least once a day, changing hygiene habits, and reducing sugar consumption [28]. Among these measures, mechanical methods such as brushing and flossing are the most important and easiest methods to reduce the prevalence of dental plaque and are the most important factor in maintaining oral health [29, 30]. Therefore, this study aimed to investigate the oral health status of female students and the relationship between some variables.

Materials and Methods

This study was a descriptive-analytical cross-sectional study, and the sample included 416 female students who were free of any oral and dental diseases and progressive gum diseases (oral cancer - gingivitis). Sampling was done using a cluster-random method. With a confidence level of 95% ($\alpha = 0.05$), according to previous studies, the prevalence of oral and dental health (P) in elementary school students was considered to be 20%, and with precision ($d = 0.2$), the sample size was estimated to be 38 people in each region, which was estimated to be 10% attrition and to increase the accuracy of the study, 42 people were considered in each region.

A total of 416 samples were included in the study. The data collection tool was a 31-question researcher-made questionnaire designed based on existing literature and articles. The questionnaire consisted of 4 sections. The first section assessed demographic information (age, parental education level, and family income). The second part included 14 questions in the area of knowledge, each question was given 0-1 points (in this part, a correct answer was given 1 point, and a wrong answer was given 0 points), and a higher score indicated greater awareness of oral health issues. The third part included 5 questions in the area of performance with a range of 5-20. Scores of 4, 3, 2, and 1 indicated high, good, poor, and no performance, respectively, and a higher score indicated better performance on oral health issues. It should be noted that the score of knowledge and performance was entered into the software as a percentage. In the case of knowledge, the score obtained from each individual was multiplied by fourteen (the highest score), and in the case of performance, the score obtained from the student was multiplied by twenty (the highest score), and in the case of performance, the score obtained from the student was multiplied by twenty (the highest score). So people who scored 33.3% or less had poor knowledge and performance, people with average knowledge and performance scored less than or equal to 66.6% and greater than 33.3%, and people with good knowledge and performance scored more than 66.6%. The fourth section of the questionnaire included 4 questions regarding the source of information. In the preparation of the questionnaire, questions were designed to be completely simple and understandable for elementary school students, and the "I don't know" option was used in the design of the questions so that if students did not know the answer to a question, they would not randomly answer an option. The content validity of the tool was reviewed by fourteen professors specializing in health education and dentists, and their opinions were applied to the validity of the

questionnaire, and its reliability was validated by the test-retest method. In this way, the questionnaires were completed in two rounds with an interval of 10 days by 20 students of the same age group, and the results of the two tests were analyzed. Regarding knowledge and performance, reliability was examined with the Pearson correlation coefficient, and the correlation between these two variables was 87% and 81%, respectively. It should be noted that the questionnaires were completed by students in a self-report manner over 10 weeks.

Finally, after data collection, to check the normality of the data, the Kolmogorov–Smirnov test and descriptive statistics tests (frequency, mean) and Pearson correlation test were used at a significance level of 0.05 in the SPSS software version 23.

Results and Discussion

The average age of the students participating in this study was 10.88 ± 0.62. According to **Table 1**, 226 fathers (54.3%) and 219 mothers (52.6%) had education at the middle, high school, and diploma levels. 188 of the sample (45.1%) claimed that their family income was adequate, i.e., enough to cover living expenses. 230 students (55.3%) reported that they brushed their teeth less than twice a day, 323 (77.6%) stated that they flossed less than once a day, and 320 (76.9%) stated that they only visited the dentist when their teeth were sore/broken or had decay.

Table 1. Demographic characteristics and some factors affecting the oral health of students

Variable		N	%
Age	10 years	107	25.7
	11 years	251	60.3
	12 years	58	13.9
Father's education	Illiterate, Elementary	46	11.05
	Middle and High School, Diploma	226	54.3
	University	144	34.6
Mother's education	Illiterate, Elementary	51	12.2
	Middle and High School, Diploma	219	52.6
	University	146	35.09
Family income	Low (not enough to cover living expenses)	23	5.5
	Adequate (enough to cover living expenses)	188	45.1
	Good (somewhat more than enough to cover living expenses)	114	27.4
	Excellent (much more than enough to cover living expenses)	91	21.8
Brushing	Less than twice a day	230	55.3
	At least twice a day	186	44.7
Flossing	Less than once a day	323	77.6
	At least once a day	93	22.4
Reasons for visiting the dentist	Decay, pain, fracture	320	76.9
	Six-monthly checkup	96	23.1

The results of this study, according to **Table 2**, show that the target group had average knowledge and performance regarding oral hygiene. So 199 (47.8%) and 251 (60.3%) of the samples had average knowledge and performance, respectively.

Table 2. Average and percentage of student's knowledge and performance regarding oral hygiene

Variable	Frequency (Percentage)			Mean ± Standard Deviation
	Poor	Average	Good	
Awareness	171 (41.1%)	199 (47.8%)	46 (11.05%)	41.21 ± 22.30
Performance	64 (15.3%)	251 (60.3%)	101 (24.3%)	53.33 ± 19.6

Weak: variable score ≤ 33.3%; 33.3% < variable score ≤ 66.6%; and good: variable score > 66.6%

Table 3 shows that there was a significant and positive correlation between performance with parental education and family income (P < 0.01). So the higher the parental education and family income, the higher the students' performance regarding oral hygiene; but knowledge had a positive and significant correlation only with parental education (P< 0.05), that is, the higher the parental education, the more students had an awareness regarding oral hygiene.

Table 3. Correlation between parental education, household income, and student knowledge and performance variables

Variables	Performance	Awareness	Father's education	Mother's education	Family income
Performance	1	0.076	0.165**	0.202**	0.194**
Awareness	0.076	1	0.105*	0.109*	0.013
Father's education	0.165**	0.105*	1	0.659**	0.253**
Mother's education	0.202**	0.109*	0.659**	1	0.250**
Family income	0.194**	0.013	0.253**	0.250**	1

*Significance at the 0.05 level and **Significance at the 0.01 level

According to **Table 4**, 161 students (38.7%) claimed that they received the most oral hygiene information from teachers and 102 students (24.5%) from health educators.

Table 4. Frequency distribution of students' information sources

Source of information	N	%
Teachers	161	38.7
Health educators	102	24.5
Parents	31	7.5
School teaching aids	106	25.5
Other	16	3.8

Oral health is an important branch of public health that has a significant impact on individual health and affects the quality of life and general condition of the body [31, 32]. Nowadays, due to changes in lifestyle and eating habits, humans are considered the most susceptible to tooth decay, with 99% of people suffering from it during their lifetime. The most important way to reduce tooth decay is to focus on prevention, and the best place and time to promote a culture of prevention is school [33-35]. Therefore, this study aimed to investigate the oral health status of elementary school students and some related factors.

The findings of this study showed that there is a significant relationship between some social variables, including parental education and family income, and student performance. According to our findings, only 96 (23.3%) of the students visited the dentist regularly for a six-month check-up; 76.9% of them considered visiting the dentist to be due to pain/fracture or tooth decay. In the present study, 44.7% of the students brushed their teeth at least twice a day.

The findings of the study showed that the average score of participants' knowledge and performance regarding oral hygiene was average. Given the higher level of performance than knowledge, the researcher investigated the relationship between other factors, including demographic characteristics, knowledge, and performance. The data obtained from this study showed that parental education has a significant relationship with student's knowledge and performance. Thus, the higher the parental education, the better the students' knowledge and performance regarding oral hygiene.

The correlation between parental education and knowledge, according to the findings of the present study, indicates a greater impact on mothers' education. The correlation between parental education and performance based on the results of this study (mother's education r = 0.202 and father's education r = 0.165) again shows a greater relationship between mothers' education and participants' performance. Regarding the relationship between students' family income level and their performance regarding oral hygiene, a significant relationship was observed. Thus, the higher the family income level, the better the students' oral hygiene performance.

There was no significant relationship between the variable of awareness and family income, which can be attributed to the effect of uniform and documented oral health education in improving the awareness of elementary school students regardless of geographical region and socio-economic status. The most important sources of information for students regarding oral health in this study were teachers, health instructors, school teaching aids, parents, and other sources, respectively. Family income had a significant relationship with performance, such that students with higher family incomes performed better, which can be used to plan oral health education in low-income areas to promote a culture of oral health.

Conclusion

Oral health is an important branch of public health that has a significant impact on individual health and affects the quality of life and general condition of the body.

© 2024 Turkish Journal of Dental Hygiene

This study was conducted to investigate the oral health status of female students and some related factors. The average score of students' knowledge and performance in the field of oral health care was moderate, 41.21 ± 22.30 and 53.33 ± 19.6, respectively. Performance was positively and significantly correlated with parental education and family income, but knowledge was only correlated with parental education. Based on the results of the present study, moderate knowledge and performance were observed among female students regarding oral health, and with increasing parental education, the level of knowledge and performance of students increased. Since students mentioned teachers and health educators as their most important source of information, it seems that teacher-centered educational interventions can be effective.

Acknowledgments: None

Conflict of Interest: None

Financial Support: None

Ethics Statement: None

References

1. Keikhaee R, Rakhshani F, Fijan S, Keikhaee M, Rad JS, Roostaee F. The effectiveness of oral health education by peers on knowledge and performance of students in Zabol, Iran. Int J Res Med Sci. 2017;2(1):222-7. Available from: https://www.msjonline.org/index.php/ijrms/article/view/2108
2. Al Saffan AD, Baseer MA, Alshammary AA, Assery M, Kamel A, Rahman G. Impact of oral health education on oral health knowledge of private school children in Riyadh city, Saudi Arabia. J Int Soc Prev Community Dent. 2017;7(Suppl 3):S186-93. doi:10.4103/jispcd.JISPCD_372_17
3. Onik E. Missing persons: African Americans in dental hygiene. Am Dent Hyg Assoc. 2009;83(2):62-9.
4. Como DH, Stein Duker LI, Polido JC, Cermak SA. The persistence of oral health disparities for African American children: A scoping review. Int J Environ Res Public Health. 2019;16(5):710. doi:10.3390/ijerph16050710
5. Organization WH. Oral health surveys: Basic methods: World Health Organization; 2013.
6. Dye BA. The global burden of oral disease: Research and public health significance. J Dent Res. 2017;96(4):361-3. doi:10.1177/0022034517693567
7. Shoaee S, Ghasemi E, Sofi-Mahmudi A, Shamsoddin E, Tovani-Palone MR, Roshani S, et al. Global, regional, and national burden and quality of care index (QCI) of oral disorders: A systematic analysis of the global burden of disease study 1990–2017. BMC Oral Health. 2024;24(1):116. doi:10.1186/s12903-023-03808-z
8. Duangthip D, Chu CH. Challenges in oral hygiene and oral health policy. Front Oral Health. 2020;1:575428. doi:10.3389/froh.2020.575428
9. Kwan SY, Petersen PE, Pine CM, Borutta A. Health-promoting schools: An opportunity for oral health promotion. Bull World Health Organ. 2005;83(9):677-85. doi:10.1590/S0042-96862005000900013
10. Saccomanno S, De Luca M, Saran S, Petricca MT, Caramaschi E, Mastrapasqua RF, et al. The importance of promoting oral health in schools: A pilot study. Eur J Transl Myol. 2023;33(1):11158. doi:10.4081/ejtm.2023.11158
11. Bethell CD, Newacheck P, Hawes E, Halfon N. Adverse childhood experiences: Assessing the impact on health and school engagement and the mitigating role of resilience. Health Aff. 2014;33(12):2106-15.
12. Machuca G, Khoshfeiz O, Lacalle JR, Machuca C, Bullon P. The influence of general health and socio-cultural variables on the periodontal condition of pregnant women. J Periodontol. 1999;70(7):779-85. doi:10.1902/jop.1999.70.7.779
13. Deghatipour M, Ghorbani Z, Ghanbari S, Arshi S, Ehdayivand F, Namdari M, et al. Oral health status in relation to socioeconomic and behavioral factors among pregnant women: A community-based cross-sectional study. BMC Oral Health. 2019;19:1-0. doi:10.1186/s12903-019-0801-x
14. Locker D, Matear D, Stephens M, Jokovic A. Oral health-related quality of life of a population of medically compromised elderly people. Community Dental Health. 2002;19(2):90-7.
15. Koenig A, Porzelt S, Behrens-Potratz A, Stratmeyer P, Schellhammer S, Schmage P, et al. Assessing oral health-related quality of life among older people in home-based care-survey results of the InSEMaP study in Germany. BMC Oral Health. 2024;24(1):734. doi:10.1186/s12903-024-04500-6
16. Freddo SL, Aerts DR, Abegg C, Davoglio R, Vieira PC, Monteiro L. Oral hygiene habits and

use of dental services among teenage students in a city in southern Brazil. Cad Saude Publica. 2008;24(9):1991-2000.
17. Goodarzi A, Hidarnia A, Tavafian SS, Eslami M. Measurement of health belief model constructs in relation with the oral health practice of female students in Tehran. Health Educ Health Promot. 2017;5(4):25-37.
18. Sumita I, Toyama N, Ekuni D, Maruyama T, Yokoi A, Fukuhara D, et al. The impact of oral health behaviors, health belief model, and absolute risk aversion on the willingness of Japanese university students to undergo regular dental check-ups: A cross-sectional study. Int J Environ Res Public Health. 2022;19(21):13920. doi:10.3390/ijerph192113920
19. Xiang B, Wong HM, Perfecto AP, McGrath CP. Modelling health belief predictors of oral health and dental anxiety among adolescents based on the health belief model: A cross-sectional study. BMC Public Health. 2020;20:1755. doi:10.1186/s12889-020-09784-1
20. Shah N, Mathur VP, Kathuria V, Gupta T. Effectiveness of an educational video in improving oral health knowledge in a hospital setting. Indian J Dent. 2016;7(2):70-5. doi:10.4103/0975-962X.184646
21. Verlinden DA, Schuller AA, Verrips GHW, Reijneveld SA. Effectiveness of a short web-based film targeting parental oral health knowledge in a well-child-care setting. Eur J Oral Sci. 2020;128(3):226-32. doi:10.1111/eos.12700
22. Jeong JS, Kim KS, Lee JW, Kim KD, Park W. Efficacy of tooth brushing via a three-dimensional motion tracking system for dental plaque control in school children: A randomized controlled clinical trial. BMC Oral Health. 2022;22(1):626. doi:10.1186/s12903-022-02665-6
23. Yaghini J, Naghsh N, Tavakoli M, Ghoreishi S, Azari A, Mogharehabed A, et al. Efficacy of plaque control by tooth brushing with and without different dentifrices: A clinical trial. J Dent School, Shahid Beheshti Univ Med Sci. 2014;32(2):111-7. doi:10.22037/jds.v32i2.24805
24. Bayingana JM, Shyaka G, Ogendi J. Knowledge, attitude and practices towards oral health among secondary school students in Huye district, Rwanda. Afr Health Sci. 2024;24(1):250-61. doi:10.4314/ahs.v24i1.30
25. Yılmaz G, Riad A, Krsek M, Kurt H, Attia S. Oral health-related knowledge, attitudes and behaviours of elementary school teachers. Int J Environ Res Public Health. 2021;18(11):6028. doi:10.3390/ijerph18116028
26. Aldowah O, Assiry AA, Mujallid NF, Ashi FN, Abduljawad F, Al-Zahrani MM, et al. Assessment of oral health knowledge, literacy, and attitude among schoolteachers towards oral health - A cross-sectional study. BMC Oral Health. 2023;23(1):392. doi:10.1186/s12903-023-03012-z
27. Movaseghi Ardekani F, Ghaderi F, Kaveh MH, Nazari M, Khoramaki Z. The effect of an educational intervention on oral health literacy, knowledge, and behavior in Iranian adolescents: A theory-based randomized controlled trial. Biomed Res Int. 2022;2022:5421799. doi:10.1155/2022/5421799
28. Fallahinejad Ghajari M, Mirshekar Z, Razavi S. Knowledge and attitude toward oral and dental health among Zahedan's guidance school students. J Dent Sch. 2006;24(4):492-8.
29. Frazelle MR, Munro CL. Toothbrush contamination: A review of the literature. Nurs Res Pract. 2012;2012:420630. doi:10.1155/2012/420630
30. Pradeep S, Nandini G, Hiranmayi S, Kumar G, Bijjala NK, Guduri S. A prospective study on assessment of microbial contamination of toothbrushes and methods of their decontamination. Cureus. 2022;14(10):e30155. doi:10.7759/cureus.30155
31. Shirahmadi S, Bashirian S, Soltanian AR, Karimi-Shahanjarini A, Vahdatinia F. Effectiveness of theory-based educational interventions of promoting oral health among elementary school students. BMC Public Health. 2024;24(1):130. doi:10.1186/s12889-023-17528-0
32. Riad A, Buchbender M, Howaldt H-P, Klugar M, Krsek M, Attia S. Oral health knowledge, attitudes, and behaviors (KAB) of German dental students: Descriptive cross-sectional study. Front Med. 2022;9:852660. doi:10.3389/fmed.2022.852660
33. Hosseinpour F, Panahi R, Omidi BR, Khorasani E, Dehghankar L. The relationship between tooth decay with stress and BMI among elementary students in Iran. Front Public Health. 2022;10:920004. doi:10.3389/fpubh.2022.920004
34. Agius AM, Gatt G, Cortes ARG, Attard NJ. Patterns in oral hygiene and dietary habits in school children during the COVID-19 pandemic. Int J Clin Pediatr Dent. 2023;16(2):205-10. doi:10.5005/jp-journals-10005-2397

35. Moin M, Maqsood A, Haider MM, Asghar H, Rizvi KF, Shqaidef A, et al. The association of socioeconomic and lifestyle factors with the oral health status in school-age children from Pakistan: A cross-sectional study. Healthcare. 2023;11(5):756. doi:10.3390/healthcare11050756