EPIDEMIOLOGY

THE ORAL HYGIENE HABITS AMONG INTERMEDIATE AND SECONDARY SCHOOLS STUDENTS IN RIYADH, SAUDI ARABIA

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ABSTRACT

The aim of the study was to find out the prevalence and frequency of oral hygiene habits among intermediate and secondary school students in Riyadh.

The study was carried out using a self-administered questionnaire. Seventeen hundred students responded with a response rate of 85%. The age range of the students was 12-20 years (mean 15.39 and SD ± 2.08). The results showed that daily oral hygiene habit was prevalent among 19% male and 20% female students in intermediate school students. Toothbrush was most commonly used (63.7%) by female students at secondary schools. Miswak was used by almost 24% secondary school male students. Toothpaste was commonly used by both groups of students. Once daily tooth brushing habit was prevalent among 42.6% male and 27.6% female students at intermediate school and 61.4% male and 26.8% female students at secondary school. Horizontal and unspecific tooth brushing technique was equally common among male secondary school students. Medium toothbrush type was common among both groups. Miswak was most commonly used by male students and majority of the miswak user students 58.5% to 63% used old miswak. Both group of students expressed the use of toothbrush due to better cleaning perception. It can be concluded that over all the oral hygiene practices among secondary schools students need to be improved. Female students have better oral hygiene practices as compared to male students at intermediate school but trend shifts to male student at secondary school level. Further research is needed to evaluate the effectiveness of oral hygiene habits, and comparison of oral health status among the studied population.

Keywords: Oral hygiene habits, Miswak, Toothbrush, School students, Saudi Arabia.

INTRODUCTION

People's oral health behavior is important for the prevention and care of oral diseases. Their views of being able to cope with oral health behavior relate to actual tooth brushing, inter dental cleaning and dental visiting.\(^1\) The oral hygiene habits of a particular population depends upon its cultural background, religious norms, awareness of the problems that a lack of hygiene causes, knowledge of the existence of particular cleaning tools, education levels and socio-economic status.\(^2\) Today the toothbrush has

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become a necessity and no conscientious person in the Western World and in some parts of the developing world can think of spending a day without the involvement of a toothbrush. In the developing world various plants are used for oral hygiene purposes. There is variable data available from different developed and developing countries on oral health practices. These days, most Japanese have a great interest in oral hygiene. A national survey in Japan in 1993, showed that 95% of Japanese brush their teeth every day. Oral hygiene practices are prevalent also in a developing country, e.g., in China. Toothbrushing is practiced habitually by most Chinese, although a small proportion of elderly people do not brush their teeth at all. In a report from USA Amish population, it has been highlighted that 2.6 percent of the population showed never having brushed their teeth. A study from Tanzania reported that up to the age of 15 years, 92% of the children do brush their teeth every day. In Saudi Arabia, a study on school children revealed that 83 per cent used a toothbrush while 16 percent used miswak. Another study on secondary school students from Riyadh confirmed that 10 percent of non-smoker students never brushed their teeth.

The aim of this study was to find out the prevalence and frequency of oral hygiene habits among intermediate and secondary school male and female students from Riyadh City.

MATERIALS AND METHODS

Subjects

The study was carried out on intermediate and secondary school students (male, female) from Riyadh, Kingdom of Saudi Arabia, over a period of two months, using stratified cluster sampling technique. A questionnaire was developed and used in Arabic language having fifteen questions. The questionnaire was tested before embarking on the study. The questionnaire was distributed to two thousand students (1000 male and 1000 female).

The data was entered by a Fox Pro Program and analyzed by using SPSS version 10. The data was analyzed for frequency distributions and chi-square test for comparisons. The p value was set .05 percent for significance level.

RESULTS

Seventeen hundred questionnaire were returned. Fifteen hundred and ninety six questionnaires were acknowledged appropriately filled and were accepted for the analyses giving response rate of 80%. A total of 82 percent male (n = 820) and 77.6% female (n = 776) respondents were within the age range 12-20 years (mean age 15.39 and SD ± 2.08).

Among intermediate school students (age 12-15 years) 7% of male and 3% of female and in secondary schools 14% of male and 3.5% of female students never cleaned their teeth. The daily oral hygiene habit was prevalent among 19% male and 20% female students in intermediate and 25.4% male and 19.0% female students in secondary schools.

Toothbrush was most commonly used by both male and female students at intermediate (28.9% male, 44.5% female) and at secondary school (28.8% male and 63.7% female). The use of miswak was less prevalent as compared to brush and was used by almost 24% of secondary school male students (Table 1).

Toothpaste was commonly used with toothbrush in both groups of students. 11.3% of male secondary school students did not use anything with toothbrush (Fig. 1). While toothpaste was used with miswak by 4% male and 11% female students in intermediate and 4.6% male and 8.3% female students in secondary schools (Fig. 2).

Once daily tooth brushing habit was prevalent among 42.6% male and 27.6% female at intermediate and 61.4% male and 26.8% female students at secondary schools (Fig. 3). Up to 54.4% of the students spent up to 3 mins per brushing time. The duration of brushing up to 3 mins was almost similar in both groups (Fig. 4).

Circular tooth brushing technique was used by 25.5% male and 42.9% female students at intermediate schools. While horizontal and unspecific 23% technique was equally common among male secondary school students. The circular technique was practiced by 38.7% secondary school female students (Table 2). Medium type of toothbrush was in most common use ranging from 37.2 to 43.8 percent in both groups (Fig. 5). Miswak was used, more than 3 times a day by male students 53.1% and 55.8% in intermediate and secondary schools respectively. Once daily use of miswak was common among female students ranging from 49.5% to 55.2% respectively (Fig. 6). Majority of the students used miswak more than 3 mins per day (Fig. 7). Horizontal technique among miswak user was common among male and vertical among female intermediate school students and at secondary school un-
TABLE 1. FREQUENCY OF METHODS USED FOR CLEANING TEETH

<table>
<thead>
<tr>
<th>Age 12-15</th>
<th>Age 16-20</th>
</tr>
</thead>
<tbody>
<tr>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td>Toothbrush</td>
<td>106</td>
</tr>
<tr>
<td>Miswak</td>
<td>35</td>
</tr>
<tr>
<td>Toothbrush &amp; Miswak</td>
<td>219</td>
</tr>
<tr>
<td>Finger</td>
<td>4</td>
</tr>
<tr>
<td>Others</td>
<td>3</td>
</tr>
<tr>
<td>TOTAL</td>
<td>367</td>
</tr>
</tbody>
</table>

Sig. Level: \( _{0.001} \) 50.001

TABLE 2. FREQUENCY OF TOOTH BRUSHING METHOD

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Age 12-15</th>
<th>Age 16-20</th>
</tr>
</thead>
<tbody>
<tr>
<td>No.</td>
<td>%</td>
<td>No.</td>
</tr>
<tr>
<td>Horizontal</td>
<td>89</td>
<td>25.2</td>
</tr>
<tr>
<td>Vertical</td>
<td>64</td>
<td>18.1</td>
</tr>
<tr>
<td>Scrubbing</td>
<td>55</td>
<td>15.6</td>
</tr>
<tr>
<td>Circular</td>
<td>90</td>
<td>25.5</td>
</tr>
<tr>
<td>Unspecific</td>
<td>55</td>
<td>15.6</td>
</tr>
<tr>
<td>TOTAL</td>
<td>353</td>
<td>100</td>
</tr>
</tbody>
</table>

Sig. Level: \( _{0.001} \) 50.001
specific technique of miswak was common (Table 3). Majority of the students 58.5% to 63% used old miswak (Fig. 8).

Most of the students preferred using toothbrush due to their perception of more cleaning effect by toothbrush, ranging from 46% - 58% respectively (Table 4). Sunnah (Prophet Muhammad's (PBUH way of Practice) was given the most common reason of using miswak by 58% male and 61.5% female intermediate school and 53% male and 47.2% female secondary school students (Table 5). Better cleaning was given the most common reason of using both miswak and toothbrush by both male and female students (Table 6).

**DISCUSSION**

A recent consensus statement on oral hygiene concluded that bacterial plaque plays an important role in the etiology of dental caries, gingivitis and periodontitis; that effective removal of dental plaque can result in the prevention or reduction of these diseases.\(^{10}\) It
has been established that mechanical cleaning procedures are reliable means of controlling plaque, provided cleaning is sufficiently thorough and performed at regular intervals.\(^{(11,12)}\) The present study was conducted to look into two aspects of oral hygiene habits among school students, firstly to assess the prevalence of oral hygiene habits and secondly, the frequency of these hygiene habits and then comparing among male and female students from intermediate and secondary schools in Riyadh. Though questionnaire approach is acceptable but it has inherent limitations regarding over or under estimation of the investigation, in the absence of clinical examination of the subjects.

In this study the valid response rate of eighty percent shows keen interest of the students in their oral health matters. The prevalence of oral hygiene habits was interesting as 7% of male in intermediate and 14% in secondary schools never brushed their teeth while among female students this corresponded to 2.7 - 3.5 per cent respectively. That shows the increase in neglecting oral hygiene as higher age group is concerned. The frequency of daily brushing ranging from 19-25%. The trend shows that daily practice of oral hygiene method was decreased in secondary school female students as compared to male students. This trend is in agreement with a study of primary school children in Jubail.\(^{(13)}\) Toothbrush in combination with miswak was most commonly used in both male and female groups of students. Only toothbrush was used by 64% of the female students from secondary schools groups, while almost 24% of the male students from secondary schools, used miswak. Which shows more access to miswak and social and cultural norm of the society. Daily toothbrushing habit varied from 42.6% in male and 27.6% female in intermediate to 61.4% male and 26.8% female in secondary schools. While in the same age group of 12-15 years the frequency of toothbrushing was 54% - 57% in a study from Pakistan.\(^{(14)}\)

Miswak was used more than three times a day by 53% male and 24% female student at intermediate schools, while this increased to 56% in male and decreased to 17% in female at secondary schools. The over all time spent on brushing was less as compared to miswak in average more than three minute per use, and it is in agreement with previous study. This shows that more time is being spent on miswak compared to toothbrush but that does not reflect the meaningful cleaning of teeth by miswak as most of the male chew the miswak as a cultural norm. Circular toothbrushing and unspecific miswak technique was most common among respective users. This shows the need of proper technique of miswak use. Majority of the students in both groups of schools expressed that toothbrush clean better than miswak, while majority of the miswak user, use it due to Sunnah with second feeling of better cleaning. The combined users of miswak and toothbrush ranged 53% - 68% in expressing the understanding of better cleaning. The comparative studies of miswak and toothbrush have shown that, low periodontal treatment need was found among Saudi adults who used miswak.\(^{(16,17)}\) Eid et al.\(^{(18)}\) reported that there was no significant difference in gingival indices or bleeding between miswak and toothbrush users. Gazi et al.\(^{(19)}\) in a cross over study demonstrated that gingival indices were significantly lower following the use of a miswak in comparison to a conventional toothbrush used without toothpaste. Recently Darout et al.\(^{(20)}\) assessed and compared the periodontal status of adult Sudanese habitual miswak and toothbrush users. It was found that the periodontal status of the miswak users in the Sudanese population was better than that of toothbrush users and the efficacy of miswaks used for oral hygiene was comparable to or slightly better than that of the toothbrush.

All of the above-mentioned comparative studies are in favor of promoting traditional oral hygiene tool of miswak. This can be integrated for oral health promotion activities and the target group of oral hygiene neglectors should be persuaded to start with miswak, which is socially and culturally accepted and religiously motivated as the finding of present study has highlighted.

The other important finding in this study is that female students in secondary school groups have descending trend of oral hygiene practices. As we know that todays children or adolescent are tomorrows parents, so the female students needed to be focused for effective orientation for toothbrushing as before becoming mothers.

The parental intervention needed for improving oral hygiene by effective and regular toothbrushing behavior through incentive orientated approach has been recommended.\(^{(21)}\) In another study it is highlighted that since children spend a good part of their days at school, it would be more effective to improve the amount of information they receive about oral health knowledge, preventive practices and dietary habits at school. One way to achieve this would be to incorporate oral health information into science and health curriculum. Family, parents and teachers should also be in the health educational process.\(^{(22)}\)
relation to the Saudi Arabia, it has been recommended that to help the development of school based oral health promotion, demonstration projects should be implemented.\(^6\)

**CONCLUSIONS**

- Almost 10 percent of intermediate school students and 17 per cent from secondary schools never cleaned their teeth.
- Female students have better oral hygiene practices as compared to male students at intermediate level but trend shifts towards the male students at secondary school level.
- Toothbrushing was most commonly used by female students at both intermediate and secondary schools.
- Medium toothbrush type was commonly among both groups of students and both groups expressed the common use of toothbrush due to better cleaning perception.
- Miswak was used by 24% secondary school male students. Majority of the students used old miswak and unspecific technique was most commonly used.
- Sunnah was expressed as common motivation of using miswak.

**RECOMMENDATIONS**

1. Oral health educational activities at schools should be integrated with oral health promotional approach.
2. Female students at schools should be given more knowledge and incentives to improve and develop oral hygiene practices on regular basis.
3. The parents and teachers should play a major role in promoting healthy oral habits among students.

Further research is needed to evaluate the effectiveness of oral hygiene habits and to compare the oral health status among the studied population.

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