International Journal of Community Medicine and Public Health
Modi Y et al. Int J Community Med Public Health. 2024 Jun;11(6):2304-2308
http://www.ijcmph.com
pISSN 2394-6032 | eISSN 2394-6040

DOI: https://dx.doi.org/10.18203/2394-6040.ijcmph20241489

Original Research Article

Dental health status and treatment needs among the adult population of western Indian city: a cross-sectional study

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Received: 28 March 2024
Revised: 07 May 2024
Accepted: 08 May 2024

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ABSTRACT

Background: Oral health is a key indicator for general health, overall well-being and quality of life. This study evaluated the oral hygiene knowledge, practice and its association with oral problems and create awareness about oral health, oral diseases and its treatment to the people in Ahmedabad.
Methods: Sample size was estimated to be approximately 260 based on pilot study and by convenience sampling method. Chi-square test using SPSS statistical software.
Results: It was observed that around 74.22% of participants felt tooth pain, of which female were more expressive of their pain as compared to their male counterpart. Of which a staggering 73.07% participants brushed their teeth only once in a day. It was observed that there was a failure among population to use interdental aids for cleaning and maintaining oral hygiene. Approximately 70% of population visited their dentist not even once in the year.
Conclusions: It was observed and hence concluded on the basis of the derived results that there was a lack of appropriate oral health awareness among the local people in Ahmedabad even among the literate.

Keywords: Dental health education, Oral health, Oral health awareness, Oral hygiene

INTRODUCTION

Oral health is a key indicator for general health, overall well-being and quality of life. Poor oral hygiene has a significant impact on oral health and can give rise to various problems, such as tooth decay, tooth or gum pain and discomfort, periodontitis and infection and loss of teeth.[1] Oral health is equally important in relation to general health. Genetic predispositions, developmental challenges, poor oral hygiene, and traumatic events are some of the potential etiological factors contributing to these oral disorders.[2]

Oral hygiene behavior and oral health care need depend on a number of factors. Patients comply better with oral health care regimens when informed and positively reinforced. Lack of information is among the reasons for non-adherence to oral hygiene practices. Most of the people are not aware about the effect of poor oral hygiene on systemic diseases. The people in India hardly visit to the oral health professionals for oral health routine checkup.[3,4]

Further, oral health attitude and beliefs plays significant role for oral health behavior.[5] Oral health knowledge is considered to be an essential prerequisite for health-related behavior, although only a weak association seems to exist between knowledge and behavior in cross-sectional studies, nevertheless studies have shown that there is an association between knowledge and better oral health.[6,7]

Some years ago, the WHO recommended conducting household surveys of adults between 35-44 years aged to

gather epidemiological information on the oral health status and dental caries patterns among the different age groups, with the findings utilized to draw up appropriate and tailored oral health care.[8] Loss of the natural tooth, dental plaque accumulation and inflammation of gingival tissues increase with age.[9] As a result of this aging population, the prevalence of chronic diseases, especially health and oral health problems, will increase, which has implications for use and costs of the health care service.[10,11]

With the help of some basic questionnaire related to oral health and hygiene, we will assess the level of knowledge and awareness among the local people of city about their oral hygiene practices, oral diseases and treatment.

METHODS

An observational cross sectional study design was adopted to assess the knowledge and awareness of Oral Health among the local people in the age group 35-44 years in Ahmedabad City, Gujarat.

Study sample and sampling technique

This study was a pilot study, which was initially conducted among 50 people and was selected by convenience sampling method.

Then based on the pilot study awareness among the study population was found 20% and that has been taken as the final sample sizing.

So,

$$N = \frac{z^2pq}{l^2}$$

where, z=1.96, p=20%, q=100-p=80%, l=as absolute 5%.

$$N = \frac{4 \times 20 \times 80}{25} = 256$$

So the sample size for the study was approximately 260.

Questionnaire

With the help of Oral Health Questionnaire for Adults by the World Health Organization 2013, we were able to assess the knowledge and awareness of 35-44 years aged population regarding oral hygiene and its maintenance as well as associated oral health problems and the treatment seeking behavior of individuals.

Inclusion criteria

People with age between 35 to 44 years, residence should be in Ahmedabad city and willing to participate in study were included.

Exclusion criteria

People with age bellow 35 and above 44 years, residence should be out of Ahmedabad city, and unwilling to participate in study were excluded.

Data collection

The WHO questionnaire form was converted into the Google forms. The Ethical approval had been taken from Institutional Ethical Committee. Data is collected from September 2022 to February 2023. The forms were filled out by the population with their relevant options. This data was collected in the form of excel sheet and then it was analyzed. During this whole process, confidentiality was maintained. The personal data was never exposed. This report presents a summary of the results of the oral health awareness among the 35-44 years aged population of Ahmedabad City, Gujarat.

Statistical analysis

The data was first transferred to Microsoft Excel and then the results were analyzed by using SPSS statistical software in terms of percentages. Associations between discreet variables were tested by Chi-square test and they were highly significant (P<0.001).

RESULTS

This study was carried out among 260 people of Ahmedabad. Among these participants, 176 (67.7%) participants were female and the other 84 (32.3%) participants were male. The participants were between 35 to 44 years old. Among these participants, most of the participants (30%) were 35 years old (Table 1).

Table 1: Distribution of the study sample according to age and gender.

Age (years)	Male (%)	Female (%)	Total (%)
35	20 (7.69)	58 (22.31)	78 (30)
36	7 (2.69)	11 (4.23)	18 (6.92)
37	4 (1.54)	9 (3.46)	13 (5)
38	13 (5)	20 (7.69)	33 (12.69)
39	3 (1.15)	4 (1.54)	7 (2.69)
40	9 (3.46)	25 (9.61)	34 (13.08)
41	4 (1.54)	4 (1.54)	8 (3.08)
42	9 (3.46)	16 (6.15)	25 (9.61)
43	5 (1.92)	7 (2.69)	12 (4.62)
44	10 (3.85)	22 (8.46)	32 (12.31)

The chi-square is 5.397 and the p value is >0.05.

During the past 12 months, 219 (74.22%) participants felt tooth pain. Among them 149 (57.30%) were female and 70 (26.92%) were male. Other 41 (15.78%) participants not felt tooth pain. Among them 27 (10.39%) were female and 14 (5.39%) were male (Table 2).

Table 2: Distribution of study sample as per toothache or discomfort with gender during past 12 months.

During past 12 months felt tooth pain or discomfort	Yes (%)	No (%)
Male	70 (26.92)	14 (5.39)
Female	149 (57.30)	27 (10.39)
Total	219 (74.22)	41 (15.78)

The chi-square is 0.075 and the p value is >0.05.

Among the participants, most of the participants (54.23%) had an average status of the teeth and most of the participants (53.08%) had an average status of the gums according to them. None of the participants had an excellent status of teeth or gums (Table 3).

Among the participants, 190 (73.07%) participants brush once in a day, 66 (25.38%) participants brush twice or more in a day, 3 (1.16%) participants brush 2-6 times in a week and 1 (0.39%) participant never brush (Table 4).

Table 3: Status of the teeth and gums of the participants.

	Excellent	Very good	Good	Average	Poor	Very poor	Don't know
Teeth	0 (0)	3 (1.15)	91 (35)	141 (54.23)	21 (8.08)	3 (1.15)	1 (0.39)
Gums	0 (0)	5 (1.92)	89 (34.23)	138 (53.08)	23 (8.85)	4 (1.54)	1 (0.39)

The chi-square is 0.788 and the p value is >0.05.

Table 4: Distribution of study sample according to their frequency of brushing practice with gender.

Brushing	Once in a day (%)	Twice or more in a day (%)	2-6 times in a week (%)	Once a week (%)	2-3 times a month (%)	Once a month (%)	Never (%)
Male	64 (24.6)	17 (6.54)	2 (0.77)	0 (0)	0 (0)	0 (0)	1 (0.39)
Female	126 (48.5)	49 (18.8)	1 (0.39)	0 (0)	0 (0)	0 (0)	0 (0)
Total	190 (73.1)	66 (25.4)	3 (1.16)	0 (0)	0 (0)	0 (0)	1 (0.39)

The chi-square is 5.174 and the p value is >0.05.

Among these participants, most of the participants only used toothbrushes for oral hygiene practice but 1 (0.39%) participant didn't use a toothbrush. Other methods like wooden toothpicks were used only by 9 (3.46%) participants, thread (dental floss) was used by only 4 (1.54%) participants and chewstick/miswak was used by only 13 (5%) participants (Table 5).

Table 5: Usage of oral hygiene methods practiced by the participants.

	Yes (%)	No (%)
Toothbrush	259 (99.61)	1 (0.39)
Wooden toothpicks	9 (3.46)	251 (96.54)
Plastic toothpicks	0 (0)	260 (100)
Thread (dental floss)	4 (1.54)	256 (98.46)
Charcoal	0 (0)	260 (100)
Chewstick/miswak	13 (5)	247 (95)
Other	1 (0.39)	259 (99.61)

The chi-square is 1616.38 and the p value is <0.001

The most common problem experienced by the participants was difficulty in chewing foods which was very often experienced by 4 (1.54%) participants, fairly often experienced by 34 (13.08%) participants, sometimes experienced by 114 (43.85%) participants, 1 (0.38%) participant didn't know and 107 (41.15%) participants didn't experience a problem during last 12 months.

259 (99.61%) participants used toothpaste. Only 1 (0.39%) participant didn't use toothpaste. Among the participants, 47 (18.07%) participants saw a dentist less than 6 months ago, 51 (19.62%) participants saw a dentist 6-12 months ago, 62 (23.85%) participants saw a dentist more than 1 year but did not more than 2 years, 46 (17.69%) participants saw a dentist before 2 years but not more than 5 years and 15 (5.77%) participants saw a dentist before 5 years or more but 39 (15%) participants never received dental care.

Most of the participants were educated but 6 (2.3%) participants did not have formal schooling, 2 (0.76%) participants had less than primary school education and 14 (5.38%) participant had education till primary school. The most common forms of sugar were tea with sugar which was intake several times a day by 168 (64.62%) participants, every day by 78 (30%) participants, several times a week by 1 (0.38%) participants, once a week by 1 (0.38%) participant, several times in a month by 5 (1.92%) participants and seldom/never by 7 (2.69%) participants.

Usage of tobacco was most frequently done in the form of cigarettes and by chewing it. Chewing tobacco was used every day by 29 (11.15%) participants, several times a week by 8 (3.08%) participants, several times a month by 1 (0.38%) participant, seldom by 1 (0.38%) participant and never used by 221 (85%) participants.

DISCUSSION

This observational questionnaire study evaluated oral health awareness among the local people in Ahmedabad

in the adult age group of people between 35-44 years of age.

This study has confirmed the general opinion that oral hygiene has remained an ignored and unrealized major social problem. Preventive oral health education is gaining importance all over India and especially in Ahmedabad city. Hence in this study attempts were made to describe the preventive oral knowledge, practice and behavior of the studied population.

From the data, females felt more toothache or discomfort than males. 26.92% of male participants felt pain in the tooth and 57.30% of female participants felt pain in the tooth. So, females have more toothache problems compared to males.[12] This data shows most of the people (86.15%) completed secondary school, high school and college but they are not aware of their oral health and hygiene.

Brushing was the most commonly used method. All participants use the brushing method to clean their teeth. Out of which, 25.38% of participants brush twice a day which is very less as compared to a study done in the US population, where 90% of the participants were doing the same.[13] There is generally a failure in the use of interdental aids as a preventive tool. Similar to the results of the present investigation, a 2001 study on the population of Saudi Arabia determined that none of the participants implemented dental floss for interdental cleaning.[14]

Most people brush only once a time in the day, which has a *p*-value >0.05 which is not significant. People only use brushing techniques. There is generally a failure in the use of interdental aids as a preventive tool.

Usage of tobacco was most frequently done in the form of cigarettes and by chewing it. Cigarettes, smokeless tobacco, and other forms of tobacco cause oral cancer, gum disease, and other oral health problems.[15]

Most of the participants don't visit the dentist for routine checkups of their oral health.[3,4] This can lead to unawareness of various infections of oral cavity in case of poor oral hygiene. It can lead to dental caries, periapical abscess etc.

Dental infections have the potential to extend into the fascial planes of the head and neck, leading to serious consequences. There are various routes through which the illness might spread. They may cause osteomyelitis if they extend adjacently into the jaw. Ludwig angina can arise from infections that spread to gaps in the second and third molars. Dental infections in kids can move to the retropharyngeal or parapharyngeal spaces, where they can result in retropharyngeal or parapharyngeal abscesses, respectively. Case reports of oral infections spreading and leading to thrombosis in the cavernous sinus have been published.[16] In extremely rare instances, subdural empyema and meningitis may additionally arise from dental infections.[17] These can be avoided by awareness of oral health. In both studies of older populations in the UK and the USA, there was a different relationship between all-cause mortality and subjective and objective oral health concerns. Similarly linked to respiratory and cardiovascular diseases were certain indicators of dental health. Our findings imply that, independent of psychological and biological reasons, older people with poor dental health may have a lower life expectancy. In older adults who live in the community, oral health issues may be modifiable risk factors for improving disease prognosis and survival.[18]

The knowledge of fluoride in toothpaste was very less among the participants. Only 6.15% of participants knew that they were using toothpaste that contains fluoride. More people should know the benefits of fluoride in toothpaste for prevention of the dental caries.[19] So, education regarding the routine 6-month dental checkup should be conducted among the local people of Ahmedabad.

This study has shown very limited knowledge of prevention and preventive dental behavior.

CONCLUSION

Despite many health awareness programs being conducted throughout the year all over India, there is a lack of appropriate oral health awareness among the 35-44 years of aged population in Ahmedabad City even among the literate. Moreover, the majority of the patients were not aware of the fact that oral health affects systemic health. Hence, there is a need to educate and spread knowledge of proper dental care and prevention of dental diseases through dentists and oral hygienists, outreach programs and relevant public health awareness measures to make a healthy individual and society. Although dental health education is a relatively new discipline within dentistry, it is suggested that this education should start at an early stage in life, be delivered by trained personnel and be carefully integrated into general health. So, with the help of the Government along with the dentists, improvement in the oral health of the local people can be carried out by spreading more awareness of oral health and hygiene through the combined efforts of the community and the Government to be free from oral diseases and have a good healthy life.

ACKNOWLEDGEMENTS

We would like to thank Dr. Janki Shah and Dr. Sajan Pandya for giving guidance and support to conduct this study.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee of Govt. Dental College & Hospital on 24 August 2022 (IEC GDCH/S.4/ICMR/ 2022)

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Cite this article as: Modi Y, Desai T, Mandanka S, Soni P, Patel R. Dental health status and treatment needs among the adult population of western Indian city: a cross-sectional study. Int J Community Med Public Health 2024;11:2304-8.