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Original Research Article

A study of the prevalence on the dental problems in relation to their habits of personal hygiene

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ABSTRACT

Background: Oral hygiene practices play a crucial role in maintaining dental health and preventing common dental issues such as tooth decay, gum disease and oral infections. Traditional methods like the use of miswak and khilal are still widely practiced, particularly in culturally rooted communities. However, their effectiveness in reducing dental problems remains under-researched. Similarly, gargling especially before bedtime is a basic but often neglected hygiene habit that may have implications for oral health. There is limited evidence on how different gargling substances, such as plain water, toothpaste or medicated solutions, affect dental health outcomes.
Methods: This observational cross-sectional study, titled A Study on the Prevalence of Dental Problems in Relation to Personal Hygiene Habits, was conducted in the Civil Lines area of Aligarh, Uttar Pradesh. Aim was to assess relationship between dental hygiene practices and the prevalence of dental problems. Data were collected using a pre-typed semi-structured questionnaire and analyzed through descriptive and inferential statistical methods.
Results: Among the participants, gargling with medicated material was associated with a significantly higher prevalence of dental problems (64.7%) compared to those using plain water (13.9%) or paste (13.3%) (χ^2=46.8, $p<0.001$). The use of miswak (23.8%) and khilal (49.6%) showed no statistically significant association with dental issues.
Conclusions: The findings suggest that while traditional practices like miswak and khilal do not significantly impact dental health, the use of medicated gargling materials may be linked to a higher occurrence of dental problems, emphasizing the need for improved oral hygiene awareness.

Keywords: Dental problem, Gargling, Khilal, Miswak, Personal hygiene

INTRODUCTION

Certain teeth and gums related problems like tooth decay, periodontal disease and tooth loss are result of infrequent and ineffective interdental cleaning. Primary prevention and oral health promotion is the key to reduce the problems.[1] Rajpar et al, in their study concluded that awareness regarding dental floss needs to be bolstered in the population as preventive oral health care behaviour.[2,3] The father of modern dentistry, Pierre Fauchard, a Frenchman, wrote in first great textbook of dentistry, published in 1728, little or no care as to the cleansing of the teeth is ordinarily the cause of all the maladies that destroy them. This half-truth has rung down the centuries, often expressed in the brief, false slogan "A clean Tooth never decays." There is no such thing as a bacteriologically clean tooth. There are always some bacteria in the mouth.

Cleanliness of the mouth may aid in the control of tooth decay. The purpose of brushing the teeth, in this respect, is to remove fermentable food debris. Toothpastes, powders and liquids are used only to aid the brush. As for is known, there is no powder, paste or liquid dentifrice which in itself will prevent tooth decay. In most

instances, the proper use of a satisfactory toothbrush, a safe dentifrice and through rinsing of the mouth with water immediately after eating will ensure maximum benefits but the effectiveness of this procedure in the control of tooth decay has not been established.[4]

Cleanliness of the mouth may aid in the control of tooth decay by removing fermentable food debris. Fermentable in the mouth begins within a few minutes after food is eaten. Therefore, the ideal procedure would be to clean the teeth after each meal with a satisfactory toothbrush, a mildly abrasive dentifrice used carefully and properly, followed by a thorough rinsing of mouth with water. Rinsing alone is desirable if brushing is impossible. It helps to remove the food particles and to keep the mouth clean and sweet. Salt and water or water only is a good rinse.[5]

A tooth is a hard structure composed of dentine and the enamel covering the dentine although resemble bone, but is much harder. The enamel of the tooth is the hardest tissue in the body. Once the enamel of the teeth is completely formed, the cells that produced it disappear. Thus, it can then no longer receive nourishment from the body. The enamel is therefore incapable of repair. It covers only the exposed surface of the tooth, as within the bone the dentine of the tooth is covered with cement like material, called cementum.[6]

A proper wholesome diet is necessary not only for building of strong teeth, but also to ward off dental diseases. Milk, eggs, tomatoes, guavas, amlas and other citrus fruits including green leafy vegetables rich in vitamin C content should be included in our daily life. If the diet happens to be lacking in minerals and vitamin C, children may suffer from structural defects of teeth, gums and bones. Children often suffer from caries either on the account of deficiency of vitamin D or due to acid forming bacteria formed on account of fermentation of carbohydrates.

Especially amongst children, eating of sweets, chocolates, toffees and chewing gums etc., are the promoting causes of dental caries or decay of teeth, because starch and sugar undergo fermentation in the mouth and are converted into acids. Acids acts on the enamel of the teeth, exerting a corroding action, destroying it and exposing underlying dentine. The microorganisms which are teeming in our mouths subsequently attack the exposed Full-grown teeth also require balanced nourishment for their maintenance.[6]

Saliva contains a mild alkali which will neutralize excess acids in food and also the acid made in decaying food; saliva helps to preserve the teeth from attack by acids. The flow of saliva into one's mouth is greater during the day than at night because eating and talking stimulate the salivary glands. Because of this, it is particularly important to clean one's teeth before going to bed at night, though it is, of course, wise to do so after every meal and so to remove, very quickly, the food that has accumulated.[7] In India a green neem or kicker stick is used for cleaning teeth, which is very good from the hygienic point of view. The tongue should be cleaned by a tongue-cleanser every morning.[19] Imagine a smile revealing dirty, broken teeth and one quickly realizes how important good teeth are in improving one's appearance. The bad teeth cause pain and ill health.[7]

In areas of the country where there is a fairly high content of fluorine the teeth of the children do not decay as readily as in other places where the fluorine content is low. For this reason, small quantities of fluorine are being added to the public water supplies in many parts of the country. Pain from a badly decayed tooth will finally force most people to the dentist, but a badly decayed tooth cannot be repaired and must be pulled out, which leads to the inevitable loss of biting power and the discomfort of the false teeth.[7]

Halitosis is disagreeable odour of the breath may come from decayed teeth, from collections of decomposing food between the teeth. The collections affecting the teeth can be corrected dentistry and dental hygiene. Mouthwashes may be temporarily masking unpleasant odours, but they never really eliminate the odours or remove the cause.[8]

A tooth paste, powder or liquid dentifrice is used merely to aid the brush. As far as is known, none of them contains any substance which will in itself prevent tooth decay. There is no specific procedure or agent that will completely prevent dental caries. Powdered table salt or baking soda or a mixture of equal parts of each may be used effectively in place of a commercial tooth paste.[5]

In brushing the teeth, extreme care should be taken not to injure the delicate oral tissues. The teeth should be brushed away from the gum with a rolling or sweeping motion. The grinding surface should be brushed with a slight backward-and-forward and side-to-side motion. The tooth surface next to the tongue should be brushed as carefully as those next to the cheeks and lips. Thorough brushing will help to preventive the accumulation of food debris. Even careful brushing of the teeth may not keep them entirely free from a lime-like deposit called tartar, formed by mucin and minerals from the saliva.

For this reason, oral prophylaxis by the dentist or dental hygienist is desirable at least once or twice a year. Dental floss, used under instruction from the dentist, helps to remove any particles that may remain between the teeth after brushing. The silk should be passed through the contact points, held closely to the surface of the teeth and carried upward or downward as far as the gums. Care must be taken not to injure the soft tissues. It is necessary for children under 10 or 12 years of age to use dental floss. When the toothbrush and dental floss are not available, a toothpick is often used to clean the proximal surfaces of the teeth after eating.[5] Electric toothbrushes,

in which the small brushing head oscillates, are reported in several studies to remove deposits from the teeth as effectively as proper hand bruising and to be less irritating to the gums. Studies also show that it is easier to get most children to use an electric tooth brush than to get them to brush their teeth properly by hand.[5,8]

The maintenance of healthy teeth begins when the baby is in its mother's womb. Though when the baby is born, it is usually born without teeth showing trough the gums, its teeth are, in fact, already formed and are present in the jaws; they mainly have to grow up above the level of the gums. Since the teeth are formed before the child is born, it is mother's responsibility to see that she eats the food to ensure the formation of the sound teeth in her baby; plenty of milk is most important and fruit and vegetables too.[7]

Dental plaque is major cause especially for periodontal problems. Although periodontal disease is preventable, its prevalence is increasing in the world. Studies have shown that daily good oral hygiene is necessary for removal of dental plaque to prevent disease.[10] The mechanical method of plaque control is easiest and effective to prevent periodontal diseases. Tooth brush alone is relatively ineffective interdentally, so for preventing several dental conditions, use of interdental cleaning aids like dental floss, tufted dental floss, tooth picks, interdental brushes, interdental tips, wooden dental cleaners etc. are necessary.[11]

Dental floss is more effective in removing interdentally plaque than manual toothbrush alone; these two in combination are effective for proper oral hygiene. Various reports suggest that only a minority of population is compliant flosses on a daily basis.[12]

Objectives

The primary objective of this study was to assess the prevalence of dental problems in relation to personal oral hygiene habits among individuals in the Civil Lines area of Aligarh, Uttar Pradesh. Specifically, it aimed to evaluate the impact of various hygiene practices including gargling with different materials, the use of miswak and khilal (toothpicks) on dental health, in order to determine their effectiveness and inform future public health strategies.

METHODS

This study entitled "a study on the prevalence on the dental problems in relation to the habits of personal hygiene" was conducted among the people of Aligarh belonging to civil line area of district Aligarh in duration of two months i.e., May and June in 2018. This study was an observational cross- sectional study conducted to find out the prevalence of the dental problems among the people of Aligarh, Uttar Pradesh, India practicing or not practicing the method of personal hygiene of dental health. A Pre-typed semi-structured Performa consist of several questions was prepared for collection of data from subjects. For the sampling of the study a random 1100 individuals have been chosen the from study population. Present study was analyzed through both descriptive and inferential statistical methods.

The inclusion criteria for the study comprised residents of Aligarh, individuals of either sex aged 15 years and above, who were mentally and physically sound and willing to participate. The exclusion criteria included individuals with disabilities, migrants, bedridden persons, those under 15 years of age, individuals with chronic or genetic disorders and those unwilling to participate in the study.

The ethical clearance was taken from the IEC (Institutional Ethical Committee) in its meeting held on 5th December 2018 in the Faculty of Unani Medicine, Aligarh Muslim University, Aligarh (office reference no.528/FUM dated 22.11.2018). Ethical considerations were as; informed consent form was given to each subject which consist the below mentioned information. Privacy during the interview was maintained and every care was taken to maintain confidentiality of the data. Proper advice was given whenever required.

RESULTS

Demographic profile of the participants

Table 1 demonstrates that highest numbers of individuals are of age of 25-35 years i.e., 36.6% while the least number of age group are 65-75 (0.4%). Rest of the age group are 15-25 (34.1%), 35-45 (17.4%), 45-55 (8.7%) and 55-65 (2.8%) respectively. Table 2 shows that male population among the study group are more than female. They were about 70.4% in compare to female that were about 29.6% and the ratio was 2.37:1 (M: F). Table 3 illustrate that most of the participants in the study were Muslim (93%) and subjects come from the category of Hindu were 7%. Table 4 demonstrates that in the study population majority of persons are unmarried (52.1%) and those who were married are 47.9%.

Habit of personal hygiene and associated problem

Table 5 simplifies that 35.1% (n=386) were gargling at bed time. Out of them 14.5% (n=56) were having dental problem and 84.5% (n=330) were not having the dental problem 64.9% (n=714) were not doing gargle at bed time. In this group 12.7% (n=91) were suffering from dental problem and 87.3% (n=623) were free from dental problem. Table 6 expounds that 29.5% individuals were using plain water for gargle, 4.1% were using paste and 1.5% were using medicated solution for the same purpose. 64.9% individuals were not using any kind of material as they were not doing gargle at all. Table 7 shows that 23.8% (n=262) were using miswak for their teeth cleaning. Among them 15.3% (n=45) were suffering

from dental problem while 84.75% were not having this problem. 76.2% (n=838) were not using miswak. In this group 13.6% (n=114) were having dental problem and 86.4% (n=724) were devoid of the problem. The overall prevalence of dental problem was 14% (154). Table 8 spells out that 49.6% were doing khilal. Among them 12.3% (n=67) were suffering from dental problem while 87.3% (n=479) were not having this problem. 50.4% (n=554) were not doing Khilal. In this group 15.7% (n=87) were having dental problem and 84.3% (n=467) were devoid of the problem. The overall prevalence of dental problem was 14% (154).

Table 1: Distribution of studied population according to age.

Age (in years)	Frequency	%
15-25	375	34.1
25-35	403	36.6
35-45	191	17.4
45-55	96	8.7
55-65	31	2.8
65-75	4	0.4
Total	1100	100.0
Mean±SD 31.1±10.8		

Table 2: Gender wise distribution of the study population.

Sex	Frequency	%
Male	774	70.4
Female	326	29.6
Total	1100	100.0

Table 3: Religion wise distribution of the study population.

Religion	Frequency	%
Muslim	1023	93.00
Hindu	77	07.00
Total	1100	100.00

Table 4: Marital Status of the population of study group.

Marital Status	Frequency	%
Married	527	47.9
Unmarried	573	52.1
Total	1100	100.0

Table 5: Distribution of studied population according to habit of gargle at bed time in relation with dental problem.

Habit of gargle at bed time	Dental problem	No dental problem	Total	
Gargle at bed time	56	330	386	**X^2=0.6 P<0.001 Not Significant**
	14.5%	84.5%	35.1%	
No gargle at bed time	91	623	714	
	12.7%	87.3%	64.9%	
Total	147 (13.4%)	953 (86.6%)	1100 (100%)	

Table 6: Distribution of population according to use of material for gargle.

Use of material with gargle	Frequency	%
Plain water	324	29.5
Paste	045	4.1
any other medicated solution	017	1.5
Not doing	714	64.9
Total	1100	100.0

Table 7: Distribution of population according to use of miswak and dental problem.

Frequency of using miswak	Dental problem	No dental problem	Total	
Use of miswak	40 (15.3%)	222 (84.7%)	262 (23.8%)	X^2=0.45 Not Significant
No use of miswak	114 (13.6%)	724 (86.4%)	838 (76.2%)	
Total	154 (14%)	946 (86%)	1100	

Table 8: Distribution of the studied population according to the habit of doing Khilal (Using tooth pick) in relation with dental problem.

Frequency of doing Khilal	Dental problem	No dental problem	Total	
Doing Khilal	67 (12.3%)	479 (87.3%)	546 (49.6%)	X^2=2.69 Not Significant
Not doing Khilal	87 (15.7%)	467 (84.3%)	554 (50.4%)	
Total	154 (14%)	946 (86%)	1100	

DISCUSSION

The study undertaken was an observational, cross-sectional and retrospective study conducted on 1100 people of various age groups at civil lines area of Aligarh and its vicinities. The findings and results observed are discussed in detail with reference to the study variables.

Demographic profile of the participants

Age distribution

The mean age of the studied population was 31.1±10.8. Out of 1100 individuals from study group, there were 34.1% (n=375) in the age group of 15-25 years, 36.6% (n=403) individuals in the age 25-35 years, 17.4% (n=191) in the age group of 35-45, 8.7% (n=96) in the age group of 45-55 years, 2.8% (n=31) in the age group of 55-65 years and 0.4% (n=4) in the age group of 65-75 years.

Among the studied population the highest numbers of individuals are of age of 25-35 years i.e., 36.6% while the least number of age group are 65-75 (0.4%). The reason may be availability of this age group at the time study survey and their openness to participate.

Sex distribution

Male population among the study group were more than female. They were about 70.4% (n=774) in compare to female. Females were about 29.6% (n=326) and the ratio was 2.4:1 (M: F). It was due to the shyness of the female respondents to share their personal habits.

Religion wise distribution

Out of 1100 participants, 93% (n=1023) were Muslims and subjects come from the category of Hindu were 7% (n=77). Most of the participants in the study were Muslims, as the research focused on assessing the prevalence of dental problems in relation to religion-based personal hygiene practices. Muslims were emphasized due to their strong religious emphasis on oral hygiene, making them a relevant group for this investigation.

Marital status distribution

In the study population, the majority of participants were unmarried, accounting for 52.1% (n=573), while 47.9% (n=527) were married. This distribution is likely due to the large proportion of participants being hostel residents.

Habit of personal hygiene and associated problem

Distribution of studied population according to types of gargle in relation with dental problem

On which pattern in regards with the oral and dental hygiene the present study was designed, it was difficult to find any such kind of study to compare the outcomes of the present study. But in available literature the oral and dental hygiene has got its optimum importance. Keeping this in view the individuals were enquired about their habit of gargle before going to bed for the maintenance of their oral hygiene. In the present study it was found that 29.5% (n=324) were doing gargle with plain water.

Among them 13.9% (n=45) were having dental problem while 86.1% (n=279) individuals were safe from dental problem. 4.1% (n=45) participant were using any kind of paste for gargling of their mouth. In this group 13.3% (n=6) were suffering from dental issue and 86.7% (n=39) were not suffering from such kind of disease. 1.5% (n=17) were gargling with medicated material. Here 64.7% (n=11) were having the dental problem and 35.3% (n=6) were not having the said problem. 64.9% (n=714) were not in practice of doing gargle before going to bed. Among these population 12.9% (n=92) were the victim of dental problem and 87.1% (n=622) were not so. The difference between these two variables was statistically significant. (X2= 46.8, p<0.001 Significant)

The importance of the oral hygiene has got very much importance as the Healthy Mouths, Healthy Lives report states: "The impact of oral disease on people's everyday lives is subtle and pervasive, influencing eating, sleeping, rest and social roles. Collectively, oral diseases and disorders create substantial pain and suffering, disability and, in certain cases, death".[13]

Distribution of studied population according to use miswak in relation with dental problem

In India a green neem or kicker stick is used for cleaning teeth, which is a very good stuff from the hygienic point of view.[6]

This is not only practical in India but it is also very much practiced in Muslim ruling countries. As it is stated by Bedi Yash Pal, it is a good habit from the hygienic point of view. In the present study the individuals were asked about their habit of mouth cleansing by the miswak and it was found that 23.8% (n=262) were using miswak for their teeth cleaning. Among them 15.3% (n=45) were suffering from dental problem while 84.75% were not having this problem.

76.2% (n=838) were not using miswak. In this group 13.6% (n=114) were having dental problem and 86.4% (n=724) were devoid of the problem. The difference between these variables was found not significant statistically. (X2=2.69, p>0.05 Not Significant). Al-Ghamdi et al, reported in their study that 22.74% were in utilization of miswak. The results in the present study in comparison to Al-Ghamdi's study are same.[9]

Shruthi et al and Kumar et al reported in their study that significant improvement in plaque score and gingival health when miswak was used as an adjunct to tooth brushing. In the present study the results in relation with use of miswak and dental problem were not fount statistically significant.[14]

Batwa et al, reported in their study that 48% of the subjects were using miswak either exclusively or occasionally. In the present study 23.8% (n=262) were found using miswak. It is just half of this mentioned study. This may be due different cultural, social and geographical distribution.[15]

Distribution of the studied population according to the habit of use of Khilal (Tooth Pick) in relation with dental problem.

Khilal (Tooth Pick) is also a traditional method of dental hygiene. The pieces of food use to get stuck in the gaps of the teeth and removing it by any means like thin wood and metallic thin stick is khilal (tooth pick). If the pieces of food stuff specially meat will not be removed from the gaps of the teeth it may cause putrefaction and bad breath from the mouth. In the present study it was found that 49.6% were doing khilal. Among them 12.3% (n=67) were suffering from dental problem while 87.3% (n=479) were not having this problem. 50.4% (n=554) were not doing Khilal. In this group 15.7% (n=87) were having dental problem and 84.3% (n=467) were devoid of the problem. The difference between these variables was found not significant statistically. (X2= 2.69, p>0.05 Not Significant).

Oral diseases are significant public health issues worldwide and it is of great importance to integrate oral health not only into global health agenda, but also via the common daily life approach and through effective multidisciplinary and society collaborations.[16] Keeping in view the importance of dental hygiene as described by Jin et al, Lamster et al, in the present study this issue was also enquired to assess the level of oral and dental hygiene of the participant in the given population.

The results of this study found that the use of dental floss or toothpick holder resulted in no significantly different effect in the improvement of gingival health. As for the results in relation with use of tooth pick and dental problem, in the present study, it was found not significant statistically and it was similar to the study carried by Lewis et al, in statistical significance.[5]

Recommended practices include good nutrition, cutting down on highly sweetened foods, specially between meals; and substituting other things such as fruits, popcorn, milk and sweetened fruit juices for snacks. Brushing teeth after meal or rinsing the mouth with water. Using drinking water which has fluoride content recommended by health authorities, approximately one part per million. Regular visit of dentist after the full eruption of the teeth.[8]

This study has several limitations. Being a cross-sectional design, it captures associations at a single point in time and cannot establish causality between oral hygiene practices and dental problems. The data were self-reported, which may introduce recall or reporting bias. The study population was limited to the Civil Lines area of Aligarh, which may not be representative of broader populations. Additionally, the overrepresentation of hostel residents and the Muslim community may limit the generalizability of the findings to other demographic or religious groups.

CONCLUSION

The study explored the relationship between oral hygiene practices and the prevalence of dental problems. Among participants, 29.5% reported gargling with plain water, of which 13.9% had dental issues. A small proportion (4.1%) used toothpaste for gargling, with 13.3% experiencing dental problems, while only 1.5% used medicated gargle materials, among whom a significantly higher 64.7% had dental issues. Additionally, 64.9% of respondents did not practice gargling before bedtime and 12.9% of them reported dental problems, showing a

statistically significant association (χ^2=46.8, p<0.001). The use of Khilal (toothpicks) was also examined: 49.6% practiced Khilal, with 12.3% reporting dental issues, while among the 50.4% who did not, 15.7% had dental problems. This difference was not statistically significant (χ^2=2.69, p>0.05). Similarly, the use of miswak was assessed, with 23.8% of participants using it, 15.3% of them had dental problems compared to 13.6% among non-users, which also showed no significant association (χ^2=2.69, p>0.05).

This study advances knowledge by highlighting the significant impact of specific oral hygiene practices particularly gargling habits on dental health. It underscores the need for increased awareness and targeted interventions, while also revealing that traditional practices like khilal and miswak may not significantly affect dental outcomes.

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