

Clinical Effects of Miswak and Tooth Brushing On Gingivitis

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On Gingivitis

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ABSTRACT

Objective: The objective of this study was to determine the clinical effects of miswak and tooth brushing on gingivitis at Isra University Hospital Hyderabad

Study Design: observational study

Place and Duration of Study: This study was conducted at the patients visiting Periodontology Department Isra University Dental College and Hospital from July 2018 to January 2019.

Materials and Methods: This observational study was conducted in patients visiting Periodontology Department Isra University Dental College and Hospital from July 2018 to January 2019. The selection of the patients was assigned to group A (n=30) who used tooth brush and group B (n=30) who used Miswak. Medical history, intraoral examination followed by full mouth scaling was done. Gingival index (GI) and Plaque Index (PI) was recorded at baseline; visit I after 02 weeks and visit II after 06 weeks and then evaluation was made. Data was analyzed by SPSS version-21.

Results: Overall 60 subjects were studied; 50% of them were tooth brush users and 50% were miswak users. The mean age of the both tooth brush and miswak user groups were 24.4±5.5 and 28.4±4.8 years, respectively. Of 30 users of the tooth brush; males were 20 and females were 10; whereas out of 30 miswak users, males were 25 and females were only 5. During follow-up visits, miswak and toothbrush user groups revealed showed no significant variances when compared according to GI and PI index. Findings revealed that in the removal of plaque, the use of both the miswak and the toothbrush is similarly effective whereas the toothbrush is even better than miswak in enhancing the gingivitis.

Conclusion: Miswak and the toothbrush were equally effective. The use of miswak is somewhat more effective in removing dental plaque and tooth brush in improving gingivitis.

Key Words: Gingival index, Plaque index, Tooth brush, Miswak

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INTRODUCTION

Periodontal conditions and dental caries are among the most prevalent dental conditions among humans.

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Bacterial plaque remains to be an instigator of periodontal condition. The elimination of bacterial plaque is therefore essential in order to preserve oral health, which are achievable either chemical or mechanical methods or both. Mostly, for cleaning the teeth toothbrushes and dentifrices are widely used^{1,2}.

About 3500 BC, if we see Babylonians they were utilized chewing sticks but in modern technology tooth brushing is advanced method used for cleaning teeth purpose. The use of wood sticks to clean teeth and oral cavity is quoted in the previous literature of ancient Egypt, Muslims following Greeks and Roman's literature^{3,4}. In South America and its related countries like Africa, Middle East and Asia miswak is emphasized for teeth cleaning purpose. The choice of Plant origin Miswak depends largely on traditional / religious preference rather than clinical effectiveness¹. In pre-Islamic times miswak was customized because the miswak practice at that time has great influences in islam^{2,5}. According to folk cultures, oral hygiene care different from country to country. Various societies have prevalence of different traditional practice as

mandatory. Different types of (miswak), tooth brushes and gel dentifrice are extensively used by people⁶. For maintaining the oral hygiene >50% of the rural population practiced sticks from trees as miswak that is reported in National Health Survey of Pakistan (1990-94). On the contrary, the majority of urban people use modern toothbrushes, toothpaste and other dentifrices⁷. Numerous well-known oral healthcare companies worldwide are marketed nowadays different Mouthwashes and toothpastes containing miswak extracts⁸. According to WHO (1987) recommendation and in 2000, an international agreement report on oral health concluded that in the developing countries miswak usage should be encouraged as it is economical, readily available and rooted in the tradition; and to document the effectiveness of miswak for oral health more research work is needed^{9,10}. Because absolute method and amalgamated within cultural taboos and religious faith it is an easy way of adopting miswak in primary health care approach (PHCA). In developing countries these inexpensive method are practiced to declining the weight of oral diseases^{11,12}. To assess and evaluate the clinical effectiveness of miswak and toothbrush practice, as it can be considered as a general public and professional interest, that why this topic is selected for research work, to compare the research result with existing method, hence this study aim was to compare the finding and differentiating clinical effects of two oral hygiene aids on gingivitis induced by plaque namely the miswak and tooth brushes. Miswak as method of oral hygiene is broadly practiced but little or no research work are done on this topic in this country and that demands the-depth study of miswak effectiveness in oral health maintenance, so that the oral health care providers can make sure of its efficacy and be able to advise about the effectiveness, method to the people and patients who use it. This study was tried to test the null hypothesis that "for maintenance of oral hygiene use of miswak is not equally effective as tooth brush.

MATERIALS AND METHODS

This observational study was carried out in patients with clinical diagnosis of plaque induced gingivitis (PIG) attending the Periodontology Department OPD of Isra University Dental College and Hospital, Hyderabad from July 2018 to January 2019. All the patients with 18 to 35 years of age, with clinical diagnosis of mild to moderate PIG, subjects with pocket depth below 3 mm and subjects with minimum 14 teeth and either of gender were included. Patients using anti-inflammatory and antimicrobial drugs, systemic disease patients, dental calculus patients and subjects with Gingival Index (GI) at 3 were excluded. Ethical clearance was received from the institute's Ethical Review Committee prior to data collection process. The subjects were fully discussed regarding study protocols

and rules to abide by for miswak or tooth brushing. Medical history, intraoral examination, GI and Plaque Index (PI) were obtained at baseline. *Salvadora persica* (Miwak) or standard toothpaste (Colgate) and tooth brushes (Solo brand soft bristle) were given to the subjects to use. Subjects were advised to use miswak and/or toothbrush two times a day. Outcome was on subsequent visits of the patients was done according to Gingival Index: (Silness J. Loe H¹³) 0-Normal gingiva. 1-Mild inflammation: slightly changed color and light edema but no bleeding at probing. 2-Moderate inflammatory response: edema, redness, glazing and bleeding upon probing. 3-Severe inflammatory response: edema and marked redness, with prone to impulsive bleeding and ulceration. Plaque Index (Turesky modified Quigley-Hein index) was assessed as 0=No plaque. 1- At the cervical margin separate plaque flecks are present. 2- At the cervical margin a continuous thin band of plaque (up to 1.0 mm) is found. 3- Covering less than one-third of crown of a band of plaque wider than 1.0 mm is observed. 4- Covering of plaque at least one-third but less than two-thirds of the crown of the tooth is found. 5- Covering of plaque two-thirds or more of the crown of the tooth is found¹⁴. Research data was recorded on pre-designed proforma. Data analysis was done by using SPSS 21.0.

RESULTS

Mean age of tooth brush and miswak groups was noted as 24.36±5.53 and 28.36±4.83 years respectively without significant difference p-value 0.098 (Table-I)

Table No1: Age distribution of study population (n=60)

| Age (years) | Mean±SD | p-value |
|-------------|------------------|---------|
| Tooth Brush | 24.36±5.53 years | 0.098 |
| Miwak | 28.36±4.83 years | |

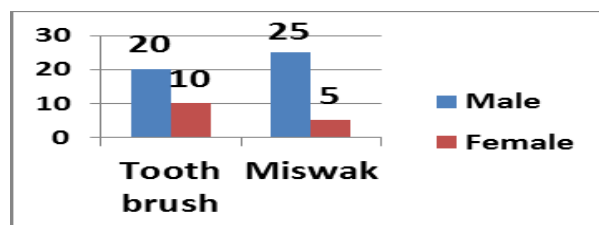


Figure No.1: Gender distribution of the Toothbrush and Miswak users n=60

Out of 30 tooth brush users; 20 were male and 10 were female, while of miswak users; 25 were male and 5 were female (Fig. I).

Gingival index (GI) showed the mean score in tooth brush users and miswak users 2.10±0.48 and 2.16±0.46 respectively at first visit, it was 1.53±0.81 and 1.60±0.72 respectively at 2nd visit, while 0.93±0.63 and 1.06±0.75 respectively was at 3rd visit findings were statistically insignificant according to both groups. (Table-2). Plaque index (PI) showed the mean score in

tooth brush users and miswak users 2.66 ± 0.75 and 2.83 ± 0.59 respectively at visit 1, 0.46 ± 0.62 and 0.66 ± 0.66 respectively at visit 2, 0.67 ± 0.54 and 0.70 ± 0.53 respectively at visit 3 p-values were quite insignificant, mean PI score was also insignificant among both groups. (Table-2)

Table No.2: Mean comparison of Gingival index and Plaque index among Both Toothbrush and Miswak users (n=60)

| Gingival index and Plaque index | Groups | Mean+SD | P-value |
|---------------------------------|-------------|----------------|---------|
| GI Visit 1 | Tooth Brush | 2.10 ± 0.48 | 0.60 |
| | Miswak | 2.16 ± 0.46 | |
| GI Visit 2 | Tooth Brush | 1.53 ± 0.81 | 0.72 |
| | Miswak | 1.60 ± 0.72 | |
| GI Visit 3 | Tooth Brush | 0.93 ± 0.69 | 0.38 |
| | Miswak | 1.06 ± 0.63 | |
| PI Visit 1 | Tooth Brush | 2.66 ± 0.75 | 0.36 |
| | Miswak | 2.83 ± 0.59 | |
| PI Visit 2 | Tooth Brush | 0.46 ± 0.62 | 0.16 |
| | Miswak | 0.66 ± 0.66 | |
| PI Visit 3 | Tooth Brush | 0.67 ± 0.54 | 0.80 |
| | Miswak | 0.70 ± 0.53 | |

DISCUSSION

The two oral diseases namely, Dental caries and periodontal diseases are main excruciation to human being. Initiation and development of periodontal diseases is purely depends on Bacterial plaque. Mechanical and chemical are predominantly obtainable methods for oral health maintenance. For the purpose of cleaning teeth, toothbrushes and dentifrices are broadly practiced. The use of miswak or traditional toothbrush has greater influence in Islam.^{2,3}

The present study in which 60 patients were examined, the clinical effects of miswak and tooth brush on the gingivitis as assessed by the Gingival and Plaque indices are compared .By practicing the chewing sticks and manual tooth brush from first to last visit there was almost equally declining of mean plaque score and gingival score. Similarly there is no significant differences in mean scores according to study conducted by Ghazi et al¹⁵ which are in agreement with present study. There are numbers of studies which show the reduction in plaque and gingivitis in people practicing the miswak effectively. There was a greater effect of miswak on the removal of plaque as compared to tooth brushing according to foregoing studies described by Ethiopia¹⁶, that was conducted on school children, and Saudi Arabian dental students.^{17,18} There is no any consensus to the present study result with

overhead studies. Effectives of miswak in cleaning teeth have been explained by few researchers. From transverse studies incompatible results were obtained. Higher accumulation of plaque and bleeding from gingiva in miswak users in relation with tooth brushing users in between adults has been evident in a study¹⁹. There is no any incompatibility among these analysis result and present study and this might be because of absence of any angulation of miswak bristles as compare with tooth brushes which make it difficult to clean the distal surfaces of posterior teeth more comfortably²⁰. According to Shetty ET al²¹ and sonali saha ET al²² in India Miswak is highly efficient in removal of plaque with declining of gingivitis as compared with tooth brushes, but present researches are not in consensus with above studies. Norton and Addy²³ analysis results and present studies are compatible as both concluded that higher plaque accumulation and gingivitis in miswak users as compare with tooth brushes users, and this might be the results of substandard cleaning methods leads to bad oral hygiene. Ardakani FE et al²⁴ investigation and conclusion are not agreed with these result as they believed that removal of plaque and reduction in gingivitis are better obtained by miswak if properly use when compared with tooth brushes. Numerous researches declared that to obtain greater advantages from miswak it should be used with correct methods to keep away from any un pleasing effect like oral injuries^{18,19}. In underdeveloped nations those methods for cleaning the teeth should be emphasized which are economical, readily available and that one admit and supported by WHO^{21,20,25}. To reduce plaque accumulation and its consequences, as a small numbers of means for oral health care are present there. Oral health is fundamental to overall health, wellbeing and quality of life^{26,27}. The World Health Organization (WHO) stimulates the development of more investigations to give value to efficacy of miswak and its role in oral health care. The people who practiced miswak and toothbrushes have no any notable dissimilarity in gingival indices or bleeding analyzed by same investigators in an earlier study²⁸. The increasing findings manifested that there is no disagreement in between the use of miswak and tooth brushing and this is consensus with present study.

CONCLUSION

It was concluded that the Miswak and the toothbrush equally effective. Miswak use is as effective as tooth brush in removing dental plaque and tooth brush is somewhat more effective in improving gingivitis. Miswak can be a good alternative to the tooth brush because it is inexpensive, replaces both the tooth brush and tooth paste and is readily available.

Author's Contribution:

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