

A Cross-sectional Study on Self-assessment of Dental Health and Oral Hygiene Awareness among Delhi NCR Region

Sabika Abbas¹, Ruby Chauhan¹, Surbhi Teotia¹, Sayantika Kumari¹, Aanchal Anant Awasthi², Shazina Saeed³, Neha Taneja³, Rajiv Janardhanan⁴

¹MPH Student, Laboratory of Disease Dynamics and Molecular Epidemiology, Amity Institute of Public Health, Amity University, Noida Sector-125, Uttar Pradesh, India; ²Assistant Professor, Laboratory of Health Data Analytics and Visualization Environment, Amity Institute of Public Health, Amity University, Noida Sector-125, Uttar Pradesh, India; ³Assistant Professor, Laboratory of Disease Dynamics and Molecular Epidemiology - Amity Institute of Public Health, Amity University, Noida Sector-125, Uttar Pradesh, India; ⁴Director and Head, Laboratory of Disease Dynamics and Molecular Epidemiology, Laboratory of Health Data Analytics and Visualization Environment, Laboratory of Analytical Bio-Surveillance and Infectious Disease Epidemiology Amity Institute of Public Health, Amity University, Noida Sector-125, Uttar Pradesh, India

ABSTRACT

Background: Oral health is an essential and vital component of overall health and general well-being of an individual determining its general health as mouth reflects the diseases in the body. Hence, the dental health and hygiene should be taken care off.

Purpose: The purpose of the study was to assess the dental health and oral hygiene awareness among Delhi NCR region.

Materials and Methods: A cross-sectional study was conducted in Delhi NCR region. The study population consisted of 250 individuals in whom 53.6 % were female and rests were male. The World Health Organization questionnaire was sent to the participants online through social media.

Results: Total participants in the age group of 18 years to 63 years has responded to aids of cleaning teeth, 98.8%, 4.4%, 6%, and 23.2% individuals were using toothbrush, charcoal, neem stick, and dental floss, respectively. About 32.8% respondents reported that they do not know about the fluoride in the toothpaste and 23.2% said that they do not use fluoridated toothpaste. About 23.6% individuals go to the dentist when they have pain. About 17.2% has interrupted sleep and 24% participants feel tense because of the teeth problems.

Conclusion: The results from the study show that the participants are not interested in maintaining oral health and dental hygiene. The reason lies in the fact that they do not know the importance of it. Therefore, the study suggests that advocacy program should be conducted to spread awareness on oral health and dental hygiene among people of Delhi NCR region.

Key words: Assessment, Awareness, Dental health, India, Oral hygiene

INTRODUCTION

According to the World Health Organization, “Health is a state of physical, mental, and social well-being and not merely the absence of disease or infirmity.”^[1] Oral health is an essential and vital component of overall health and

general well-being of an individual determining its general health.^[2] Mouth is considered a mirror of the body and gateway to good health.^[3] For example, dental caries, periodontal diseases, and infections in oral mucosa show imbalance nutrition in the diet.^[4] Most of the oral diseases and conditions share modifiable risk factors with the leading NCDs (cardiovascular diseases, cancer, chronic respiratory diseases, and diabetes) associated with the tobacco use, alcohol consumption, and unhealthy diets high in free sugars, which are increasing at the global level. There has been a proven relationship between oral and general health. It is reported, for example, that diabetes mellitus is linked with the development and progression

Access this article online



www.ijss-sn.com

Month of Submission : 09-2020
Month of Peer Review : 09-2020
Month of Acceptance : 10-2020
Month of Publishing : 11-2020

Corresponding Author: Dr. Aanchal Anant Awasthi, Amity Institute of Public Health, Amity University, Noida, Uttar Pradesh, India.

of periodontitis and oral cancer was within the top three of all the cancers in some Asian-Pacific countries in 2018, stated by the International Agency for Research on Cancer.^[5]

FDI World Dental Federation has defined oral health as “Oral health is multi-faceted and includes the ability to speak, smile, smell, taste, touch, chew, swallow, and convey a range of emotions through facial expressions with confidence and without pain, discomfort, and disease of the craniofacial complex.”^[6] The Global Burden of Disease Study 2017 had estimated that oral diseases affect 3.5 billion people worldwide, with untreated dental caries being among the most prevalent non-communicable diseases.^[7] Therefore, it proves that oral diseases are still a burden on the country.^[8]

Dental caries is one of the ubiquitous, non-communicable disease prevailing all around the world.^[9] According to the Global Oral Health Data Bank, the prevalence of dental caries varies from 49% to 83% across different countries.^[10] Increased refinement of foods, lifestyle, and the greater availability of sugar has been found to be responsible for the modern pattern of dental caries.^[11]

The national health survey conducted by Dental Council of India (DCI) stated that caries prevalence was 85% in Nagpur.^[12] Goel *et al.* reported a 100% caries prevalence in rural Delhi.^[13] The reason of such prevalence is lack of awareness among the people in India. People are more focused on their systemic health than on dental health unknowing the fact that it is related to general health. Therefore, the aim of the study is to report self-assessment of dental health and oral hygiene and their concern toward the dental health among people of Delhi-NCR region.

MATERIALS AND METHODS

A cross-sectional study was conducted in the month of August 2019. The study population consisted of 250 individuals from Delhi – NCR region. Participants were requested to take part in the study. The questionnaire was sent to the participants online using social media apps like WhatsApp and Gmail. This questionnaire consisted of monthly family income in Indian Rupees and self-assessment questionnaire on dental health and oral hygiene available on the WHO website.^[14]

Frequencies along with the percentages were reported for categorical data. Graphical representations was done for important characteristics of data. Data analysis has been done using the IBM SPSS Statistics for Windows, Version 21.0 Armonk, NY: IBM Corp.

RESULTS

Out of 250 study participants, 46.4% were male and 53.6% were female. The age group of 18–63 years was selected for the study. Majority (84.8%) of them were residing in urban areas. Regarding the education majority (66.8%) of them were graduates. With reference, to the family income majority, 40.4% had a family income of >2 lakhs [Table 1].

Figure 1 indicates the number of times participants clean their teeth. The bar graph represents that only 36.8% of the participants clean their teeth twice daily, whereas more than half (59.2%) individual brush their teeth once in a day. Further, the percentage of participants those who brush less than once a day was 2.8%. We also found that 1.2% participants never brushed their teeth.

Table 2 shows the cleaning aids for cleaning the teeth. About 98.8% participants use a toothbrush to clean their

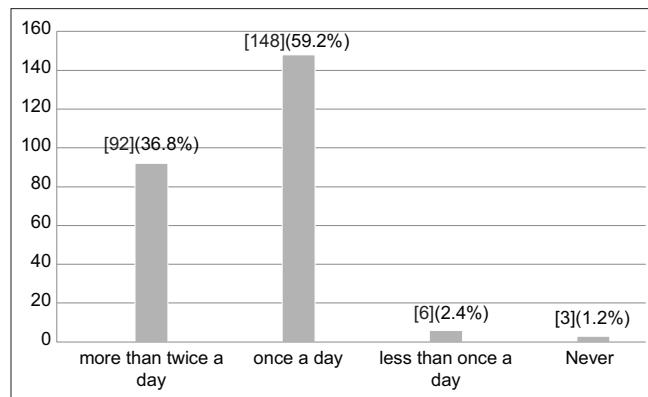


Figure 1: Self-reported frequency of cleaning teeth by study participants

Table 1: Sociodemographic characteristics of study participants

Variables	Frequency (n)	Percentage
Gender		
Male	116	46.4
Female	134	53.6
Location		
Urban	212	84.8
Peri-urban	11	4.4
Rural	27	10.8
Education		
No formal schooling	3	1.2
Primary school completed	2	0.8
Secondary school completed	3	1.2
High school completed	16	6.4
College/University completed	167	66.8
Postgraduate degree	59	23.6
Family income		
<50,000	47	18.8
50,000–1 L	63	25.2
1 L–2 L	39	15.6
>2 L	101	40.4

teeth followed by the use of wooden toothpick (27.2%), plastic toothpick (7.2%), thread (23.2%), charcoal (4.4%), chew stick (6%), and other cleaning aids are used 13.2% by the participants.

Figure 2 shows that 44% individuals use fluoridated toothpaste and 32.8% individuals do not know about the fluoridated toothpaste. About 23.2% of the participants responded that they do not use fluoridated toothpaste. This figure shows the lack of awareness among the participants about fluoride-based toothpaste.

Table 3 shows the frequency and percentage of the last visit to the dentist by the study participants. Majority (26.8%) of study participants have their last visit to the dentist in < 6 months. About 12.4% of them had their last visit between 6 and 12 months, 15.2% had their last visit between 1 and 2 years, 12.4% had their last visit between 2 and 5 years, and 11.2% had their last visit in >5 years. However, 22% of the study participants had never received dental care. This table also shows the frequency and percentage for the reason of the last visit to the dentist by the study participants. Majority (30%) of study participants had their last visit to the dentist for routine check-up/treatment. About 23.6% of them had their last visit to the dentist for pain or trouble with teeth, gums, or mouth and 11.6% of them had their last visit to the dentist for consultation/advice and for treatment/follow-up treatment. However, 23.2% of the study participants do not know/do not remember the reason for the last visit to the dentist.

Table 4 shows the frequency and percentage of problems experienced by the study participants because of the state of their teeth/mouth during the past 12 months. The most frequent problems faced by the study participants were: Difficulty in biting foods (26.8%), difficulty in chewing foods (26.4%), and dry mouth (25.2%). About 26% of them felt embarrassed due to the appearance

of teeth and 24% of them felt tensed because of the problem of teeth or mouth. The less frequent problems faced by them were: Avoided smiling because of teeth (19.6%), had a sleep that is often interrupted (17.2%), difficulty with speech/trouble pronouncing words (16.8%), reduced participation in social activities (14.4%), have taken days off work (14%), and difficulty doing usual activities (13.6 %).

Table 2: Cleansing aids used to clean the teeth

Cleaning aids	Yes	No
Toothbrush	24 (98.8)	3 (1.2)
Wooden toothpicks	68 (27.2)	182 (72.8)
Plastic toothpicks	18 (7.2)	232 (92.8)
Thread	59 (23.2)	192 (76.8)
Charcoal	11 (4.4)	239 (95.6)
Chewstick	15 (6.0)	235 (94)
Other	33 (13.2)	217 (86.8)

Table 3: Frequency of last visit along with the reasons to visit the dentist by the study participants (n=250)

Characteristics	Frequency (n)	Percentage
<6 months	67	26.8
Between 6 and 12 months	31	12.4
Between 1 and 2 years	38	15.2
Between 2 and 5 years	31	12.4
>5 years	28	11.2
Never received dental care	55	22.0
Consultation/advice	29	11.6
Pain or trouble with teeth, gums, or mouth	59	23.6
Treatment/follow-up treatment	29	11.6
Routine check-up/treatment	75	30
Do not know/do not remember	58	23.2

Table 4: Frequency and percentage of problems experienced by the study participants because of the state of their teeth/mouth during past 12 months

Characteristics	Frequency (n)	Percentage
Difficulty in chewing foods	66	26.4
Difficulty with speech/trouble pronouncing words	42	16.8
Dry mouth	63	25.2
Felt embarrassed due to the appearance of teeth	65	26
Felt tense because of problems of teeth or mouth	60	24
Have avoided smiling because of teeth	49	19.6
Had sleep that is often interrupted	43	17.2
Have taken days off work	35	14
Difficulty doing usual activities	34	13.6
Reduced participation in social activities	36	14.4

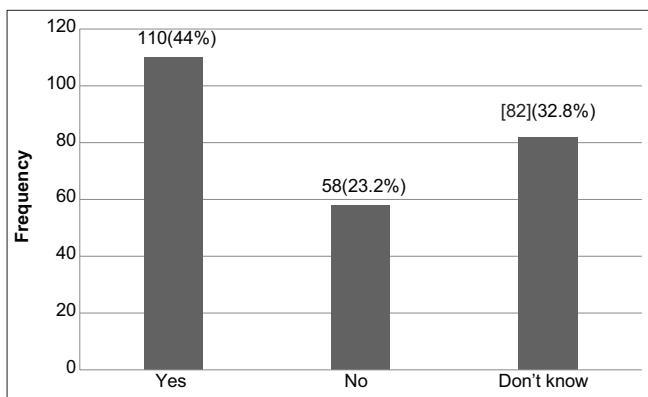


Figure 2: The use of toothpaste that contains fluoride for brushing

DISCUSSION

The present study was aimed for the self-assessment of dental health and oral hygiene and their concern toward the oral health and dental hygiene in Delhi NCR region. The results which we governed from the study are as follows: Considering the Figure 1, most (59.2%) brush their teeth once daily and (36.8%) individuals brush the teeth twice in a day. These results are contrasted with the study of Naseem *et al.* (2017), most of the participants (55.9%) brushed 2 times a day while (36.7%) brushed only 1 time.^[15] The American Dental Association recommends that an individual should brush twice in a day with fluoride toothpaste for 2 min to maintain oral hygiene.^[16] Another important finding of our study was that 32.8% respondents reported that they do not know about the fluoride in the toothpaste and 23.2% said that they do not use fluoridated toothpaste [Figure 2]. Fluoride is recommended in the toothpaste by the FDI in the appropriate dose for the prevention of caries.^[17,18]

This finding of our study is similar to the study conducted by Harikiran *et al.* (2019) which shows that more than half (60%) did not know whether their toothpaste contained fluoride.^[19] Another study conducted by Jain *et al.* In the year 2018 found 82% of respondents were unaware of the same fact.^[20] These numbers represent a lag of awareness about oral health among study respondents.

In response to aids of cleaning teeth [Table 2], 4.4%, 6%, and 23.2% individuals were using charcoal, neem stick, and dental floss, respectively, whereas the study conducted by Jain *et al.* represents the use of above items as 23%, 18%, and 0.0%, respectively.^[21] These differences in percentages of aids used could be due to cultural differences of both study populations. In addition, our study portrays that toothbrush and toothpaste were used by 98.8% of the respondents followed by the use of wooden toothpick (27.2%). These findings of our study were similar to many studies.^[22,23] Kapoor *et al.* as in their study, 90.3% patients cleaned their teeth with toothbrush and toothpaste.^[22] On similar lines, Freire *et al.* reported most common oral hygiene aids were toothbrush (97.6%) and toothpaste (90.5%).^[23]

Table 3, shows the frequency of visit to the dentist and the most common reasons for the visit. About 26.8% participants visit to the dentist in <6 months, 12.4% participants in between 6 and 12 months, and 15.2% individual visit to the dentist in between 1 and 2 years of time. About 23.6% individuals go to the dentist when they have pain. These results are comparable with the results of Devraj *et al.* study, 2012 in which 31.4% visit the dentist in <6 months followed by the 14.6% participants in 6

months–1 year and 15.5% in 1 year–2 years. About 35.2% individuals have responded that pain is the main reason to visit the reason.^[24] Such similar results are observed in the other studies as well in which pain in the tooth is the main reason to visit the dentist.^[25-29]

Another finding of our study discusses the problems faced by the people due to dental problems [Table 4]. These results were comparable with the study of Jayasvasti *et al.* in the year 2019, our study has shown 17.2% has interrupted sleep and 24% participants feel tense because of the teeth problems and similar results were seen in the Jayasvasti *et al.* study, 3.9% depressive symptoms and 11.2% sleep problems because of the dental problems.^[30]

These percentages show their lack of interest for dental health in spite of its appearance. Other studies have shown similar results that due to lack of awareness, interest, and knowledge people have poor oral hygiene.^[31-33]

Strength and Limitations

This study was conducted in the resourceful region, that is, Delhi NCR, whereas most of the studies are being conducted in the rural/ backward area for the self-assessment of oral health. Since there is dearth of studies on this topic in urban areas, the strength of our study lies in the fact that it aims to explore the self-reported pattern of dental health and oral hygiene in urban settings. Findings of this study can be utilized to frame the hypothesis for larger prospective analytical studies. In addition, our study utilizes a WHO standard questionnaire, which makes it easier to compare our findings with future studies on the same topic.

This study has several limitations. First, the cross-sectional nature of our study design could not establish a cause and effect relationship. Second, due to lack of time and resources, our study was based on limited sample size.

CONCLUSION

The preliminary data obtained from our study indicate that participants show disinterest in maintaining their oral health and dental hygiene, unknowing the fact that oral health is related to general health. Therefore, based on our findings, we suggest promoting advocacy program to spread awareness on oral health and dental hygiene among people of Delhi NCR region.

REFERENCES

1. World Health Organization. Oral Health Surveys-Basic Survey; 2020. Available from: <https://www.who.int/about/who-we-are/constitution>. [Last accessed on 2020 Jul 05].
2. Bala K, Gupta R, Ara A, Sahni B. 2018 KAP study of oral health status

- among adults in a rural area of Jammu district. *Int J Community Med Public Health* 2019;6:135-41.
3. Desai K, Patel S. Assessment of oral hygiene awareness among college students in Surat city. *Natl J Community Med* 2018;9:236-9.
 4. Gondivkar SM, Gadball AR, Gondivkar RS, Sarode SC, Sarode GS, Patil S, et al. Nutrition and oral health. *Dis Mon* 2019;65:147-54.
 5. World Health Organization; 2020. Available from: <https://www.who.int/news-room/fact-sheets/detail/>; <https://www.who.int/health-topics/oral-health>. [Last accessed on 2020 Jul 05].
 6. FDI Definition of Oral Health; 2020. Available from: <https://www.fdiworlddental.org/news/press-unveils-new-universally-applicable-definition-of-oral-releases/20160906/fdi-unveils-new-universally-applicable-definition-of-oral-health>. [Last accessed on 2020 Jul 05].
 7. Kasseebaum NJ, Smith AG, Bernabé E, Fleming TD, Reynolds AE, Vos T, et al. Global, regional, and national prevalence, incidence, and disability-adjusted life years for oral conditions for 195 countries, 1990-2015: A systematic analysis for the global burden of diseases, injuries, and risk factors. *J Dent Res* 2017;96:380-7.
 8. GBD 2016 Disease and Injury Incidence and Prevalence Collaborators. Global, regional, and national incidence, prevalence, and years lived with disability for 328 diseases and injuries for 195 countries, 1990-2016: A systematic analysis for the global burden of disease study 2016. *Lancet* 2017;390:1211-59.
 9. Kolay SK, Kumar S. Prevalence of dental caries: Children in Darbhanga population. *Int J Appl Dent Sci* 2019;5:249-52.
 10. Frencken JE, Sharma P, Stenhouse L, Green D, Laverty D, Dietrich T. Global epidemiology of dental caries and severe periodontitis a comprehensive review. *J Clin Periodontol* 2017;44 Suppl 18:S94-105.
 11. Kshatriya G. Changing perspective of tribal health in the context of increasing diseases in India. *J Environ Soc Sci* 2014;1:1-7.
 12. Kothia NR, Bommireddy VS, Devaki T, Vinnakota NR, Ravoori S, Sanikommu S, et al. Assessment of the status of national oral health policy in India. *Int J Health Policy Manag* 2015;4:575-81.
 13. Goel P, Singh K, Kaur A, Verma M. Oral healthcare for elderly: Identifying the needs and feasible strategies for service provision. *Indian J Dent Res* 2006;17:11-21.
 14. Annex 7 WHO Oral Health Questionnaire for Adults; 2013. p. 111. Available from: https://www.mail.google.com/mail/u/1/?ui=2&ik=0ef72f6640&attid=0.1&permmsgid=msgf:1666398076478591490&th=17203c38bae69202&view=att&disp=inline&realattid=f_ka2h8ssb0. [Last accessed on 2020 Jul 06].
 15. Naseem S, Fatima SH, Ghazanfar H, Haq S, Khan NA, Mahmood M, et al. Oral hygiene practices and teeth cleaning techniques among medical students. *Cureus* 2017;9:e1487.
 16. American Dental Association. Oral Health Topics: Home Oral Care; 2020. Available from: <https://www.ada.org/en/member-center/oral-health-topics/home-care>. [Last accessed on 2020 Jul 09].
 17. Jepsen S, Blanco J, Buchalla W, Carvalho JC, Dietrich T, Dorfer C, et al. Prevention and control of dental caries and periodontal diseases at individual and population level: Consensus report of group 3 of joint EFP/ORCA workshop on the boundaries between caries and periodontal diseases. *J Clin Periodontol* 2017;44 Suppl 18:S85-93.
 18. Promoting oral health through fluoride toothpaste: Adopted by the FDI general assembly: 7 September 2018, Buenos Aires, Argentina original version adopted by the FDI general assembly: November 2000, Paris, France. *Int Dent J* 2019;69:17-8.
 19. Harikiran AG, Pallavi SK, Hariprakash S, Nagesh KS. Oral health-related KAP among 11 to 12-year-old school children in a government-aided missionary school of Bangalore city. *Indian J Dent Res* 2008;19:236-42.
 20. Kittu J and Aditi V. Knowledge, attitude and behavior concerning fluoridated toothpaste and among Indian adolescents. *Acta Sci Dent Sci* 2017;2:2-5.
 21. Jain N, Mitra D, Ashok KP, Dundappa J, Soni S, Ahmed S. Oral hygiene-awareness and practice among patients attending OPD at Vyas dental college and hospital, Jodhpur. *J Indian Soc Periodontol* 2012;16:524-8.
 22. Kapoor D, Gill S, Singh A, Kaur I, Kapoor P. Oral hygiene awareness and practice amongst patients visiting the department of periodontology at a dental college and hospital in North India. *Indian J Dent* 2014;5:64-8.
 23. Freire MD, Sheiham A, Bino YA. Sociodemographic factors associated with oral hygiene habits in Brazilian adolescents. *Rev Bras Epidemiol* 2007;10:606-14.
 24. Devaraj C, Eswar P. Reasons for use and non-use of dental services among people visiting a dental college hospital in India: A descriptive cross-sectional study. *Eur J Dent* 2012;6:422-47.
 25. Cohen LA, Bonito AJ, Eicheldinger C, Manski RJ, Masek MD, Edwards RR, et al. Behavioral and socioeconomic correlates of dental problem experience and patterns of health care-seeking. *J Am Dent Assoc* 2011;142:137-49.
 26. Al-Shammari KF, Al-Ansari JM, Al-Khabbaz AK, Honkala S. Barriers to seeking preventive dental care by Kuwaiti adults. *Med Princ Pract* 2007;16:413-9.
 27. Ekanayake L, Mendis R. Self-reported use of dental services among employed adults in Sri Lanka. *Int Dent J* 2002;19:151-6.
 28. Jaafar N, Jalalludin RL, Razak IA, Esa R. Investigation of delay in utilization of government dental services in Malaysia. *Community Dent Oral Epidemiol* 1992;20:144-7.
 29. Kuthy RA, Odom JG, Salsberry PJ, Nickel JL, Polivka BJ. Dental utilization by low-income mothers. *J Public Health Dent* 1998;58:44-50.
 30. Jayavasti I, Htun KC, Peltze K. Self-rated oral health status and social and health determinants among 35-65-year-old persons in one region in Myanmar: A cross-sectional study. *Clin Cosmet Investig Dent* 2019;11:339-48.
 31. Jones M, Lee JY, Rozier RG. Oral health literacy among adult patients seeking dental care. *J Am Dent Assoc* 2018;138:1199-208.
 32. Borrell LN, Burt BA, Taylor GW. Prevalence and trends in periodontitis in the USA: The [corrected] NHANES, 1988 to 2000. *J Dent Res* 2005;84:924-30.
 33. Sabbah W, Tsakos G, Sheiham A, Watt RG. The role of health-related behaviors in the socioeconomic disparities in oral health. *Soc Sci Med* 2009;68:298-303.

How to cite this article: Abbas S, Chauhan R, Teotia S, Kumari S, Awasthi AA, Saeed S, Taneja N, Janardhanan R. A Cross-sectional Study on Self-Assessment of Dental Health and Oral Hygiene Awareness among Delhi NCR Region. *Int J Sci Stud* 2020;8(8):22-26.

Source of Support: Nil, **Conflicts of Interest:** None declared.