

Knowledge and behavior related to oral health among Jimma University Health Sciences students, Jimma, Ethiopia

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ABSTRACT

Background: Oral health practices are essential for prevention of dental and other associated systemic diseases. This study explores Jimma University Health Sciences students, with the respect to frequency and quality of use and the effect of gender differences on the distribution of oral health knowledge and behavior. **Materials and Methods:** Self-reported questionnaires were distributed to be completed by the participants from health sciences students. These students were selected at random after having read a consent letter. Three hundred students (males 206 and 94 females) were completed the questionnaires. The data were processed and analyzed by means of the Statistical Package for Social Sciences (SPSS version 14.0, Institute Inc., Cary, NC, USA). **Results:** About 57.6% males and 52.5% females scored highly in knowledge of caries. The corresponding rates regarding the knowledge of gingivitis were 49% and 44% respectively. Tooth brushing and the use of mefakia (chewing stick) ≤ 2 times a day was confirmed by 56.8% males and 58.2% females and by 74.8% males and 62.8% females, respectively. **Conclusion:** Awareness of oral health issues is high, but specific misconceptions exist. There is gender equality in knowledge and practice of oral hygiene among health sciences students. Mefakia chewing stick was equally used with toothbrush for oral hygiene practice.

Key words

Chewing sticks, knowledge, manual toothbrush, mefakia, oral hygiene

INTRODUCTION

The rapid changes in the pattern of oral diseases have been noted at the global level, during the past decade. For instance, in the developed countries, caries experience, and poor gum conditions have declined dramatically among young aged groups.^[1,2] Such changes are observed in parallel with improved sociodemographic conditions, changes in lifestyle and effective use of preventive oral health programs, including personal self-care practices in terms of tooth brushing, use of inter-dental remedies, dental attendance patterns, and use of fluorides.^[3] In contrast, several studies have shown increasing oral health problems in a number of developing countries

where community-oriented preventive programs have not been implemented.^[4-6]

Most people in the developed countries show great interest in oral hygiene and that 16% to 80% of boys in 32 countries in Europe and North America practiced tooth brushing more than once a day, whereas girls reported better compliance 26-89%.^[7] Another multinational study of 22 countries reported similar results.^[8] A national survey in 1993 demonstrated that 95% of Japanese brushed their teeth every day.^[9] Oral hygiene practices are also prevalent in some developing countries. For instance, tooth brushing is practiced habitually by most Chinese, although a small proportion of elderly people do not brush their teeth at all.^[10] In Korea, 97% of Koreans brush their teeth once a day.^[11] While in India, only 69% of the population brushes their teeth.^[12] A national health survey in Pakistan showed that about 36% of the Pakistani population cleaned their teeth daily, irrespective of whether chewing sticks or toothbrush was employed, while 54% did so either on alternative days, weekly or monthly.^[13] In Tanzania, it was reported that 92% of children up to the age of 15 years did not brush their teeth every day.^[14] In Saudi Arabia, 83% of school

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children used toothbrush for oral hygiene while 16% used miswak (chewing stick prepared from *Salvadora persica*).^[15]

In Ethiopia, it has been shown that substantial portions of the population do carry out oral hygiene procedures. However, the methods used for oral hygiene include chewing sticks (mefakia, prepared from a variety of plant stems, twigs and roots), plant stems with charcoal powder, use of fingers, or toothbrushes with or without toothpastes.^[16]

The consensus statement on oral hygiene states that tooth brushing and other mechanical procedures, including chewing sticks are considered the most reliable means of controlling plaque, provided that cleaning is sufficiently thorough and performed daily.^[17] Health sciences students have an important role in oral health promotion when they graduate and start working in health care systems. Their appropriate knowledge on some oral health aspects will assist establishment of oral health program. Little information is available online about oral hygiene practices among Jimma University Health Sciences students.

The aims of this survey were to explore Jimma University Health Sciences students' oral hygiene behavior with the respect to frequency and quality of use and to investigate the effect of gender differences on the distribution of oral health-related knowledge and behavior.

MATERIALS AND METHODS

The study was carried out over a period of 2 months during autumn 2013 at the Jimma University campus, which is located in Jimma town, Southwest of Ethiopia, about 357 km away from Addis Ababa the capital city of Ethiopia. The total study population was estimated 2188 students and by using convenience sampling method Darout *et al.*^[18] Three hundred students were randomly selected to be involved in this study.

Samples and procedures

Students from environmental health, nursing, health education and junior batches (the 1st, 2nd and 3rd years) of the schools of dentistry, were selected at random to be participated in this study. The participants were selected because they were health sciences students from health officer, health education, nursing and junior batches of the schools of dentistry, not currently involved in oral health program. These students were considered a pool sample with equal knowledge in the field of oral health and also because they were all lived in the university campus. A number of self-reported questionnaires were given to student representatives from each category and asked to be distributed randomly to the participants. The participants joined the study after having read a consent

letter and accepted to participate. Refusals were replaced by random distribution of new questionnaires.

Survey instrument

The study involved distribution of a precoded questionnaire constructed in English by the authors.^[18] The questionnaire contained 32 questions assessing sociodemographic characteristics and a number of variables related to knowledge of causes of oral diseases and means of their prevention, including tooth cleaning frequency and methods of oral hygiene. Prior to the distribution of the questionnaire, the principal investigator explained to the participants the aims of the study, gave examples how to complete the questionnaire adequately and offered immediate assistance with the completion, if required.

Measurements

Gender was assessed as male/female; age was grouped into 18-20 years old and ≥ 21 years old. Frequency of tooth cleaning using toothbrush and/or mefakia was measured as: ≤ 3 times a day to more than 3 times a day. Two dummy variables were constructed, yielding < 2 and > 2 times a day. Duration of tooth cleaning was assessed by asking "For how many minutes do you toothbrush/clean with mefakia?" using a scale ranging from 1 min to more than 3 min. Two dummy variables were constructed yielding < 3 min and > 3 min. Reason for using toothbrush and/or mefakia was estimated using the categories better cleaning and other reasons, whereas method of tooth cleaning was measured using a scale rotation method and other methods. Having received information regarding tooth brushing/tooth cleaning was assessed as no or yes. Moreover, the respondents were requested to evaluate the following five statements regarding causes of oral diseases in terms of yes/no/don't know: Caries can occur by: Bad cleaning; not visiting a dentist; having weak teeth; having a worm in the tooth; and consuming sugared foods.

A sum index of knowledge about caries was constructed (range: 1-5) and reduced to a dummy variable high knowledge and low knowledge based on a median split. Using the response scale, the students were requested to evaluate four statements about the causes of gingivitis: Irregular tooth brushing; having a virus in the gum; having bacteria in the gum; having a worm in the gum. A sum score of knowledge about gingivitis was constructed by adding the four items. This sum score was dichotomized based on a median split into high knowledge and low knowledge.

Statistical analysis

The data were processed and analyzed by means of the Statistical Package for Social Sciences (SPSS version 14.0, Institute Inc., Cary, NC, USA). Frequency distributions of variables were computed separately for male and female

students. Logistic regression analyses were conducted with knowledge scores and oral hygiene behavior as dependent variables. Contingency tables were made for sociodemographic variables. The Chi-square test was used for comparisons between males and females. Differences with a $P < 0.05$ were considered to be statistically significant.

Ethical considerations

The study proposal was submitted to Jimma University Research and Publication Office for ethical clearance and written informed consent was obtained from the participants prior to study commencement. In this concern, it has been stated to the participants that there is no direct benefit of their participation in the study, however knowledge gained from the study may lead to the prevention and treatment of oral diseases (general population benefits) and that no information about the participants, or information provided by them during the research will be disclosed to others without their written permission.

RESULTS

Oral hygiene practice

The total participants were 300 students, 206 males and 94 females (mean age 22.1 years) of these 95 (46.1%) and 50 (53.2%), respectively, were at the age range of 18-20 years where 111 (53.9%) males and 44 (46.8%) females were at age >21 years. The results regarding percentage distribution and number of the study participants according to age and sex are summarized in Figure 1. The knowledge items were divided into items of causes of caries and gingivitis. A total of 119 (57.6%) males and 53 (52.5%) females scored highly in knowledge of caries. The corresponding rates regarding the knowledge of gingivitis were 102 (49%) and 46 (44%) respectively. The results showing percentage distribution and number of the study participants who confirmed specific causes of dental caries and gingivitis are summarized in Figures 2 and 3. Regular tooth brushing (at least twice a day) was common in males 117 (56.8%) and females 68 (58.2%).

Duration of tooth brushing for <3 min was equally responded among males and females 130 (63.1) and 61 (63.4), respectively. Approximately, half number of both males and females who used a toothbrush applied the horizontal and vertical methods. More than two-thirds of the toothbrush users gave “good cleaning properties” as the major reason for such use [Table 1]. Substantial proportion of the males 89 (43.2%) and females 35 (37.2%) reported using mefakia at least twice daily [Table 2].

Among the males and females who used mefakia, 142 (68.9%) and 56 (59.6%) respectively used the horizontal and vertical method, whereas 39 (18.9%)

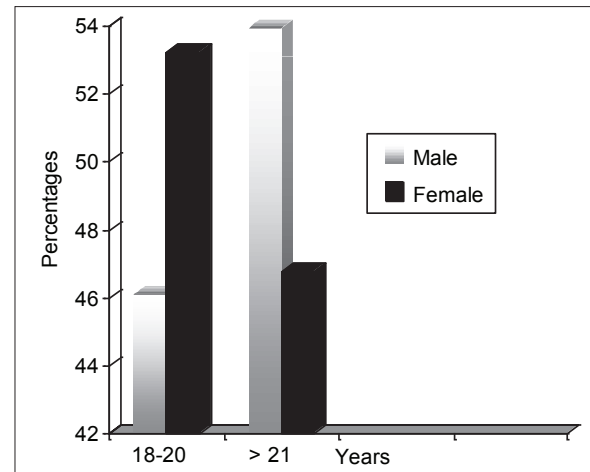


Figure 1: Numbers (n) and percentage distribution (%) of the study participant's by age and sex

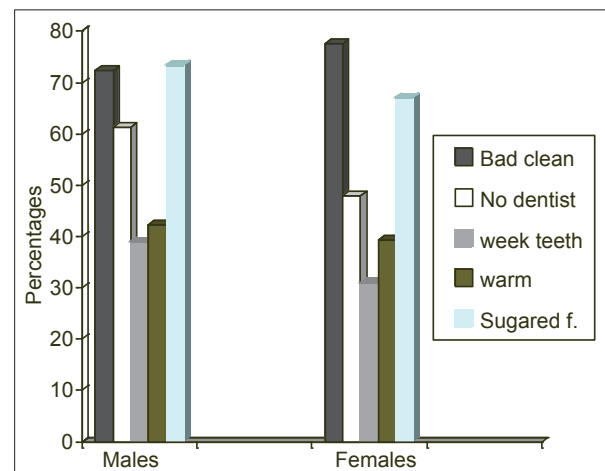


Figure 2: Numbers (n) and percentage distribution (%) of the study participants who confirmed specific causes of dental caries

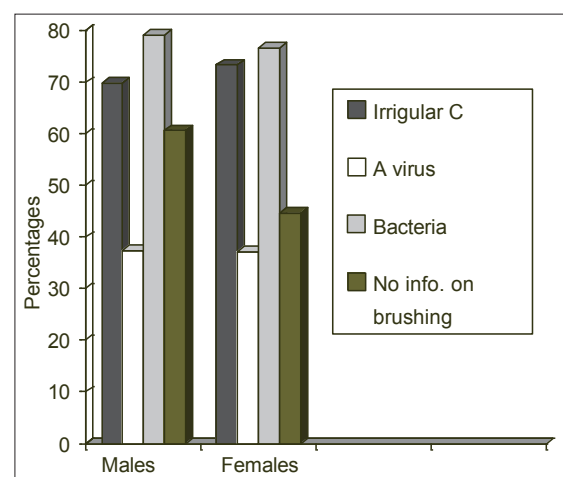


Figure 3: Numbers (n) and percentage distribution (%) of the study participants who confirmed specific causes of gingivitis

males and 9 (9.6%) females used other methods [Table 2]. A majority, 108 (52.4%) males and less 35 (37.2%) females

Table 1: Numbers (n) and percentage distribution (%) of the study participants according to frequency, duration, reason and method of brushing with toothbrush

Tooth brush	Males (n=206)		Females (n=94)	
	n	(%)	n	(%)
Tooth brush frequency				
<2 times a day	117	56.8	68	58.2
>2 times a day	48	23.3	33	34.4
Tooth brush duration				
<3 min a day	130	63.1	61	63.4
>3 min a day	38	18.4	19	19.8
Reason for brushing				
Better cleaning	136	66.0	59	62.8
Others tradition	35	17.0	21	22.3
Methods of tooth brushing				
Horizontal and vertical	134	65.0	55	58.5
Rotation and others	42	20.4	20	21.3

Table 2: Numbers (n) and percentage distribution (%) of the study participants according to frequency, duration, reason and method of brushing with mefakia

Mefakia	Males (n=206)		Females (n=94)	
	n	%	n	%
Mefakia cleaning frequency				
<2 times	154	74.8	59	62.8
>2 times	21	18.2	7	7.4
Duration of mefakia				
<3 minutes	89	43.2	35	37.2
>3 minutes a day	85	41.3	30	46.2
Reason for brushing				
Better cleaning	70	34.0	36	38.3
Tradition and other reason	108	52.4	35	37.2
Methods of using mefakia				
Vertical and horizontal	142	68.9	56	59.6
Rotation and others	39	18.9	9	9.6

gave other reasons in terms of pleasantness, tradition, religion, and good prices for using mefakia. Table 2 shows percentage distribution % and (n) number of the study participants according to frequency, duration, reason, and method of brushing with mefakia.

DISCUSSION

Epidemiological data regarding oral health knowledge and behavior of Jimma University Health Sciences students, Ethiopia have not previously been published online. This survey was undertaken to gather such information among Jimma University Health Sciences students to aid the establishment of preventive oral health education program. Thus, the participants of this study were selected because they were health sciences students not currently involved in preventive oral health program and that dental students were at

the basic sciences level. Therefore, this study considered them as pool sample with equal knowledge in the field of oral health. The results presented in this study are considered to be representative of Jimma University Health Sciences students. This study shows that all students correctly completed the questionnaires, which demonstrate keen interest of the students in their oral health matters.

Less gender differences were identified in this study concerning the single knowledge items. However, males more often than females preferred “avoid visiting a dentist” as a cause of dental caries.^[18] Moreover, in a representative study of school children living in urban areas in Jordan, Rajab *et al.*^[19] found no substantial differences between boys and girls in responses to oral health knowledge items. These observations may indicate that when both sexes are at identical educational levels, they are equally knowledgeable with respect to oral health issues.

Although misconceptions about oral health still exist in the present study, a high proportion of boys and girls had correct knowledge, confirming for instance that inappropriate cleaning and consumption of sugared foods cause tooth decay and that gingivitis might be attributed to irregular tooth brushing. Farsi *et al.*^[20] indicated that 87% of the school students in Jeddah city knew that regular tooth brushing can prevent gum diseases. The level of knowledge identified among Jimma University Health Sciences students was encouraging and may have implications for preventive oral health program. Thus, from a theoretical point of view, oral health habits are a function of perceived vulnerability to an oral disorder and the belief that a particular preventive measure will be sufficient to overcome this vulnerability. People who have assimilated oral health knowledge and feel a sense of personal control over their oral health are more likely to adopt self-care practices.^[21] The finding of this study demonstrated that a substantial proportion of the participants reported using toothpaste whereas most mefakia, (chewing stick prepared from a variety of plant stems and twigs, Wu *et al.*^[22]), users did not use any adjuvant. Tooth brushing with toothpaste is arguably the most common form of tooth cleaning practice by individuals in the industrialized countries, whereas the chewing stick is often used as the sole cleansing agent by individuals in developing countries.^[21] In this study, more and less than two-thirds of the toothbrush and mefakia users, respectively, cleaned their teeth at least twice daily. From Kuwait, it was recently concluded that the male Health Sciences College students seemed to have appropriate knowledge on some oral health topics, but limited knowledge on the others that their tooth brushing practices are still far behind the international recommendation (twice a day) and also the knowledge, why it should be done so frequently also very limited.^[23]

This study shows that awareness of oral health issues is high, but specific misconceptions exist and that there is gender equality in knowledge and practice of oral hygiene among health sciences students. Mefakia was equally used with toothbrush for oral hygiene practice. However, self-reported information may need to be confirmed by clinical assessments or checked up from dental files. Therefore, the results of the present study may need to be confirmed by clinical assessments.

Recommendations

Based on this study findings, we recommend establishment of oral health program in Jimma University that addresses oral health promotion and disease prevention. Health sciences personnel working in health care systems in addition to dental hygienists should have to be involved in such program and that the notion of oral health as integral part of community health should be central to construction of such strategy.

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