

Evaluation of oral self-care behavior among laypersons and dental students

Sarah W. Al-Abbasi

University of Basrah, College of Dentistry, Preventive and Pediatric dentistry Department, Basrah, Iraq

Sarah W. Al-Abbasi ORCID ID: 0000-0003-3879-9623

ABSTRACT

Background. The goals of this study were to identify oral self-care behavior and knowledge among dental students at Basrah Dentistry College and laypersons, as well as to assess the effectiveness of knowledge in improving oral hygiene performance in our culture.

Materials and methods. Students and laypersons completed a self-administered questionnaires in their dormitories that included information on age, gender, tooth cleaning material, and frequency of tooth cleaning. The questionnaire was based on Google form questions found on the internet.

Result. The total of 281 persons from both dental students & laypersons participated in the study. All the questionnaires were returned after the completion and were analyzed. The study shows that there is a small deference between dental students and laypersons due to the availability of many sources of information nowadays such as dental clinics, internet and TV. Dental students perform better in oral hygiene than laypersons, which is undoubtedly owing to the lectures they receive in their studies and the setting of practical work in the college clinic, which makes them more interested and motivated.

Conclusion. The outcome of the study is that there is a little high level of knowledge about oral self-care procedures in dental students than in laypersons. So there is a need to educate the laypersons to increase their concern about oral hygiene and a need to provide dental students with the knowledge of how to instruct the laypersons that will visit their clinic in the future.

Keywords: dental students, laypersons, oral self-care, tooth brushing, interdental aids

INTRODUCTION

Oral self-care behavior is below suggested levels, and additional educational efforts are required to develop such behavior in order to improve oral health status [1].

Oral self-care should be practiced on a daily basis to help avoid dental disease and bad breath. Mainly prevalent types of dental disease are tooth decay (cavities, dental caries) and gum diseases, such as gingivitis and periodontitis [2]. Maintaining good oral hygiene requires consistent brushing and interdental cleaning. Adults should adhere to general standards that include brushing their teeth at least twice a day using toothpaste that contains fluo-

ride. This includes brushing before going to bed and at least one additional time during the day [3]. Interdental cleaning is as crucial as tooth brushing [4]. Fluoride treatments, sealant application, and scaling are examples of preventative services provided by dentists (scraping off the hardened plaque known as tartar). The dentist can also provide diagnostic services like x-ray imaging as well as treatments like cavity filling [5].

The primary reason for poor oral health is a lack of frequent dental appointments, untreated dental disorders, and harmful habits such as tobacco use [6]. The World Health Organization (WHO) advises oral self-care (ROSC) for the year 2020, which involves limiting sugar-containing snack consump-

Corresponding authors:

Sarah W. Al-Abbasi

E-mail: salihkazim@yahoo.com

Article History:

Received: 14 February 2024

Accepted: 30 March 2024

tion to once daily or rarely, adopting a practice of tooth brushing more than once, and using fluoride-containing toothpastes on a regular basis [7].

Individual oral care, which focuses on personal oral health responsibility, is a strategy of avoiding tooth decay and gingival disease. In this sense, mechanical approaches such as brushing and flossing are the most simple and effective preventative behaviors for reducing dental plaque and preventing tooth decay [8].

To effectively promote oral self-care habits in society, it is imperative to comprehend the fundamental factors that impact individuals' decision-making behaviors [9,10].

Socio-psychological researchers have employed a variety of ideas to reach this goal. The Theory of Planned Behavior (TPB) is a useful approach for health education that applies to oral health activities. This theory offers a useful foundation for interpreting behaviors that impact oral health [11,12].

Exploring the understanding, perspectives, and attitude of students in dental school regarding dental health have a significant effect on the level of oral health care provided to future patients. While dental education has an effect on students' oral health behaviors, there has been little research on how and when they adjust their self-care behaviors [13,14]. Public education and promotion of oral health is a crucial responsibility of dental students, who will one day head the field [15-17].

Overall, dental students possess a positive disposition towards oral health. However, they must enhance their own oral-health practices in order to effectively serve as positive examples for their patients, families, and acquaintances [18-22].

MATERIALS AND METHODS

Design and setting

A survey study conducted at University of Basrah, as different college members sharing their information by answered questionnaires forms in a period of three months.

Ethical approval

The study has received ethical approval from the College of Dentistry, University of Basrah (No. #1002 in 12/Dec/2021).

Data collection

This study depends on Goggle form questions on the internet to dental students of Basrah Dentistry College and layperson that most of them are students of Medicine, Law, Administration, Economics, and others at University of Basrah. The evaluation of oral self-care behavior was collected upon their answers from January to March 2022.

Participants

In total, 281 participants were enrolled in this work, 86 men and 195 women. The questionnaires designed for the purpose of this study consisted of ten questions. Questions related to the state of oral self-care behavior, the frequency of visits to the dentist and if they had toothache, are all listed in Table 1.

TABLE 1. The questionnaires

1. Source of your information	7. Do you believe that the use of fluoride toothpaste is beneficial for dental health?
2. How many times do you brush your teeth?	8. Which brush do you brush your teeth with?
3. How many times do you clean your tongue a day?	9. When was the last time you visited the dentist?
4. Which brush are you using?	10. What is the reason that makes you visit the dentist?
5. Which teeth brushing method are you using?	
6. Which interdental cleaning aids are you using?	

Some of the questions were open questions and for the rest of them patients were asked to mark “yes” or “no”. A different study [23] used some of the questions, and the writers also came up with their own [24].

Statistical analysis

SPSS statistics (BMI, US, NY, ver. 22) for Window were used to analyzed the data. The nominal results were described by frequency distributions and percentages whereas the ordinal results were described by mean and SD. Pearson correlation test was used to specify the relations between layman and dental students' knowledge groups. Fisher exact test and chi-square were also used to correlate the relationship within the group. The association was considered statistically significant when $P < 0.05$.

RESULTS

The sample description of both students and laypersons in relation to gender is given in Table 2, where the participant were 143(50.89%) dental students (males 41(28.67%) and females 102(71.33%)) and for laypersons, it was 138 (49.11%), (males 45(32.61%) and females 93(67.39%) with no significant difference ($p=0.41$).

TABLE 2. Sample description in relation to gender

Category	Male No %	Female No %	Total No %
Dental student	41(28.67)	102(71.33)	143(50.89)
Laypersons	45(32.61)	93(67.39)	138(49.11)

Fisher exact test (X^2)= 0.69, $p= 0.41$

Table 3 showed analysis of responses of dental students and laypersons. Regarding the questionnaires, when asked about the source of information, it was found that 36.43% of dental students' information come from dental clinics, 11.43% from parents, and 50.71% from the Internet. As for laypersons, it was 41.96% from dental clinics, 16.96% from parents, and 36.61% from the Internet with no significant differences (p=0.08, 0.5 and 0.6), respectively.

TABLE 3. Percentage and analysis of responses of dental students & laypersons: brushing habits (oral self-care behavior)

Questions	Dental students	Laypersons	P value
Source of your information:			
A. Dental clinics	51 (36.43%)	47 (41.96%)	0.08
B. The family	16 (11.43%)	19 (16.96%)	0.5
C. Internet	71 (50.71%)	41 (36.61%)	0.6
D. Television	1 (0.71%)	2 (1.78%)	0.19
E. Other	1 (0.71%)	3 (2.68%)	0.09
How many times do you brush your teeth a day?			
A. After every meal	14 (9.79%)	22 (15.83%)	0.08
B. Once	54 (37.76%)	50 (35.97%)	0.1
C. Twice	66 (46.15%)	57 (41.00%)	0.4
D. Other	9 (6.29%)	10 (7.19%)	0.3
How many times do you clean your tongue a day?			
A. Every day	77 (54.61%)	72 (52.17%)	0.9
B. Not once	31 (21.98%)	36 (26.11%)	0.06
C. Sometimes, when it smells	33 (23.40%)	30 (21.72%)	0.08
Which brush are you using?			
A. Soft	67 (47.18%)	65 (47.10%)	0.8
B. Medium	74 (52.11%)	70 (50.72%)	0.82
C. Solid	1 (0.71%)	3 (2.17%)	0.06
Which teeth brushing method are you utilizing?			
A. Vertical	21 (15%)	17 (12.06%)	0.06
B. Horizontal	9 (6%)	11 (7.80%)	0.08
C. In a circular motion	49 (34%)	54 (38.29%)	0.09
D. All of the above	64 (45%)	59 (41.84%)	0.8

When it comes to brushing, 37.76% of dental students say they do it once/day, and 46.15% say they do it twice/day. Among laypersons, 35.97% say they

TABLE 4. Interdental aids used by dental students & laypersons

	Dental student	Laypersons	P value
Which interdental cleaning aids are you using?			
A. Dental floss	67 (46.53%)	50 (36.49%)	0.07
B. The small toothbrush between the teeth	19 (13.19%)	21 (15.22%)	0.08
C. Toothpick	31 (21.53%)	43 (31.16%)	0.06
D. Nothing	27 (18.75%)	23 (16.67%)	0.1
Do you believe the use of fluoride toothpaste is beneficial for dental health?			
A. Yes	79 (54.86%)	50 (36.49%)	0.05
B. No	16 (11.11%)	73 (53.28%)	0.05
C. I don't know	49 (34.03%)	14 (10.22%)	0.05
Which toothbrush are you brushing your teeth with?			
A. interdental cleaning brush	17 (12.06%)	26 (30.20%)	0.04
B. miswak	0	1 (1.20%)	0.1
C. regular brush	124 (87.94%)	59 (68.60%)	0.05

do it once/day, and 41% say they do it twice/day without significant differences (p=0.1 and 0.4), respectively.

Dental students brush their tongues every day 54.61% of the time and when there is the odor 23.4% of the time while laypersons brush their tongues 52.17% of the time every day and when there is the odor 21.72% of the time without significant differences (p=0.9 and 0.08), respectively.

A medium brush was chosen by 52.11% of dental students, and a soft brush by 47.18%. About 50.72% of laypeople chose a medium brush, and 47.1% a soft brush without significant differences (p=0.82 and 0.8), respectively.

About 14.68% of students brushed their teeth vertically, 34.27% brushed them circularly, and 44.76% used all three methods. For laypeople, about 12.06% brushed their teeth vertically, 38.29% brushed them circularly, and 41.84% used all three methods without significant differences (p=0.06, 0.09 and 0.8), respectively.

Dental students and laypersons use the interdental aids listed in Table 4. Among dental students, 46.53% reported using dental floss regularly. For laypersons, it was found that 36.49% use dental floss and 31.16% use the toothpick, while 21.53% of dental students use the toothpick without significant differences (p=0.07, 0.06 and 0.08), respectively.

Students that use of fluoride-containing toothpaste are 54.86% and laypersons 36.49%, while 53.28% answered; it is not good for teeth with significant differences (p=0.05 and 0.05), respectively.

Regarding brush teeth use, the regular brush is the most used method for dental students about 87.94%, and 68.6% for laypersons with significant differences (p=0.05).

Figure 1 showed the responses about the last time the participants visited the dentist, the dental students visited the dentist less than 6 months about 39% and from 6 months to 12 months about 17%, while laypersons about 22% and 10%, respectively.

The responses about the reason that make participants visit the dentist (Figure 2) were 50%, while

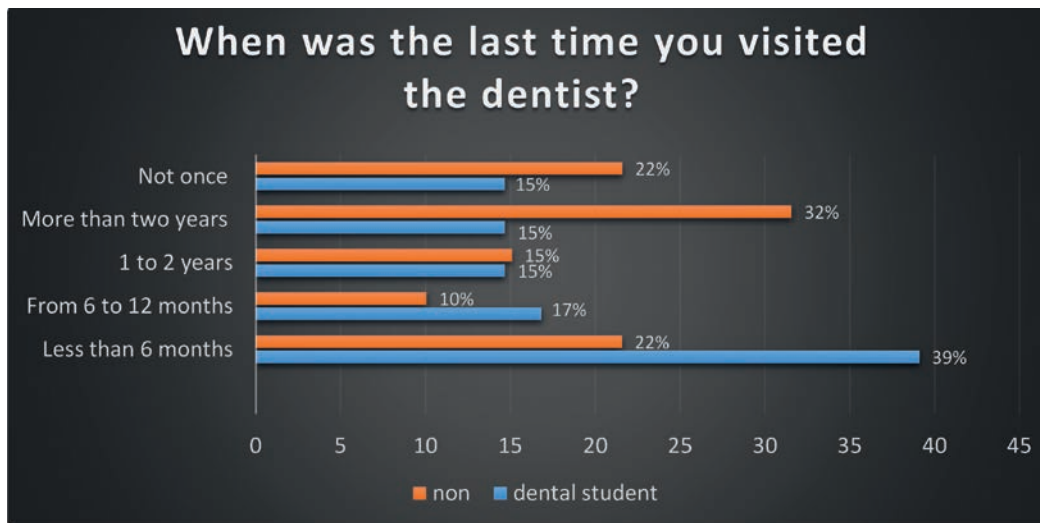


FIGURE 1. Showing the responses about the last time participants visited the dentist

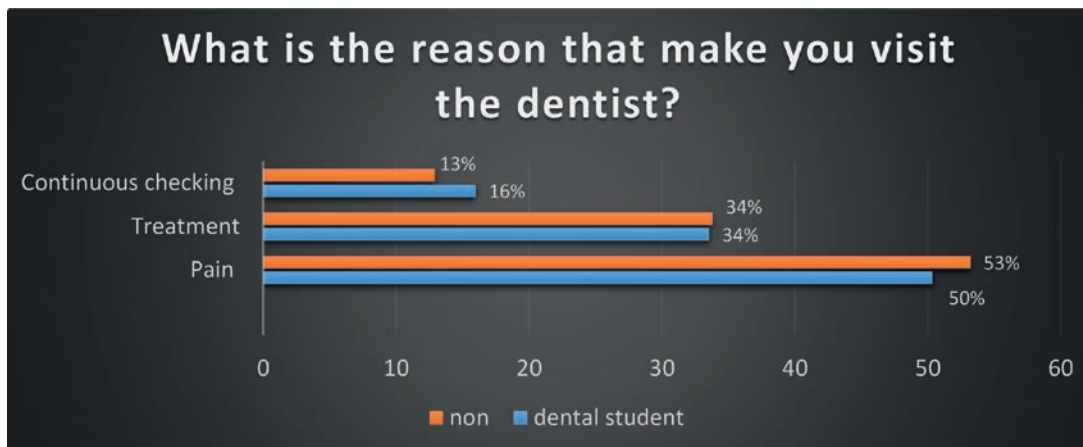


FIGURE 2. Shows the answers to the question about the reason that make participants visit the dentist

53% visiting dental clinics and dental students for when there is pain, 16% of dental students visited the dentist for continuous examinations while it was 12% for laypersons.

DISCUSSION

This study examined data on oral self-care and behavior, as well as the level of awareness among dental students and laypersons. Furthermore, strengthening dental curriculum, such as boosting dental courses throughout the last three years and increasing clinical practice within a year, can be useful in improving oral health.

This study and the data done between dental students and laypersons revealed that the sources of knowledge for both groups, whether from dental clinics or the Internet, are quite similar, with a 1-2 ratio in favor of dental students. Positively, if they keep up with the development, they are use the Internet in order to promote the transmission of information, which plays an effective role in educating both groups.

According to the findings of this study, the percentage of people who brush their teeth twice a day is higher in both groups than those who clean their teeth only once a day. Thus, we can conclude that both groups are interested in maintaining their teeth and their health, because they understand the importance of brushing their teeth and prefer twice over once, and a reversal of the teeth shown by laypersons is a slightly different situation for dental students [26].

Another study found a substantial difference in the number of times dental students brushed their teeth per day, which is far from common practice in many other nations [27]. This is also evident in Kumar's research in Chennai, India [25,28]. This could be because they cannot afford to buy toothpaste on a regular basis; therefore, in order to make their toothpaste last longer, they saved by brushing once a day. A poor attitude towards oral health may also play a role.

Tongue care also helps to preserve oral health and eliminate bacteria that live on the tongue. As a result, tongue hygiene in particular, and oral

hygiene in general, serve as an effective entrance to preventing many diseases and eliminating microorganisms that enter the body through the mouth. The ratio of brushing to not brushing the tongue among dental students is really big, and these differences are completely comparable to laypersons. The ratio of dental students to laypersons differed. The reason for the importance of awareness and the spread of culture among dental students and the role of scientific lectures in spells in addition to campaigns and their global implementation for dental colleges during the allocation of “Dental Day” and “Oral Health Day” by dental students and routinely through community education of oral health and teeth.

Brushing methods such as vertical, horizontal, and circular movements have been taught for decades. The use of the circular motion method and using a medium brush among two groups were more popular; also, the use of a soft brush among laypersons and dental students was high, indicating the possibility of their plaque increasing and their use of a hard brush exposed them to a percentage of probability of gum disease and bleeding gum [29]. However, the optimum method is one that is adjusted to the patient's specific needs and abilities, and it is the dentist's obligation to thoroughly train the patient on how to do the procedure.

The frequency with which teeth are brushed is another crucial factor in plaque removal efficiency [30]. Investigations into optimal times for cleaning one's teeth have proved unclear. While it is believed that cleaning teeth for longer periods of time removes more plaque, the brushing technique may affect study comparisons [31].

Removing interstitial plaque is essential for keeping healthy gums, preventing gum disease, and treating gum disease, reducing dental decay. Unfortunately, toothbrushes are inefficient at eliminating interstitial plaque, therefore patients must resort to alternative methods. Floss, wood sticks, rubber tips, and interdental brushes are currently the most used ways for cleaning between teeth.

Flossing is the most generally used approach for interdental cleaning; yet, this study discovered that laypersons use less dental floss than students. These percentages are similar to another study [32] that revealed that dental students use more dental floss than the other group, and that laypersons wash their teeth without brushing, such as with a toothpick. They have a higher percentage than dentistry students, so do not follow these behaviors; this is related to the lack of promotion and marketing to this point, as well as its value as a margin for laypersons.

Dental students, in particular, should highlight the necessity of utilizing dental floss and fluoride-containing toothpaste, as well as promoting and marketing these aspects to promote oral health. Reducing difficulties emerging from poor knowledge and the degeneration of general culture through social media, which is a large and effective means of communication by dental students and doctors.

In addition, the study found that people are generally good about taking care of their teeth and gums. However, when it comes to dental clinics, it was observed that dental students see a dentist less than six times a year to monitor their oral health, whereas laypeople see a dentist more than twice a year, this means when the patient is experiencing any pain or has any problem in the mouth. Another study conducted in Iran, similar to the one conducted on laypersons, discovered that the most common cause for a visit is tooth pain. The findings of this study are consistent with those of other studies [33].

There is emphasis regarding the significance of dental studies in motivation and attitude toward treatment [34]. As a result, comparable studies should be done with a bigger sample size to provide a more comprehensive picture of the current situation.

Most people fail to prioritize their oral and dental health, which is concerning because the mouth is the body's entry point and poor oral hygiene can cause problems throughout the body. People don't pay attention to their oral health until they have tooth decay or sensitive gums. They also don't care about how their teeth look and how clean they are when they smile. However, taking care of their physical health is just as important, since the mouth is the window to the body and can sometimes show how healthy someone is overall.

CONCLUSION

The study's findings show that dentistry students have a little higher degree of awareness about oral self-care techniques than laypersons. So, there is a need to educate the laypersons to enhance their concern about oral hygiene, and a need to provide dentistry students with the knowledge to train the laypersons who would visit their clinic in the future. Dental hygienists are the first line of defense in dealing with the oral health care crisis. As the saying goes, „Prevention is better than cure”.

Conflict of interest: none declared

Financial support: none declared

REFERENCES

- Lang WP, Ronis DL, Farghaly MM. Preventive behaviors as correlates of periodontal health status. *Public Health Dent.* 1995;55(1):10-7. doi: 10.1111/j.1752-7325.1995.tb02324.x
- Darby M, Walsh MM. *Procedures Manual to Accompany Dental Hygiene: Theory and Practice.* St. Louis, Mo.: Saunders/Elsevier, 2010.
- GOV.UK. Delivering better oral health: an evidence-based toolkit for prevention. Retrieved 8 May 2021. <https://shop.elsevier.com/books/darby-and-walsh-dental-hygiene/pieren/978-0-323-47719-2>.
- Claydon NC. Current concepts in toothbrushing and interdental cleaning. *Periodontology 2000.* 2008;48:10-22. doi: 10.1111/j.1600-0757.2008.00273.x. PMID: 18715352.
- Sutton, Amy. *Dental Care and Oral Health: Basic Consumer Health Information about Dental Care.* New York: Rosen Publishing Group, 6th edition. 2019. <https://www.amazon.com/Dental-Care-Health-Sourcebook-Reference/dp/0780817214>
- Garwood D. Oral Hygiene. *The Pharmaceutical Journal.* 2003; 270.
- Okagbare TE, Naidoo S. Parents' perception of psychosocial factors, health compromising behaviors and oral health among adolescents in South Africa. *S Afr Dent J.* [online]. 2018, vol.73, n.4 [cited 2024-04-07], pp.221-227. Available from: <http://www.scielo.org.za/scielo.php?script=sci_arttext&pid=S0011-85162018000400011&lng=en&nrm=iso>. ISSN 0375-1562.
- Rodríguez NI, Moral J. Design and content validation of the Oral hygiene habits scale. *J Oral Res.* 2016;5(4):159-67. <https://doi.org/10.17126/joralres.2016.035>
- Mohamadkhah F, et al. Effects of lecturing on selfcare oral health behaviors of elementary students. *Med J Islam Repub Iran.* 2014;28:86. PMID: 25664287; PMCID: PMC4301237.
- Goodarzi A, et al. Predicting oral health behaviors among Iranian students by using health belief model. *J Educ Health Promot.* 2019;8:10. doi: 10.4103/jehp.jehp_10_18. PMID: 30815481; PMCID: PMC6378810.
- Kasmaei P, et al. Predicting tooth brushing behavior among students in Guilan, north of Iran: an application of the theory of planned behavior. *Int J Pediatr.* 2020;8(6):11473-83. <https://doi.org/10.22038/ijp.2020.47154.3821>
- Pakpour AH, Hidarnia A, Hajizadeh E, Plotnikoff RC. Action and coping planning with regard to dental brushing among Iranian adolescents. *Psychol Health Med.* 2012;17(2):176-87. doi: 10.1080/13548506.2011.596551. Epub 2011 Jul 21. PMID: 21777092.
- Cohen, Lois K, Helen C. Gift. In: Kress GC Jr (editor). *Dental Education in Transition.* In: Disease prevention and oral health promotion: social-dental science in action. Cohen LK, Gift HC eds, Munksgaard, Copenhagen. 1995;387-426.
- Burt BA, Eklund, SA. Promotion of oral health. In *Dentistry, dental practice, and the community.* Burt BA, Eklund SA eds, 5th ed, WB Saunders, Philadelphia, 1999; 46-49. https://books.google.iq/books/about/Dentistry_Dental_Practice_and_the_Commun.html?id=Xy6e9cchvmgC&redir_esc=y
- Tada A, Hanada N. Sexual differences in oral health behaviour and factors associated with oral health behaviour in Japanese young adults. *Public Health.* 2004 Mar;118(2):104-9. doi: 10.1016/j.puhe.2003.05.007. PMID: 15037039.
- Khami MR, Virtanen JI, Jafarian M, Murtomaa H. Prevention-oriented practice of Iranian senior dental students. *Eur J Dent Educ.* 2007 Feb;11(1):48-53. doi: 10.1111/j.1600-0579.2007.00436.x. PMID: 17227396.
- Gallagher EB, Moody PM. Dentists and the oral health behavior of patients: A sociological perspective. *J Behav Med.* 1981 Sep;4(3):283-95. doi: 10.1007/BF00844253. PMID: 7033548.
- Frazier PJ. Public health education and promotion for caries prevention: The role of dental schools. *J Public Health Dent.* 1983 Winter;43(1):28-42. doi: 10.1111/j.1752-7325.1983.tb01110.x. PMID: 6574247.
- Umsan S, Bhat SS, Sargod SS. Oral health knowledge and behaviour of clinical medical, dental and paramedical students in Mangalore. *J Oral Health Comm Dent.* 2007;1(3):46-8. doi: 10.5005/johcd-1-3-46
- Peker K, Uysal O, Bermek G. Dental training and changes in oral health attitudes and behaviors in Istanbul dental students. *J Dent Educ.* 2010 Sep;74(9):1017-23. PMID: 20837744.
- Al-Omari QD, Hamasha AA. Gender-specific oral health attitudes and behaviour among dental students in Jordan. *J Contemp Dent Pract.* 2005 Feb 15;6(1):107-14. PMID: 15719082.
- Dagli RJ, Tadakamadla S, Dhanni C, Duraiswamy P, Kulkarni S. Self-reported dental health attitude and behaviour of dental students in India. *J Oral Sci.* 2008 Sep;50(3):267-72. doi: 10.2334/josnusd.50.267. PMID: 18818461.
- Freeman R. The psychology of dental patient care. 5. The determinants of dental health attitudes and behaviours. *Br Dent J.* 1999 Jul 10;187(1):15-8. doi: 10.1038/sj.bdj.4800192. PMID: 10452186.
- Gupta V. Assessment of oral hygiene practices among medical students. *Int J Community Med Public Health.* 2020;7(3):1170-7. <https://doi.org/10.18203/2394-6040.ijcmph20200986>
- Asadoorian J. Position paper on tooth brushing. *CJDH.* 2006;40(3):1-10. https://www.researchgate.net/publication/240627336_CDHA_position_paper_on_tooth_brushing
- Terézhalmy GT, Bartizek RD, Biesbrock AR. Relative plaque removal of three toothbrushes in a nine period crossover study. *J Periodontol.* 2005 Dec;76(12):2230-5. doi: 10.1902/jop.2005.76.12.2230. PMID: 16332234.
- Behbehani JM, Shah NM. Oral health in Kuwait before the Gulf War. *Prin Med Pract.* 2002;11 Suppl 1:36-43. doi: 10.1159/000057777. PMID: 12123115.
- Kumar S. Oral hygiene awareness among two nonprofessional college students in Chennai Indian - A pilot study. *Adv Life Sci Tech.* 2012;5(2012):31-36. chrome-extension://efaidnbmninnbpcapjcgclefindmkaj/<https://core.ac.uk/download/pdf/234686764.pdf>
- Terezhalmy GT, Bsoul SA, Bartizek RD, Biesbrock AR. Plaque removal efficacy of a prototype manual toothbrush versus an ADA reference manual toothbrush with and without dental floss. *J Contemp Dent Pract.* 2005 Aug 15;6(3):1-13. PMID: 16127467.
- Ashley P. Tooth brushing: Why, when and how? *DentUpdate.* 2001 Jan-Feb;28(1):36-40. doi: 10.12968/denu.2001.28.1.36. PMID: 11819948.
- Warren PR, Chater BV. An overview of established interdental cleaning methods. *J Clin Dent.* 1996;7(3 Spec No):65-9. PMID: 9238867.
- Merhant A, Pitiphat W, Douglass CW, et al. Oral Hygiene Practices and Periodontitis in Health care Professionals. *J Periodontol.* 2002 May;73(5):531-5. doi: 10.1902/jop.2002.73.5.531. PMID: 12027256.
- Maatouk F, Maatouk W, Ghedira H, Ben Mimoun S. Effect of 5 years of dental studies on the oral health of Tunisian dental students. *East Mediterr Health J.* 2006 Sep;12(5):625-31. PMID: 17333803.
- Naematollahi H, Ebrahim M. Oral health behaviour and determinant in a group of Iranian students. *Ind J Dent Res.* 2010 Jan-Mar;21(1):84-8. doi: 10.4103/0970-9290.62820. PMID: 20427913.