SS El-Qaderi D Quteish Ta'ani Assessment of periodontal knowledge and periodontal status of an adult population in Jordan

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Abstract: The aim of this study was to assess periodontal knowledge and periodontal status in 20-60-year-old adult population in northern Jordan. A convenient sample consisting of 722 adults was included in this study. A questionnaire incorporating items related to sociodemographic and periodontal knowledge questions was completed before clinical examination, using the Community Periodontal Index of Treatment Needs (CPITN). The results showed that the proportions of subjects who reported bleeding gums, gums' irritation, rough tooth surface and gum disease decreased steadily with age, there is an evident linear trend with high statistical significant difference among various age groups (P < 0.001). Furthermore, the proportions of subjects who answered correctly the periodontal knowledge questions related to plaque definition and its role in disease aetiology and prevention, decreased with age, with a high significant difference for all knowledge questions (P < 0.001). The prevalence of subjects with healthy periodontium (score 0) decreased with age, being 41.1% among 20-29-year-old group and 11.1% in 50-60-year-old group. Similar trend was seen for bleeding on probing (score 1) whilst calculus deposit (score 2) was the major problem in all age groups over 29 years. The prevalence of periodontal pockets was relatively low, with a range of 4.5-18.6% for shallow pockets (score 3) and 2.9-11.1% for deep pockets in younger and older age groups, respectively. Younger age group had more healthy sextants than older age groups. In addition, sextants with bleeding on probing were highest in 20-29-year-old age group (1.8) compared with that in 50-60-year-old age group (0.60) whilst those with calculus deposits varied slightly among different age groups (1.50–1.65). Sextants affected by shallow or deep pockets increased steadily with age. Such a finding

was also noted in excluded sextants, with an increase from 0.15 at 20–29 year-old group to 0.94 at the age of 50–60 years. It is concluded that health knowledge and status related to periodontal disease is still poor in northern Jordan. Therefore, dental health education provision is necessary to improve oral health knowledge and conditions among population in general and among older population in particular.

Key words: adult population, periodontal knowledge, periodontal status, Community Periodontal Index of Treatment Needs, Jordan

Introduction

Periodontal diseases are the most widespread diseases all over the world. Such diseases may be found in every age group, but is more commonly found in the adult population regardless of sex, race, education, residence or socioeconomic status (1). Epidemiological data concerning periodontal health is available from over 100 countries in the world (2, 3). Routine patient education concerning periodontal disease is recommended as a means of improving oral health (4). Former studies on adults have shown that their level of knowledge and attitudes towards dental health might be a barrier to effective oral preventive efforts (5). Therefore, maintenance of periodontal health and prevention of the disease requires an informed public and patient who can differentiate between periodontal health and disease (6).

Little published data is available on the level of periodontal knowledge and periodontal disease from the eastern Mediterranean countries. Such data in regard to periodontal disease from Saudi Arabia, Syria and Lebanon, derived from WHO documents, have shown that adults with completely healthy periodontal tissues comprised a small minority (2, 3).

Baseline data on periodontal knowledge, and prevalence and severity of periodontal disease in Jordan is not available. Therefore the aims of this study were to assess the periodontal knowledge and periodontal status of adults population living in northern Jordan.

Materials and methods

As suggested by Hulley and Cummings in their epidemiological approach in designing clinical research, a convenient sampling technique was used for the data collection of this crosssectional survey (7). A sample of 722 subjects aged 20–60 years who attended the outpatient dental clinic at the Dental Teaching' Centre of Jordan University of Science and Technology for oral examination was included in this study.

Information regarding age, sex and periodontal knowledge was obtained through a questionnaire before recording onto a data collection sheet. The two examiners who undertook the examinations were calibrated for 1 week in Periodontology Clinic, Faculty of Dentistry, Jordan University of Science and Technology.

The questionnaire includes items related to periodontal knowledge. The first four questions dealt with gingival bleeding, gum irritation, rough tooth surface, and the presence of gum disease. Participating subjects were requested to answer by 'Yes' or 'No' to the four questions – Do you have: gum bleeding, gum irritation, rough tooth surface, gum disease? The level of periodontal knowledge was also measured through a series of four questions aimed at finding out if the subject could define dental plaque correctly, recognize the effect of plaque on gingival tissues, identify the early signs of periodontal disease and its prevention. Four alternative answers, including the one correct answer, were given for each of these four questions and subjects were requested to check the correct answer.

The periodontal condition was evaluated by a dental mirror and WHO periodontal (E) Community Periodontal Index of Treatment Needs (CPITN) probe, using the criteria of CPITN (8). The dentition was divided into sextants and the highest code number corresponding to the worst periodontal condition around each of the 10 indexed teeth being recorded. The CPITN criteria used in this study were as follows: score 0 = healthy periodontium with no sign of periodontal disease, score 1 = gingival bleeding on probing, 2 = calculus deposits, 3 = pockets 4–5 mm (shallow pockets), 4 = pockets 6 mm or deeper (deep pockets) and X = excluded sextants.

The prevalence of periodontal conditions, and the mean number of sextants for different scores per person were summarized according to the recommendation of WHO (9, 10).

Statistical analysis

The data were analysed by means of the computerized SPSS statistical package (SPSS, Chicago, IL, USA). Simple descriptive statistics including mean values, SD and frequency distributions were used together with chi-square test. The chosen level of significance was set at P < 0.05.

Results

The total number of participating subjects in this study was 722, with a mean age of 32.0 ± 11.5 years. As it is shown in Table 1, the proportion of subjects who reported 'bleeding gums' decreased with age, being 48.4% at 20–29 years and 11.7% at 50–60 years of age. Similar trends were observed with other items; gum irritation, rough tooth surface and gum disease. Highly statistical significant differences were found between various age groups for all items (P < 0.001).

The responses to other questions assessing the level of knowledge (Table 2) revealed that about one-half (46.8-50.7%) of the younger age group (20-29 years) was able to define correctly the plaque and aetiology and prevention of gum disease. However, the proportions of correct answers decreased with age being 9.5-11.7% at 50-60 years of age, with highly statistical significant differences between age groups for all questions assessing the level of knowledge (P < 0.001). The prevalence of subjects affected by periodontal disease measured in terms of the highest CPITN is exposed in Table 3. The proportions of subjects with healthy periodontium (score 0) ranged from 41.1% among the 20-29-year-old group to 11.1% among the 50-60-year-old group. Bleeding on probing (score 1) was highest in the 20-29-year-old group (19.5%) and lowest in the 50-60-year-old group (11.1%). Calculus deposit score (2) was the overwhelming problem among persons who are over than 30 years of age whilst shallow and deep pockets (score 3 and 4) were the least prevalent problem among all

Table 1. Distribution of participating subjects who self-reported gum bleeding, gum irritation, rough tooth surface and gum disease, by age groups (n = 722)

Variables	Age groups (years)						
	20–29 (n = 126) (%)	30–39 (n = 143) (%)	40-49 (n = 265) (%)	50-60 (n = 188) (%)	P-value		
Gum bleeding	61 (48.4)	46 (25.1)	40 (15.1)	22 (11.7)	0.001		
Gum irritation	53 (42.1)	42 (29.3)	48 (18.1)	21 (11.1)	0.001		
Rough tooth surface	47 (42.1)	39 (27.2)	42 (15.8)	19 (10.1)	0.001		
Gum disease	59 (46.8)	36 (25.1)	38 (14.3)	23 (12.2)	0.001		

P-value was calculated using the chi-square test for trend.

Table 2. Fre	quency	distribution	of those w	ho correctly	answer t	the five k	nowledge	questions	on perio	dontal h	ealth (n =	= 722

	Age groups (years)					
Knowledge questions	20-29 (n = 126) (%)	30–39 (n = 143) (%)	40-49 (n = 265) (%)	50-60 (n = 188) (%)	P-value	
What is plaque? (soft deposits on teeth*)	59 (46.8)	37 (25.8)	48 (18.1)	22 (11.7)	0.001	
What can plaque cause? (gum disease") What bleeding gums indicate?	52 (41.2) 64 (50.7)	47 (32.8)	43 (16.2) 33 (12.4)	18 (9.5) 27 (10.1)	0.001	
(inflamed gums*) How can you prevent gum diseases?? (by brushing and flossing*)	48 (38.1)	34 (23.7)	46 (17.3)	29 (10.9)	0.001	

P-value was calculated using the chi-square test for trend. *Correct answer.

Table 3. Prevalence of subjects in different age groups by the highest Community Periodontal Index of Treatment Needs score

Age groups (years)	Percentages of subjects with							
	Healthy periodontium (0)	Bleeding on probing (1)	Calculus (2)	Shallow pockets (3)	Deep pockets (4)			
0–29	41.1	19.5	32.0	4.5	2.9			
0–39	32.9	18.8	39.5	4.7	4.1			
0–49	18.9	17.1	48.3	16.2	9.5			
0–60	11.1	11.1	48.1	18.6	11.1			

Age groups (years)	The mean number of subjects with							
	Healthy gum (0)	Bleeding gum (1)	Calculus (2)	Shallow pockets (3)	Deep pockets (4)	Excluded sextants (X)		
20–29	1.70	1.80	1.50	0.60	0.25	0.15		
30–39	1.15	1.20	1.65	1.00	0.50	0.50		
40–49	0.70	0.95	1.65	1.40	0.60	0.70		
50–60	0.44	0.60	1.55	1.65	0.82	0.94		

Table 4. The mean number of sextants of various age groups by Community Periodontal Index of Treatment Needs score

groups who are <50 years of age. However, the highest percentages of subjects with shallow and deep pockets were found in the 50–60-year-old age group, being 18.6 and 11.1%, respectively. The severity of periodontal diseases measured by the mean number of affected sextants per person is shown in Table 4. The mean number of healthy sextants decreased with age, ranging from 1.7 at 20–29 year-old age group to 0.44 at 50–60 year-old age group. Similar pattern was seen for bleeding on probing (i.e. 1.80–0.60). The mean number of sextants with calculus deposits was slightly higher among the age group of 30–49 years old compared with other age groups. Sextants with shallow and deep pockets increased gradually from younger to older age groups, ranging from 0.60 to 1.65 and 0.15 to 0.94, respectively. This change was also seen in excluded sextants scores (0.15–0.94).

Discussion

Periodontal knowledge is essential to prevent and maintain good periodontal health. In general, the younger age groups (20-29 and 30-39 years) reported to have gum bleeding, irritation, rough tooth surface and gum disease more than other groups (40-49 and 50-60 years). This finding may be related to the fact that gingival rather than periodontal diseases are more common in such younger adults. Furthermore, younger age groups are more aware and alert than older age groups in regard to their periodontal health. In addition, approximately similar proportions of subjects in each age group reported to have gum disease and bleeding gums, irritation, or rough tooth surface. Gum bleeding has been reported to be the first symptom of periodontal disease and the most reliable indicator of such disorder (11). Therefore, improving periodontal knowledge by dental health education may play an important role in prevention of periodontal problems (12). It seems that there is a limited periodontal knowledge especially among older subjects in regard to the definition, aetiology and prevention of dental plaque. This finding may be because of the fact that older subjects are likely to be less educated than younger subjects. The comparison of our results with previous finding is

limited as little information is available in regard to periodontal knowledge.

The CPITN has been used extensively for epidemiological surveys and screening in clinical practice for periodontal disease. However, there has been a criticism of this index as no accurate estimation of gingivitis or calculus can be determined and it also underestimates periodontitis in adults. Despite these facts, CPITN is still used because of simplicity, speed, reproducibility and international uniformity. Epidemiological studies demonstrated a direct correlation between the severity of inflammatory periodontal disease and plaque, regardless of the fact that gingivitis may or may not proceed to periodontitis (13). The maintenance of good oral hygiene will control the plaque mass and thus reduce injury to the tissues.

There are considerable differences in the findings of various epidemiological studies of periodontal health. In many of them, the prevalence of periodontal disease was found to be extremely high (100%) in adults over 35 years of age (14-18). Other studies revealed that only a small ratio of adults had a completely healthy periodontium (2, 3). Variations in such findings may be due to the use of different examination methods and instrumentation, the assessment of the severity of gingival inflammation or the interpretation of findings. Using the information in the WHO document presented by Miyazaki et al. (2) and Pilot et al. (3), it appears that persons with healthy periodontal tissue comprised a small minority (5-10%) of 35-54 year-old adults living in the neighbouring countries such as Saudi Arabia and Syria. However, the present study revealed that a greater proportion of the population (11.1-41.1%) have a healthy periodontium. Calculus and shallow pocketing were the most frequently observed conditions in this age categories in both neighbouring countries, while calculus deposit was the most frequently observed condition, indicating that less-destructive forms of periodontitis afflicted the study population. This study revealed that the percentage of adults with healthy periodontium decreased with age. This finding is consistent with the results of recent study in central Saudi Arabia (19) where the proportions of subjects reported 'gum bleeding' were similar to that found in clinical examination of adults aged 30–60 years. However, self-reported 'gum bleeding' was found to be higher than that noted in clinical examination of younger adults (20–29 years). This latter finding may be due to the overzealous tooth brushing in the younger adults who were mostly at University level. In a similar way more younger adults reported rough tooth surface than that found in clinical examination of calculus. This indicated that 20–30 years adults were more alert regarding their oral hygiene.

In Jordan, dental services are hampered by the shortage of resources and facilities and are stretched to the limit because of the rapidly growing population and to the deterioration of oral health. Therefore, to control periodontal disease in such population, national oral health policy, that emphasizes prevention, will be more advantageous and cheaper than the establishment of traditional curative programmes. This requires effective dental education programmes, which can be effective in increasing knowledge, modifying attitudes and hence improving oral health practices. Such oral hygiene measures may promote periodontal health and possibly decrease the need for future complex treatment and tooth loss.

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