Original Article

Assessment of Periodontal Status of Miswak and Toothbrush Users from Karachi. A Comparative Study

Comparison of Miswak and Toothbrush Users

Maria Khadija Siddiqui[1], Saima Hanif[2], Muhammad Najib Sidiki[3], Madiha Inayatullah[4] and Saqib Ali[4]

ABSTRACT

Objective: The purpose of this study was to assess the periodontal status of miswak and toothbrush users of Karachi.

Study Design: Observational / Descriptive / cross sectional study

Place and Duration of Study: This study was conducted in the OPD Department, Jinnah Medical and Dental College Karachi from 02.05.2015 to 30.09.2015.

Materials and Methods: Participants of the study include the students of Madrasah Islamia and patients presenting to OPD of Jinnah Medical and Dental College Karachi for routine dental checkups. We chose purposive sampling for the study. Subjects were selected on the basis of their use of miswak (Group A), use of toothbrush (Group B) and use of Miswak and Toothbrush (Group C). Each subject was examined using CPITN probe to evaluate gingival bleeding, dental calculus and probing pocket depths of the selected surfaces. Selected surfaces were lingual surface of mandibular anterior teeth and buccal surface of maxillary posterior teeth. Subjects who did not consent to participate in the study were excluded from the study. SPSS version 20 was used for data analysis.

Results: In group A 40% participants had calculus, 50% had less than 3mm pockets and 20% had more than 3mm pockets. 30% had no gingival pocketing. In group B (brushing only) 4% subjects had calculus and 96% had less than 3mm pockets. In group C (miswak plus toothbrush) 40% had calculus and less than 3mm pockets and 10% of subjects had more than 3mm pocket depth. 50% had no pockets at all. Gingival Bleeding was demonstrated in all groups with Miswak users being 30% and tooth brush users and tooth brush plus miswak users being 10 % each.

Conclusion: The periodontal status of all 3 groups was found to be satisfactory but examination revealed that the users of toothbrush only (group B) possess healthier periodontal tissues.

Key Words: Periodontal status, Miswak and toothbrush

Citation of article: Siddiqui MK, Hanif S, Sidiki MN, Inayatullah M, Ali S. Assessment of Periodontal Status of Miswak and Toothbrush Users from Karachi. A Comparative Study. Med Forum 2016;27(4):36-39.

INTRODUCTION

Miswak is a famous tree twig, used by many inhabitants as a form of traditional tooth brush. In Muslim societies, miswak use has also been found to be a religious practice and a type of ritual for cleansing of teeth[1]. Around 600 AD, miswak has been described well in Islam and was in regular use by the Prophet Muhammad (PBUH) himself. Not only that it is a mechanical mean of achieving oral hygiene, its antimicrobial benefits have also been demonstrated well[2]. Miswak when soaked in water releases benzylisothiocyanate (BITC) from the roots which hinders cariogenic substances to reach the treated tissue.[3] Despite proven efficacy of miswak, various studies have stated use of different devices among people to maintain oral health. This may be due to change in the people's views on miswak over a period of time; or with the availability of modern aids of achieving oral hygiene. Decade ago, in Saudi Arabians with diverse socioeconomic backgrounds it was revealed that with advancement of education, choice of habitual miswak consumption decreased[4]. In 2005, a study on Jordanian adults also showed most educated people prefer tooth brush only (72%) followed by toothbrush-miswak both (20.5%) for oral hygiene maintenance.[5] When it comes to effectiveness regarding periodontal health, Miswak in comparison to tooth brush has shown variation in results. None of the recent research strongly suggests which aid among miswak or toothbrush is more effective in keeping better periodontal health.

In this study the aim was to compare the effects of different means of maintaining oral hygiene on periodontal health among adults of Karachi.

1. Department of Community Dentistry / Oral Biology[2] / Department of Orthodontics[3], Jinnah Medical and Dental College, Karachi
4. Private Clinic, Karachi

Correspondence: Dr. Saima Hanif,
Senior Lecturer of Oral Biology,
Jinnah Medical and Dental College, Karachi
Contact No.: 0333-2138770
E-mail: shanif73@gmail.com

Received: January 02, 2016; Accepted: February 25, 2016

MATERIALS AND METHODS

A comparative cross-sectional study was conducted on habitual miswak and toothbrush users in Karachi. Purposive sampling was done. The age range of participants was between 18-65 years. The participants included the students of Madrasah Islamia and patients presenting to Outpatient Department of Jinnah Medical and Dental College Karachi for routine dental checkups. All subjects were interviewed regarding their oral hygiene habits and verbal consent was taken for their participation in the study. There were 3 groups of subjects, Group A (Miswak users), Group B (Toothbrush users) and Group C (Miswak and Toothbrush users).Oral examination was done to record gingival bleeding, periodontal pockets and calculus. Each subject was examined using CPITN probe of the selected surface. Selected surfaces were lingual surface of mandibular anterior teeth, buccal surface of maxillary posterior teeth.

Inclusion criteria: Regular users of oral hygiene aids at least once a day were included in the study.

Exclusion criteria: People who use dentifrice with finger or had any systemic disease which affects periodontal health were excluded. Those not willing to participate in the study were also excluded.

RESULTS

All the data was analysed using the 20th version of SPSS. Mean age was 31.47years with a Standard deviation of 11.97. 150 participants comprised the study population; 50 in each group. There were 93 males (62%) and 57 females (38%).

In group A (miswak only group) 40 % (n=20) subjects had calculus where as in group B (brushing only) 4 % (n=2) had calculus. Group C (miswak plus toothbrush) also had calculus in 40% (n=20) of the subjects. Gingival Pocketing were measured using CPITN probe. Among Group A, 50% (n=25) participants had less than 3mm deep pockets and 20 %(n=10) had more than 3mm deep pockets. 30 %(n=15) had no gingival pocketing. In Group C, 40 % of the subjects (n=20) presented with less than 3mm deep pockets, 10 %(n=5) with more than 3mm periodontal pocket depth, whereas; half of the group 50 % (n=25) had no pockets at all. Subjects of group B with less than 3mm of periodontal pockets were 56 %(n=28) while 40% (n=20) of subjects had no pockets at all. 4 % (n=2) were diagnosed with 3 mm or more pocket depth.

Gingival Bleeding was observed in all groups including 30% of Miswak users (n=15); 10 %
(n=5) toothbrush users and tooth brush plus miswak users each.

1. Periodontal status in all groups:

a) Gingival Bleeding:

Results	**Miswak Users n=50 (A)**	**Toothbrush Users n=50 (B)**	**Miswak+ toothbrush users n=50 (c)**
Present	15(30%)	5(10%)	5(10%)
Absent	35(70%)	45(90%)	45(90%)

b) Gingival Pockets:

	Miswak Users (A)	Toothbrush Users (B)	Miswak+ Toothbrush Users(C)	Total n (%)
No Pockets	15(30%)	20(40%)	25(50%)	60 (40%)
Pockets: < 3mm	25(50%)	28(56%)	20(40%)	
>3mm	10(20%)	2(4%)	5(10%)	
Total Cases of Gingival Pockets n(%)including >3mm <3mm pocketing	35(70%)	30(60%)	25(50%)	90 (60%)

2. Calculus:

	Miswak Users	**Toothbrush Users n=50 (B)**	**Miswak+ toothbrush users**	**Total**
Present	20 (40%)	2 (4%)	20(40%)	42 (28%)
Absent	30 (60%)	48 (96%)	30(60%)	108 (72%)

DISCUSSION

Dental treatment cost is ranked as fourth among the most expensive treatments.[6] People of our country are extremely threatened by this[7] so dental health is neglected and many patients remain untreated.[8,9,10]

The need for prevention and treatment of dental diseases is gaining attention with the ever increasing prevalence of oral diseases.[11] The use of the most primitive oral hygiene aid known as 'miswak' has been overlooked due to modern interdental brushes and toothbrushes.[12] Miswak has anti-septic, anti-bacterial properties and decreases plaque accumulation. It is 9.35 times more effective against caries[13] and halitosis since it consists of tannic acid, sulphur and sterols.[14] It was reported in 1984 and again in 2000 (1984 and 2000 international consensus) by WHO (World Health Organization) that miswak can be used as an efficient aid for dental hygiene maintenance.[15] More than 50% of the rural population of Pakistan select miswak as tooth cleaning aid against toothbrush.[16] It has also been reported that rural population in Nigeria (90%), Tanzania (90%), Saudi Arabia (50%) and India (50%) are using chewing sticks for oral hygiene maintenance. Around 43% of the urban population in India is also

using chewing sticks.[17,18,19] Studies have shown that there is no significant rise in plaque deposition when using toothbrush in comparison to miswak[20,21,22]; however, one study claimed that using miswak in interdental spaces is more effective[23].

A similar study in Riyadh on Pakistani adults in 2013 revealed that no considerable difference was found in the choices between tooth brush (29%) and miswak (23%) use for brushing purpose while use of both miswak and tooth brush was highly prevalent among them.[24] Although miswak use has proved to be a significant mode of oral hygiene control, its impact on oral health in comparison to toothbrush is yet to be confirmed. The current study focuses on the periodontal health status among regular toothbrush users and miswak users or the users of both.

In the current study, gingival bleeding on probing which indicates plaque induced gingivitis was observed more frequently among group A miswak users than either group B or C. This may suggest that group A has more gingivitis and is effective in plaque removal. Calculus was found in group A and group C. Interestingly, only toothbrush users showed only 4% calculus, brush appears to be better in removing plaque and therefore hinders calculus formation.

Fewer pockets were found in only toothbrush users than miswak users however both tools group presented with only 10% of participants with more than 3mm of pocket depth. Moreover, only less than 3mm deep pockets were found in the tooth-brushers while more than 3 mm deep pockets were also observed in group A and group C. This brings up the opinion that using only tooth brush(group B) as cleaning aid has better outcome in periodontal tissues and has an edge over the other two groups in preventing periodontal pocketing. Pockets of 4mm or more were not found in any groups may be because all groups had regular tooth cleansing habits thus had good control on deep pocketing.

CONCLUSION

The periodontal status of all 3 groups was found to be satisfactory since all 3 groups were using aids for tooth cleaning but examination revealed that only toothbrush users (group B) possess healthier periodontal tissues.

Acknowledgement: We thank Prof. Dr. Mohsin Girach, Prof. Dr. Junaid Lakhani and Prof. Dr. Marium Iqbal for their continuous support and guidance. Their contributions are sincerely appreciated and gratefully acknowledged.

Conflict of Interest: The study has no conflict of interest to declare by any author.

REFERENCES

1. Tubaishat RS, Darby ML, Bauman DB, Box CE. Use of miswak versus toothbrushes: oral health beliefs and behaviours among a sample of Jordanian adults. Int J Dent Hyg 2005;3(3):126-36.
2. Al-Lafi T, Ababneh H. The effect of the extract of the miswak (chewing stick) used in Jordan and the Middle East on oral bacteria. Int J Dent 1995;45: 218–222.
3. Almas K, Al-Bagieh NH. The antimicrobial effects of bark and pulp extracts of miswak, Salvadorapersica. Biomedical Letters 1999;60: 71–75.
4. Al Sadhan RI, Almas KH.Miswak (chewing stick): a cultural and scientific heritage. Saudi Dent J 1999;11: 80–87.
5. Al-Otaibi M, Zimmerman M, Angmar-Månsson B, Prevailing oral hygiene practices among urban Saudi Arabians in relation to age, gender and socio-economic background. Acta Odontologica Scandinavica 2003;61:212–216.
6. Petersen P. World Health Organization global policy for improvement of oral health, World Health Assembly 2007. Int Dent J 2008;58(3): 115-21.
7. Nomaan N, Sarah A, Yawar H, Z Ulfat B. Oral health status of patients visiting Islamic International Dental Hospital. Ann. Pak. Inst. Med. Sci. 2012; 8(1): 27-30.
8. World Health Organization- WHO.Oral health in Pakistan.A situation analysis. Ministry of Pakistan: 2004.
9. Talha M Siddiqui, Aisha Wali. et al. An Epidemiological Study of Prevalence of Dental Caries and Periodontal Disease among Adults in Deprived Areas-Karachi. JOHR 2013;4(1):3-7.
10. Rizvi KF, Bashir R. Oral Health status in public school children. Pak Oral & Dental J 2015;35:4.
11. Malik AS, Shaukat MS, Qureshi AA, Abdur R. Comparative Effectiveness of Chewing Stick and Toothbrush: A Randomized Clinical Trial N Am J Med Sci 2014;6(7):333–337.
12. Hyson JM. History of the toothbrush. J Hist Dent 2003;51:73-80.
13. Ezoddini-Ardakani F. Efficacy of Miswak (Salvadorapersica) in preventing dental caries. Health 2010;2:499–503.
14. Tubaishat RS, Darby ML, Bauman DB, Box CE. Use of miswak versus toothbrushes: Oral health beliefs and behaviors among a sample of Jordanian adults. Int J Dent Hyg 2005;3:126–36.
15. Ababneh H. The effect of the extract of the miswak (chewing sticks) used in Jordan and the Middle East on oral bacteria. Int Dent J 1995;45:218–22.
16. Asadi SG, Asadi ZG. Chewing sticks and the oral hygiene habits of the adult Pakistani population. Int Dent J 1997;47:275–8.
17. Mumghamba EG, Manji KP, Michael J. Oral hygiene practices, periodontal conditions, dentition status and self-reported bad mouth breath among

young mothers, Tanzania. Int J Dent Hyg 2006;4:166–73.
18. Guile EE, Al-Shammery AR, El-Backly MN. Oral health survey of Saudi Arabia: Oral health knowledge attitudes and practice among adults. J Dent Res 1996;75.
19. Akhtar MS, Ajmal M. Significance of chewing sticks (Miswak) in oral hygiene from a pharmacological viewpoint. J Pak Med Assoc 2000;4:84–95.
20. Bhambal AB, Kothari SK, Saxena SS, Jain MJ. Comparative effect of neem stick and toothbrush on plaque removal and gingival health - A clinical trial. J Adv Oral 2011;2:51–6.
21. Ezoddini-Ardakani M, NouriShadkam M, Fotouhi H, Bolouri FS. Study of the effects of natural toothbrush (Salvadorapersica) in prevention of dental caries and plaque index. Health 2012;4: 612–8.
22. Al-Otaibi M, Al-Harthy M, Söder B, Gustafsson A, Angmar-Månsson B. Comparative effect of chewing sticks and tooth brushing on plaque removal and gingival health. Oral Health Prev Dent 2003;1:301–7.
23. Patel PV, Shruthi S, Kumar SK. Clinical effect of Miswak as an adjunct to tooth brushing on gingivitis. J Ind SocPeriodontol 2012;16:84–8.
24. Al-Otaibi M, Zimmerman M, Angmar-Mansson B. Prevailing oral hygiene practices among urban Saudi Arabians in relation to age, gender and socio-economic background. Acta Odontologica Scandinavica 2003;61:212–216.