Asian Journal of Epidemiology

ISSN 1992-1462

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Asian Journal of Epidemiology 7 (1): 9-15, 2014
ISSN 1992-1462 / DOI: 10.3923/aje.2014.9.15

Knowledge of and Attitudes Toward Preventive Oral Health Care at an Iranian Population

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ABSTRACT

Inadequate public knowledge about preventive oral health care may lead to increased burden of oral disease. This study aimed to assess level of knowledge of, attitudes toward and behavior of adults residing in Mashhad, Iran regarding preventive oral health care. A total of 946 adult subjects were selected by stratified-cluster random sampling approach. Data were collected via a telephone interview. The interview employed a structured questionnaire about sociodemographic characteristics, knowledge, attitude and practice toward preventive oral health care. Also a question was considered about the respondent's resource for oral health prevention information. Mean score of knowledge was 0.54±0.56 (full score: 3). Higher scores were significantly more prevalent in women, younger's, people with more income and higher level of education. Mean attitude score was 1.6±0.7 (full score: 3). only 17.6% of the respondents showed positive attitude. It showed significant correlation with level of education and monthly income. Mean of behavior score was 4.5±2.07 (full score: 8). Dental flossing was more reported in more educated (OR = 2.27) and non smoker people (OR = 1.85). Dental visit was more prevalent in more educated ones (OR = 1.34). The most important source of information was semiprofessional source (mass media and health care center staff). As conclusion knowledge of Mashhad's people about preventive oral health care was low. Their mean attitude shifted to negative score and the average of behavior was moderate. This study certainly serves local health policy making. Reinforcing collaboration between dentist and semiprofessional sources could be suggested.

Key words: Knowledge, attitude, preventive, oral health care, dental care

INTRODUCTION

Although, dental caries is a preventable disease it continues to be the most important cause of dental pain and tooth loss in all age groups and all over the world (Petersen *et al*., 2005; Pitts *et al*., 2006; Petersen and Yamamoto, 2005). Despite the reduction in caries prevalence in recent decades,

dental caries has remained as a challenge (Marthaler, 2004). Whereas oral health knowledge and attitude have some positive effects on oral health behavior (Dumitrescu *et al.*, 2011; Ogundele and Ogunsile, 2008).

It has been shown that dental caries is a major problem in Iran (Pakshir, 2004). For example, the DMFT for 12-year old was 1.86 and for 15-19-year old was 4.1, with D component comprising up to 80% of the caries experience. Findings of these surveys have also showed that healthy periodontium is a rare finding among young adults (15-19 year-old) and middle-aged individuals (35-44 year-old) (Hessari *et al.*, 2007, 2008).

Khorasan Razavi is situated in the north east of Iran with a population of >5.5 million, 43% of them living in the capital, Mashhad (Statistical Center of Iran, 2007). Reports on oral health status of khorasan's people are rare. Ministry of Health and Medical Education reported mean DMFT among 6 year old khorasani's children as 4.55 with a d component of 3.7 (Samadzadeh, 2004). Some evidences support the hypothesis that oral health knowledge and attitude have positive effects on oral health behavior (Dumitrescu *et al.*, 2011; Tolvanen *et al.*, 2012). The mentioned figure of caries experience in Khorasan may be due to inadequate public knowledge about preventive oral health care.

This study aimed to assess level of knowledge of, attitudes toward and behavior of public residing in the city of Mashhad regarding preventive oral health care in relation to their age, gender, level of education and monthly income.

MATERIALS AND METHODS

Study design: The study was a cross sectional descriptive one to determine the level of knowledge of, attitudes toward and behavior of Mashhad's people regarding preventive oral health care.

Subjects: Subjects in the present study included adults aged equal and more than 30 years that were recruited based on a stratified-cluster random sampling approach.

Stratums were three main health centers in Mashhad and clusters were sub-centers. Within each cluster ten sub-clusters were randomly selected, enumerated and a total of 946 random samples of their dwellings were drawn.

Data collection: The data for the present study were gathered via telephone interview. After preparing a list from the study dwellings, a phone call was made for each subject. After three attempts, a busy or non-answering line was omitted from the list. Six trained interviewers under the guidance of one of the authors made the interviews lasting about 15 min for each one. The research deputy of Mashhad University of Medical Sciences granted ethical approval for the present study.

The interview employed a structured questionnaire using closed, open and multiple choice questions as follows:

- Background socio-demographic characteristics including: age, sex, level of education, monthly income, edentulous or not and smoking history
- Three questions were considered on the respondents' knowledge about purpose of using fluoride products, purpose of using fissure sealant and their knowledge of at least one primary sign of gum disease. Assigned score for each correct and incorrect answer were 1 and 0, respectively. 0-3 was the range of sum of scores
- Response to the statement "despite receiving preventive oral health care, I will be affected by dental caries and gum diseases served as indicator of the respondent's attitudes toward

preventive oral health care. The alternative responses included disagree, I don't know and agree in order with the score of 3 (positive attitude), 2 (neutral attitude) and 1 (negative attitude). 1-3 was the range of sum of scores

- Five questions regarding: Daily dental flossing(yes/no question), last year dental visit (yes/no question), regular tooth brushing despite busy work, regular tooth brushing despite life worries, regular using fluoride products. The alternative responses in the last three questions included: Surely, may be and never with the scores of 2, 1 and 0, respectively. Finally the resultant score was used to measure the respondent's behavior regarding preventive oral health care. 0-8 was the range of sum of scores
- A question was considered about the respondents' resource for oral health prevention information. Resource of knowledge of respondents was categorized as: Professional source (a dentist), Semi-professional source: health center staff, TV or radio, news paper, magazine and books and nonprofessional source: relatives, friends and personal experience
- Reliability of the questionnaire was determined conducting a test-retest study on sixty subjects with one-week in between. The average kappa coefficients were 0.81

Statistical analysis: ANOVA, independent t-test, Kuruskal-Wallis, Chi-square test and Pearson correlation coefficient, served for the statistic evaluations. Binary logistic regression was used for Yes/No questions which related to behavior.

RESULTS

Distribution of respondents by their background, separately for men and women has been shown in Table 1.

Mean score of knowledge was 0.54±0.56; considering that a total of 48.7% obtained zero score and only 0.1% of people obtained the full score. The lowest score was on the participant's knowledge of the purpose of using fissure sealants (Table 2).

Mean attitude score was 1.6±0.7. In 55.5% of subjects attitude was negative, 6.9% had a neutral attitude and only 17.6% showed positive attitude.

Mean of behavior score was 4.5±2.07. Only 4.6% of people obtained full score.

Statistical tests showed significant relation between mean of knowledge score and different items include: gender ($p = 0.006$), areas of Mashhad city ($p<0.0001$), age ($p = 0.001$), income ($p<0.0001$) and level of education ($p<0.0001$); such that higher scores were more prevalent in women, younger people, people with more income and higher level of education.

Table 1: Distribution of respondents (n = 946) by their background, separately for men (n = 399) and women (n = 547)

Parameters	Men (%)	Women (%)	p-value[1]
Age (years)			
31-53	23	41.8	<0.001*
54-75	16.1	16.1	
Income			
Low	10.9	19.4	0.09
Medium	29.9	34.2	
High	1.9	3.7	
Level of education			
Illiterate	2.5	7	
<High school	32.9	47.7	<0.001*
≥High school	6.8	3.2	

[1]Statistical evaluation of differences by gender: Chi-square test, *Significant at $p<0.05$

According to ANOVA test result, there was not significant relation between the source of preventive information and mean of knowledge score (p = 0.14).

The mean of attitude showed significant relation with level of education (p = 0.001) and monthly income (p = 0.001). Pearson correlation test revealed that correlation between mean of knowledge and attitude scores was negative (r = -0.09, p = 0.004) but the correlation between mean of knowledge score and behavior was positive (R = 0.15, p<0.0001).

Respondent's knowledge on oral disease prevention is summarized in Table 2. About half of the respondents gave correct answer on the purpose of using fluoride and primary sign of gum disease. Correct answers on the latter item was more prevalent among women than men (p = 0.004), younger than older respondents (p = 0.02), those with dental visit in the past year (p = 0.001) and non-edentulous respondents (p = 0.001). Regarding the item "purpose of using fissure sealant", less than two percent presented correct answer.

Determinants for using dental floss and dental visit among the participants as assessed by means of two similar logistic regression models are summarized in Table 3. Higher level of education (OR = 2.27), not smoking (OR = 1.85) and female gender (OR = 1.51) were the major factors contributing to the respondent's using of dental floss when analyzing in a logistic regression model, simultaneously controlling for the respondent's age and family income. In a similar model, analyzing the contributors to the respondent's dental visit in the last year, higher level of education (OR = 1.34) found to be major factors.

Table 2: Percentages of the respondent's (n = 946) correct answers to the questions regarding knowledge on preventive oral health care

Parameters	Purpose of using fluoride	Purpose of using fissure sealant	At least one primary sign of gum disease
All	48.5	1.5	49.7
Gender			
Men	19.5	0.2	18.6
Women	28.9	1.3	31.2
p-value	0.2	0.03	0.004*
Age (years)			
31-53	38	1.3	35.6
54-74	10.5	0.2	14.2
p-value	0.2	0.14	0.018*
Level of education			
< High school	38	1	43
≥High school	10	0.4	6
p-value	0.1	0.01*	<0.001*
Dental visit in last year			
Yes	27	1.4	26.5
No	21.4	0.1	23.4
p-value	0.9	0.30	<0.001*
Edentulousness			
Yes	4.2	0.1	8.5
No	44.1	1.4	41.2
p-value	0.5	0.18	<0.001*
Source of knowledge			
Professional	9.3	0.9	10.1
Semiprofessional	35.5	0.6	35
Nonprofessional	3.4	0.1	6.1
p-value	0.3	<0.001*	0.4

Professional: Dentist, Semiprofessional: Health center staff, TV or radio, news paper, magazine and books, nonprofessional: relatives and friends, personal experience, *Significant at p<0.05

Table 3: Determinants for using dental floss and having dental visit in the past 12 months among the participants (n = 946), as assessed by means of two similar logistic regression models

Parameters	E.S.[1]	S.E.E[2]	OR[3]	95% CI	p-value
Using dental floss					
Gender (0 = male, 1 = female)	0.41	0.19	1.51	1.03-2.21	0.03
Age (years)	-0.02	0.01	0.97	0.95-0.99	0.02
Level of education (0 = Illiterate, 6 = University)	0.82	0.09	2.27	1.90-2.72	<.0001
Smoking (0 = Yes, 1 = No)	0.62	0.25	1.85	1.14-3.03	0.01
Family income	0.002	0.001	1.00	1.001-1.003	0.002
Constant and goodness of fit	-3.40	0.68			p = 0.11
Dental visit in the last 12 months					
Gender (0 = male, 1 = female)	0.27	0.16	1.31	0.95 -1.79	0.09
Age (years)	-0.004	0.009	0.99	0.97-1.01	0.65
Level of education (0 = Illiterate, 6 = University)	0.29	0.07	1.34	1.15-1.57	0.000
Smoking (0 = Yes, 1 = No)	0.20	0.19	1.22	0.84 -1.78	0.28
Family income	0.002	0.000	1.002	1.001-1.003	0.000
Constant and goodness of fit	-1.64	0.56			p = 0.69

[1]Estimate of strength, [2]Standard error of estimation, [3]Odds ratio, CI: Confidence interval

DISCUSSION

In the present study, the role of different variables such as age, gender, education level and monthly income on the level of knowledge of and attitudes toward preventive oral health care was investigated. Briefly, females, younger people, people with more income and higher level of education had more knowledge in preventive oral health care issue. Attitude toward preventive oral health care was higher in more educated and wealthy respondents.

In this study, knowledge score of women was significantly more than men. Roberts-Thomson and Spencer (1999) in their study, however, concluded that higher percentage of females believe in myths. Also, a multi centre study in Saudi Arabia (Almas *et al.*, 2000) showed that knowledge and awareness about dental health and disease conditions are better in male subjects. Even about sealants, which people knowledge was very low, awareness of women was significantly more than men. It seems Mashhad's women valorize for their supportive role in family Oral health and have increased their Knowledge about preventive oral health care. Nevertheless it seems improving knowledge in this field is essential.

Knowledge showed significant difference with age; so that younger adults were more familiar with common and effective methods of preventive oral health care that agree with Roberts-Thomson and Spencer (1999). It may be due to more interaction of younger parents with community, so they may obtain more information about preventive oral health care. On the other hand, in Iran, average years of education have increased in recent years and younger people are probably more educated than older people. Lower level of older people knowledge is a concern because they are more prone to tooth decay especially root decay and periodontal disease which resulted in tooth loss; unfortunately tooth loss damage the quality of life.

According to this survey higher educational level was associated with more awareness. Since, the educational level was identified as an indirect indicator of socio-economic status of family (Woo *et al.*, 1999) it can be concluded that more educated people have higher socio-economic status that impact on their knowledge and use of dental services which agrees with Lin *et al.* (2001) study. Awareness showed significant difference with regional municipality where a person lived in it. Oral health education should be focused in areas with lower awareness.

Unfortunately, picture of attitude in this study was negative in 55.5% of subjects. This means that people had believed despite receiving preventive oral health care, dental caries and gum disease will occur eventually. This attitude, if not addressed, could undermine oral health promoting behaviors. For creating good behavior, not only level of knowledge is crucial, but also negative attitude should be changed to positive through tailored educational programs and oral health promotion interventions.

According to the results gender was not an influential factor on frequency of dental visits, whereas Stadelmann reported that women had more regular dental visits (Stadelmann *et al.*, 2012). It may be due to the fact that in Iran insurance companies have covered dental visits. Dental visit was more prevalent in more educated participants of this study. In accordance with us Al-Shammari reported that less educated people had less dental visits (Al-Shammari *et al.*, 2007). Also, the current study showed that level of education correlated with dental flossing habit so that more educated people use dental floss more than less educated people which is concordant with Stadelmann *et al.* (2012). According to present survey smokers use dental floss less than nonsmokers. This finding is in agreement with Stadelmann *et al.* (2012)

Most important source of information that the respondents had expressed was semiprofessional source, so providing correct information by the mass media and health care center staff seems to be important. The next important source was dentist. Considering above oral and written instructions to the patients at their dental office appointments will be useful. Gift (1991) stated dentists and physicians over emphasize oral hygiene measures relative to the use of sealant and fluoride. It seems more advice to other preventive oral health care methods like sealant and fluoride therapy may be beneficial.

As limitations of current study it should be mentioned that there might be recall bias in responses to the questionnaire because recall was restricted to a short period of time. Also, possibility of socially acceptable answering should be considered.

CONCLUSION

As conclusion of this survey knowledge of Mashhad's people about preventive oral health care was low. Their mean attitude toward preventive oral health care shifted to negative score and the average of oral preventive behavior was moderate. This descriptive study basically certainly serves local and perhaps national health policy making. Education of preventive cares should be put in oral health education formula. Considering the important role of semi-professional resources as main resource of people information, it could be suggested to increase public awareness about preventive oral health care; collaboration between professional and semi-professional sources should be reinforced.

Also, using educational system of the country as a framework for oral health promotion activities and enhancing preventive dental services in health care could be suggested.

ACKNOWLEDGMENT

Funding for this research was provided by the Research Council of Mashhad University of Medical Sciences, Mashhad, Iran.

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