

**USE OF MISWAK VERSES CONVENTIONAL TOOTH BRUSHING WITH TOOTHPASTE AND THEIR EFFECT ON PLAQUE REMOVAL, A COMPARATIVE CROSS SECTIONAL STUDY CONDUCTED IN OUTPATIENT DEPARTMENT, COLLEGE OF DENTISTRY SAKAKA, AL JOUF.****Dr. Nighat Z. Jalbani***, Nawaf Saleh Alanazi, Mazen Minwar S. Alsolami and Sultan Abdalaziz Z Alanzei

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ABSTRACT

Objective: The main objective of this study is to fortify the current available pool of research on use of miswak and to evaluate its effect on plaque removal so role of miswak efficiency can be recognized and appraised equal to tooth brushing worldwide. **Methodology:** Using cross-sectional descriptive study design, 100 self-administered validated forms were filled by adult patients coming to screening department visiting OPD of college of dentistry. Patients were then examined for plaque scores Loe and Silnees plaque index (1964). The collected data was statistically analyzed using SPSS (version 20, Chicago.inc). One way anova with Tukey's HSD test is used to compare plaque scores and t-test for bivariate variables. Pilot study was conducted using 10 questionnaires which were pretested to ensure check the feasibility of variables applied and modifications were done accordingly. **Results:** Plaque scores for toothbrush users are significantly lower than miswak users with p-value 0.002. **Conclusion:** The effectiveness of toothbrush in removing plaque is more significant as compare to miswak.

BACKGROUND

Miswak (tooth cleaning stick) popularly known as the "natural toothbrush" in English, is known by several other names in different languages in different countries specially in Arab and most of Muslim countries including India, Pakistan and Africa.^[1] The body of knowledge regarding miswak and other herbal products as oral hygiene tools are growing they are now acknowledged in both developing and developed countries because of their inimitable chemical composition, free availability, economical cost and religious beliefs. Its potential therapeutic effects specially those related to its anti-cariogenic and antibacterial properties have also been recognized and encouraged by major public health agencies like World Health Organization (WHO).^[2] Despite of affirmative results of several clinical and experimental proven studies concluding its competence equal to tooth brush, the use of miswak as an important tool of daily oral hygiene practice is still not encouraged heartily specially in western countries.^[3] What needs to be done is that more vigorous research is warranted to prove that miswak is equally effective as toothbrush in removing plaque and can be used as an important aid to practice daily oral hygiene activities.^[4]

OBJECTIVE OF THE STUDY

The main objective of this study is to fortify the current available pool of research on use of miswak and to

evaluate its effect on plaque removal so role of miswak efficiency can be recognized and appraised equal to tooth brushing worldwide.

METHODOLOGY

Using cross-sectional descriptive study design, 100 self-administered validated forms were filled by adult patients coming to screening department visiting OPD of college of dentistry. Patients were then examined for plaque using Loe and Silness plaque index. The collected data was statistically analyzed using SPSS (version 20, Chicago.inc). One way anova with Tukey's HSD test is used to compare plaque scores and t-test for bivariate variables. Pilot study was conducted using 10 questionnaires which were pretested to ensure check the feasibility of variables applied and modifications were done accordingly. The questionnaire is designed to include three parts; part 1 will include brief introduction about study, part 2 includes participant's socio-demographic data and part 3 assessing type and frequency of oral hygiene practice, periodic dental visit along with plaque assessing table for oral examination.

RESULTS

Demographic details of study revealed that 100 patients were checked in screening department of OPD among which 2 patients were excluded owing to the age requirement of the study since study is based on getting plaque scores of adults only from 20 to 50 years old.

Among 98 patients, 60 were male and 37 females. Majority of patients (91%) were residents of Sakaka city while only 7% were from far wide rural or remote area. Table I illustrates the demographic details of the study.

Table. I.

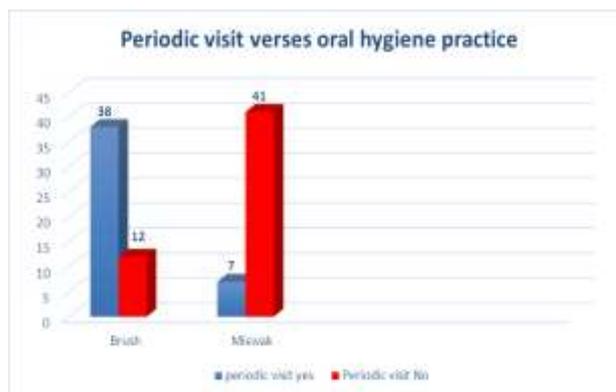
Age Groups	Address (%)	Gender	
		(n)	(%)
20-50 yrs	91% Sakaka(city)	Male 60	60%
	7% Sakaka(rural)	Female 37	37%
	100.0 Total	100.0	

The comparative data revealed some important facts and figures specially those related to the most commonly used oral hygiene tool. Brushing is seen as the most common type of oral hygiene practice among male and females both i. e (27% males and 24% females use brushing) but percentage of using miswak in males is slightly more as compare to female.

**Table. II. Percentage of type of oral hygiene practiced among patients showing almost equal number of miswak and toothbrush users.**

		Frequency	Percent
Valid	Brushing	50	51%
	Miswak	48	49%
	Total	98	100.0

When frequency of miswak versus toothbrush was evaluated, the comparative data revealed an important factor which can be responsible for increased plaque scores for miswak users than toothbrush, almost 35% of miswak users used miswak only once a day as compare to frequency of toothbrush which is twice in majority of cases (48%).

**Table. III. Comparative relationship of periodic dental visit versus frequent oral hygiene tool used.**

One of the most interesting findings of the study reveals that 38 percent of patients using brushing as regular oral hygiene tool have habit of periodic dental visit as compare to miswak users among 49% of miswak users only 7% goes for periodic dental check-up. This finding can potentiate the results of many studies who have attempted to relate the factor of education and knowledge about healthy oral health behaviors among toothbrush users as compare to those who use miswak. Since our study has not included level of education of patients, hence, it cannot be included and discussed accordingly.

Table. IV. ANOVA test illustrating the significance of the comparison between plaque scores of tooth brushing versus miswak.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	24.674	2	12.337	11.335	.002*
Within Groups	102.311	94	1.088		
Total	126.985	96			

The main finding of the study to assess the effect of toothbrush and miswak on plaque using post Hoc ANOVA test revealed significant level of difference between two groups with P- value equals to .002.

DISCUSSION

It is wide established fact that good oral health affects general quality of life and well-being. Several chronic and systemic diseases have been attributed to poor oral health. In an era where retention of natural dentition is encouraged, the global need for alternative prevention and treatment methods using safe, effective, and

economical products is on rise. The use of tooth brush in combination with dentifrices is one of the most common methods of cleaning teeth.^[5] Practicing daily oral hygiene activities can be traced back as early as 3500 BC when Babylonian fiber brush, the "chew stick" was considered the historical precursor of the modern toothbrush. Similarly, use of siwak or miswak was

endorsed during the golden period of the Islamic civilization with upsurge of preventive dentistry.^[6]

There are at least 182 plant species that have been used for preparing tooth brushing sticks, however, miswak is the most widely used that is mowed from Arak shrub or tree (botanical name *Salvadora persica*).^[7] The efficiency of miswak has been tested in several epidemiologic studies in terms of periodontal health, plaque and caries status. Interestingly many of them suggested miswak superior to toothbrush specifically when considering periodontal health.^[8]

Despite of affirmative results of several clinical and experimental proven studies concluding its competence equal to tooth brush, the use of miswak as an important tool of daily oral hygiene practice is still not encouraged heartily specially in western countries.^[3] According to^[9] the consensus statement on oral hygiene, evaluation of the effectiveness of chewing sticks warrants further research.

Although many studies raised questions regarding the efficacy of chewing sticks reporting more plaque formation and gingival bleeding in persons habitually using chewing sticks than in toothbrush users. According to^[10] In Saudi Arabia the use of toothbrush in urban areas is found to be 73% as compared to 65% of miswak but rural areas shows more inclination towards use of miswak with significant gender differences i. e female are frequent toothbrush users as compare to males. He linked this difference of results to educational level of people living in rural and urban areas. The geographic location verses use of miswak and toothbrush is also established in this study since results disclosed that majority of toothbrush users live in Sakaka city as compare to miswak users although percentage of patients from rural area are very few to establish a clear relationship between this. What needs to be done is that more vigorous research is warranted to prove that miswak is equally effective as toothbrush in removing plaque and can be used as an important aid to practice daily oral hygiene activities.^[4]

Although results of this study yields results in favor of toothbrush but the since we could not get more number of participants from rural areas where miswak is frequently used as oral hygiene tool, it is therefore important to keep option for miswak research open. Hence,^[6] suggested that more promising results can be generated by pooling more efficient scientific literature by conducting more studies in rural areas. Public health dentists and dental hygienists can help recognize and optimize public health outcomes by applying abundant of scientific evidence as well as cross-cultural knowledge available on miswak and its positive therapeutic effects. This will open a window of recommendations to blend western healthcare with Islamic practices and teachings surrounding the use of miswak.^[11]

Saudi Arabia can serve as the major hub for reinforcing scientific evidence available on miswak because of its close association with Islam, provided that need for further oral health education in the Kingdom along with optimum use of miswak is encouraged. Complementing the traditional use of miswak with modern technological developments such as tooth brushing and by tailoring oral hygiene recommendations to educational level will lead to improved oral hygiene status globally.^[10]

CONCLUSION

- The plaque scores for subjects using toothbrush are significantly low as compare to scores of miswak.
- The demographic details of study also highlighted the factor of access to dental care i. e more numbers of patients visiting the OPD facility belonged to urban area hence, association of individuals living in rural areas using miswak frequently could not get established.
- The most striking finding of study pertaining to periodic dental visit unveiled an important relationship between frequent dental visits among toothbrush users highlighting the need of increasing the awareness of regular dental care among miswak users. This might have been the reason for low plaque scores for toothbrush users since they visit dentist frequently for their periodic dental check-ups.

SUGGESTIONS

1. Need to reinforce more vigorous research targeting the population using more number of miswak so more strong comparative relationship can be established i. e studies with more statistical power. So that the objective of pooling more effective studies in global research pool should be achieved to highlight the plaque removal qualities of Miswak.
2. More research is needed to evaluate the the knowledge of good oral health practices and utilizing regular dental care among miswak users so the "Preventive" goal of health promotion in light of prevention can be achieved accordingly.

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