Original Article

Importance of preventive dentistry in the elderly: A personal approach

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ABSTRACT

Background: Oral diseases and their impact on health and quality of life have now evolved into a polarized epidemiological state in which their incidence is especially affecting the most vulnerable in the population: the elderly, especially those with low incomes economical. On the other hand, the noticeable increase observed in the proportion of older adults in developing countries such as Iraq during the last decades. Such a high proportion of older adults is causing an increase in their stomatological care needs that necessitate dentists to know precisely both the etiological factors, such as the pathogenesis and factors that determine the specificity of oral disorders at this stage of life. Only with this knowledge will professionals be able to face these patients with a modern dentistry based on prevention. The objective of the study was to show the impact of oral health on the quality of life of older adults in Iraq.

Materials and Methods: A cross-sectional study was conducted in Iraqi adults focused on demographic characteristics factors, lifestyle, the Geriatric Oral Health Index, and Oral Health Diagnosis. Data were evaluated using ratios, the Chi-square analysis for the correlation among factors and odds ratios to verify statistical significance at $P \leq 0.05$.

Results: This research confirms the impact of oral health on the quality of life of older adults in Iraq. Endodontic problems compromise the quality of life of older adults.

Conclusion: Oral health problems, especially those of traumatic, endodontic, and periodontal origin, negatively affect the quality of life of older adults in Iraq.

Key Words: Elderly, oral health, population increase, preventive dentistry, quality of life

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INTRODUCTION

The population is increasingly becoming an "old" population, and the percentage of older adults is increasing in relation to the younger segments. The elements that have contributed to this social phenomenon of our times obey, on the one hand, the advances in medicine (e.g., various immunizations, the control of previously fatal diseases, etc.). These advances enable the average life expectancy at birth to be increasingly high. On the other hand, to the campaigns on birth control and family planning, which have contributed significantly to the population growth is modified with an increase in older group.[1]

In geriatric preventive dentistry, oral health is an important subject, which can affect directly or indirectly the general health of older patients and their quality of life. The main causes of losing teeth are either caries or and periodontitis.[2]

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This trend, which apparently will not be reversed, indicates that in the short and medium term, we will be facing a population composed of elderly people, so we will have to take on the challenge of providing the specific stomatological care demanded by this group of patients. It demands to precisely know the etiological factors, as well as the pathogenesis and adjuvant factors that determine the specificity of oral conditions at this age.[3] Based on these elements and the assessment of the demands of our society, this work aims to bring to light the current situation and its possible future percussions.

The prevention of oral and other illnesses in the body can be regarded as a technique of maintaining improved oral health. Furthermore, a healthy diet improves the health of the elderly and reduces their illness burden.[2]

It is true that many older adults now enjoy good general health and naturally long to remain active and self-sufficient until old age.[4] However, in general, the regenerative capacity of the body decreases, and a wear process is reached in which chronic diseases ensue. The aging process produces a series of gradual, irreversible, and cumulative changes in the oral cavity, which results in a greater vulnerability to traumatic and infectious agents.[5]

In older adults, teeth are usually missing, and the number of their restorations is high. This alone represents a worrying need for preventive strategies in the treatment plans of these patients. Treatment becomes especially difficult when it comes to states in which these cases need the assistance of third parties when oral hygiene cannot continue to be carried out efficiently autonomously, in patients unable to fend for themselves (paralysis, Parkinson, Alzheimer's, etc.). In cases where there are no trained personnel to help with personal hygiene (oral hygiene, administration of fluorinated rinses, etc.), a rapid and complex destruction of the denture will usually occur. Unfortunately, in very few places in the world, patient care and assistance in nursing homes and hospitals are guaranteed.[6] On the other hand, older adults often take medications that often have side effects in the oral cavity reflected in a decrease in salivary flow.[7,8]

Certainly, drugs are responsible for most cases of long-standing xerostomia. Salivary deficiency, after prolonged drug treatment, usually persists for a while despite the abandonment of the drug. The problem is further exacerbated when xerostomia is triggered as a result of diseases or therapeutic interventions with the use of radiation.[9,10]

Important in patients with high cariogenic risk, it is to consider the implementation of preventive measures based on current strategies regarding the treatment of caries as an infectious and contagious disease. By simple forgetfulness, visual problems, decrease in manual ability or depression, daily oral hygiene can decrease with the consequent increase in caries risk.[11] Of importance will then be to reduce the risk of tooth decay, to include dietary advice to reduce the abuse of carbohydrate intake, especially between meals, and control the intake of food and liquids with excessive sugar content. This is common in the elderly given its lower taste acuity.[12]

In these patients, it is equally common to observe greater exposure of cement and dentin.[1] Therefore, problems of abrasion, attrition, and/or erosion may be in an advanced state and represent a clinical problem.

In edentulous patients or patients with prostheses, we find problems, such as insufficient hygiene with the development of mycotic diseases such as candidiasis,[13,14] excessive resorption of the alveolar crest and/or lesions in the oral mucosa in cases of poor prosthetic adaptation, and changes in the temporomandibular joint due to mal-occlusion.[15] With aging, there are variations in the structure of periodontal tissues that are expressed in gingival retraction, denying the root cement. In the alveolar bone, it is common to observe a minor trabeculate, this presents osteoporotic, more frequently in postmenopausal women. The periodontal ligament appears atrophic, especially when the tooth is in de-occlusion. These changes contribute to the periodontal susceptibility of elderly patient.[15]

The aging of the oral cavity is a tremendously influenced process by diverse factors such as the person's lifestyle, type of food, educational level, socioeconomic factors, and social support. These observed facts are closely associated with alterations in the state of oral health in the elderly. The objective of the study was to show the impact of oral health on the quality of life of older adults in Iraq.

MATERIALS AND METHODS

A cross-sectional study in the city of Baghdad, Iraq, included 120 adult patients over 60 who attended the Prosthodontic and Periodontic Department Clinics

at the College of Dentistry of the Mustansiriyah University, selected from March to December 2019. Research acquired the Ethical Research Committee of Mustansiriyah University's approval (protocol 25; February 01, 2019). All older adults who agreed to participate in the study and who did not have a motor mental and sensory disability were considered. For the start of the measurements, the written informed consent of the patients was requested, considering the international provisions. Data collection was carried out in two stages: first, clinical examinations were performed in the dental units to obtain the diagnosis of oral health status, applying the Geriatric Oral Health Index, which assessed the levels of perception quality of life related to the oral health in older adults, the presence of tooth decay and dental calculi, root debris, fillings, presence and condition of total and removable prosthesis and lesions in the mucosa and its etiology. In the second stage, the structured survey was applied (having assessed the validity of appearance from two judges in a previous pilot test to assess their understanding and compare the different scores obtained with the theory) through home visits to obtain the variables sociodemographic and family, containing 14 questions with a single answer option and including information on gender, sex, socioeconomic status, level of education, marital status, and occupation, family variables, such as household composition, type and ownership of the housing, and family functionality evaluated through the APGAR familiar questionnaire, which was translated to the Arabic language. Four examiners conducted the evaluation where intra- and inter-examiner agreements were verified before the study through the calculation of values of Cohen's kappa (κ).

For the statistical analysis, averages, standard deviation, frequency distribution, and percentages were calculated. Subsequently, the occurrence of oral health status and levels of perception of quality of life related to oral health were estimated by prevalence, calculating 95% confidence intervals (CIs). The relationships between variables were evaluated using the Chi-square test to verify statistical significance, with a decision limit of 0.05. All estimator values were adjusted based on the sample design. The strength of association was estimated by odds ratio (OR) with 95% CIs. In addition, for the multivariable analysis, the nominal logistic regression was used, taking into account the variables that marked a probability ≤5%.

The statistical program (STATA) version 16.1, 2020 for Windows 10.0 (StataCorp LLC, College Station, Texas, USA) was used for the analysis.

RESULTS

The average age of the participants was 68.3 years (standard deviation: 6.3). Table 1 shows the sociodemographic characteristics of the study subjects. Regarding family variables, it was observed that the main caregiver of the elderly was the spouse with 49.1%, the predominant type of family was nuclear (45.8%), and most of the families were made up of 2 and 3 members, with the majority living in house-type housing (77.5%), which were owned in 71.6% of the cases (95%). Through family APGAR, family dysfunctionality was found in 55%. In relation to family and personal medical history, hypertension was present in 70.8% and 61.6%, respectively, followed by diabetes and, less frequently, respiratory problems.

Regarding the diagnosis of oral health, 75% of the participants had <19 teeth, 59.1% and 48.3% had prostheses and maladaptive restorations, respectively, 80.0% had dental calculus, 23.3% root remains, 72.5% dental caries, and 75% temporarily-mandibular joint problems. The most present reasons for consultation were those of traumatic and periodontal origin [Table 2].

When analyzing the dimensions evaluated by the Geriatric Oral Health Assessment Index (GOHAI), which relate oral health to quality of life, it was found that the psychosocial function was the most frequently reported component especially that related to the discomfort of older adults when eating in front

Table 1: Socioeconomic and demography variable

Variables	Population (*n*=120), *n* (%)
Gender	
Female	68.0 (56.6)
Male	52.0 (43.3)
Occupation	
Employee	26.0 (21.6)
Unemployed	34.0 (28.3)
Pensioner	39.0 (32.5)
Others	21.0 (17.5)
Socioeconomic	
1	37.0 (30.8)
2	39.0 (32.5)
3	43.0 (35.8)
4	1.0 (0.8)

Table 2: Oral health diagnosis of study subjects

Oral health diagnostic parameters	Frequency (*n*=120), *n* (%)	95% CI
Reason for consultation		
Infectious origin	2 (24.1)	16.3-31.9
Traumatic origin (use of misfit prostheses)	102 (85)	78.5-91.4
Endodontic origin	54 (45)	35.9-54.0
Periodontal origin	93 (77.5)	69.9-85.0
Presence of <19 teeth	90 (75)	67.1-82.8
Presence of dentures	72 (60)	51.1-68.8
Removable prosthesis	47 (39.1)	30.3-48.0
Total prosthesis	36 (30)	21.6-38.3
Maladaptive prosthesis	71 (59.7)	50.2-68.0
Dental calculations	96 (80)	72.7-87.2
Root remains	28 (23.3)	15.6-31.0
Teeth with cavities	87 (72.5)	64.3-80.6
Seals	71 (59.7)	50.2-68.0
Maladaptive seals	58 (48.3)	39.2-57.4
Temporomandibular joint problems	90 (75)	27.9-45.4

CI: Confidence intervals

of other people because of problems with their teeth. With respect to physical function, 63.3% expressed discomfort when swallowing their food. Regarding dental sensitivity, the most perceived discomfort was sensitivity to hot, cold, or sweet foods [Table 3]. Regarding the levels of perception of quality of life related to oral health, through the GOHAI, the participants showed a high impact of their oral health about their quality of life. Only few participants had low and moderate perceptions.

When relating the perception of quality of life with sociodemographic and family variables, only statistical significance was found with family and personal history of arterial hypertension [$P = 0.01$; Table 4]. With regard to oral health diagnoses, being related to levels of perception of quality of life, statistical significance was found for traumatic and endodontic diagnosis ($P = 0.01$) and when relating the quality of life with the presence of fewer than 19 teeth [$P = 0.01$; Table 4].

When estimating the OR, an association was found between the impact of oral health on the quality of life and the fact of living with more than 5 members in the families, presenting arterial hypertension and diagnoses of endodontic origin ($P < 0.05$), behaving as risk factors for people's quality of life [Table 5]. In the logistic regression analysis, the model that best explains the detriment in the quality of life related to oral health in the study subjects was the one formed by the following factors: living with more than 5

members in the family, the antecedent of arterial hypertension, and endodontic diagnoses. The model was statistically significant [$P = 0.0001$; $\chi^2 = 21.31$; Table 5].

DISCUSSION

Many studies relate the impact of oral health on the quality of life of school children and young adults. However, to our knowledge, there are no reported data about older adults in Iraq. Similar to the results obtained in this study and the findings confirmed by Monger, who reports worldwide that women have a higher expectation of life than men, despite being the genre that suffers the most problems arising from his personal history, such as poor nutrition, pregnancy, and domestic violence, among others.[16] To this is added that the low schooling found is a social response to the little access presented 60 years ago to services such as health, work, and education, and especially to the low participation of women from new roles in society.

According to the results of the present study, 32% of the participants corresponded to pensioners, with low incomes and socioeconomic status, which could limit the maintenance and satisfaction of their basic needs, such as food, health, and housing. A point of value in this study is the fact that this population lived in their own homes, which generates not only less economic expenses but also emotional stability at this stage. Gálvez *et al.* found in older adults in Chiclayo[17] that most of them did not work because they were pensioners, being also one of the social groups with the lowest socioeconomic income. In this sense, the difference between healthy old age and a sick older adult is in the amount of money available according to some authors, so from the young adult stage, the acquisition of economic resources that can provide decent care in older ages should be considered that lead to a good quality of life.[2,18,19]

On the other hand, a factor found in the study, and reported in the literature as a protective factor, was that the vast majority of older adults belonged to the Islamic religion although it is not enough to belong but also to know their activity in terms of religious practices. Usually, this group also seeks support not only in the family but also in friends as extra-family social support and religion is a good strategy to seek this support. In addition, at this stage, a reunion with the more spiritual life is generated, probably due to

Table 3: Physical, psychosocial functions, and pain sensitivity caused by oral problems according to the Geriatric Oral Assessment Health Index

Physical, psychosocial functions, and pain sensitivity	GOHAI					
	Never, *n*(%)	Rare-once, *n* (%)	Sometimes, *n* (%)	Often, *n* (%)	Very low, *n* (%)	Always, *n* (%)
Physical function						
Did you limit the class or amount of food due to problems with your teeth or dentures?	3 (2.5)	4 (3.3)	9 (7.5)	34 (28.3)	49 (40.8)	21 (17.5)
Could you swallow comfortably?	5 (4.1)	76 (63.3)	29 (24.1)	6 (5.0)	1 (0.8)	3 (2.5)
Did your teeth or dentures prevent you from speaking the way you wanted	3 (2.5)	4 (3.3)	22 (18.3)	42 (35.0)	36 (30.0)	13 (10.8)
Could you eat what you wanted without bothering your teeth or dentures?	8 (6.6)	75 (6.25)	27 (22.5)	3 (2.5)	6 (5.0)	1 (0.8)
Psychosocial function						
Did you avoid being in contact with people due to the condition of your teeth or dentures?	6 (5.0)	9 (7.5)	14 (11.6)	43 (35.8)	43 (35.8)	5 (4.1)
Did you feel satisfied or happy with the appearance of your teeth, gums, or dentures?	12 (10.0)	46 (38.3)	11 (9.1)	29 (24.1)	14 (11.6)	8 (6.6)
Did you worry or worry about problems with your teeth, gums, or dentures?	0	3 (2.5)	8 (6.6)	31 (25.8)	51 (42.5)	27 (22.5)
Did you feel nervous or conscious due to problems with your teeth, gums dentures?	2 (1.6)	2 (1.6)	10 (8.3)	29 (24.1)	48 (40.0)	29 (24.1)
Did you feel uncomfortable eating in front of other people because of problems with your teeth, gums, or dentures?	5 (4.1)	3 (2.5)	11 (9.1)	32 (26.6)	53 (44.1)	16 (13.3)
Did you avoid laughing or smiling because your teeth or dentures dental were unsightly?	3 (2.5)	5 (4.1)	10 (8.3)	35 (29.1)	46 (38.3)	21 (17.5)
Pain sensitivity						
Have you had pain or discomfort around your mouth?	0	1 (0.8)	4 (3.3)	50 (41.6)	42 (35.0)	23 (19.1)
Did you feel your teeth or gums sensitive to hot, cold foods, or candy?	0	1 (0.8)	9 (7.5)	51 (42.5)	33 (27.5)	26 (21.6)

GOHAI: Geriatric Oral Assessment Health Index

the proximity to death, which implies greater union with religion, with respect to family functionality, Díaz and Soler.[20]

Regarding family and personal medical history, in the present study, it was found that the most prevalent pathologies were hypertension, diabetes and, to a lesser extent, respiratory problems, data also reported by researchers, where they also reported renal failure as a systemic medical history suffered by the elderly.[21,22] These chronic pathologies, which cause disability and disability, must be correlated with quality of life and years of healthy life. According to Milton Terris [23], although a few decades ago people lived less years, their life was of good quality; at present, the greater number of years lived and the various forms of prolongation of life, maintain it, but do not guarantee the quality of life.

Regarding the oral health status of the elderly, the most reported reasons for consultation were those of traumatic, endodontic and periodontal origin, etiologies that generate pain.[24] The vast majority of participants were toothless partial, with <19 teeth present in the mouth, presence of dental stones, and tooth decay; they used removable partial dentures, but mostly maladaptive. These conditions were very similar to those reported by Pinzón and Zunzunegui in Spain,[25] where older adults presented periodontal disease and poor oral hygiene, dental caries, needed dental prostheses, and presented problems in masticatory function. These dimensions or domains were also evaluated in other studies, which showed more functional and psychosocial aspects of oral health.[19,26] When making the association through the OR estimators, an association was found between the problems at the oral level and the impact that these problems have on the quality of life of older adults, with an OR of 3.5, as well as Aledhari *et al.*[27], who found an OR of 3.41 when associating oral health problems with a negative perception about the quality of life of older adults of a family health program in Baghdad in Iraq. It is essential, therefore, to work with the young population in the promotion of healthy lifestyles that allow them to

Table 4: Relationship of medical history (family and personal) and oral status with the perception of quality of life

Medical history and oral status	Low perception, *n* (%)	Moderate perception, *n* (%)	High perception, *n* (%)	*P*
Family and personal medical history				
Diabetes	10 (25)	4 (10)	26 (65)	0.541
Hypertension	17 (20)	9 (10.5)	59 (69.4)	0.011*
Heart problems	4 (11.6)	3 (8.8)	27 (79.4)	0.583
Respiratory problems	3 (25)	0	9 (75)	0.411
Skeletal problems	0	0	8 (100)	0.225
Personal diabetes	5 (22.7)	1 (4.5)	16 (72.7)	0.54
Personal hypertension	16 (21.6)	10 (13.5)	48 (64.8)	0.011*
Personal heart problems	1 (12.5)	0	7 (87.5)	0.583
Personal respiratory problems	1 (10)	1 (10)	8 (80)	0.84
Buccal variables				
Infectious origin	2 (6.9)	4 (13.7)	23 (79.3)	0.2
Traumatic origin	13 (12.7)	9 (8.8)	80 (78.4)	0.018*
Endodontic origin	13 (24)	8 (14.8)	33 (61.1)	0.012*
Periodontal origin	14 (15)	10 (10.7)	69 (74.1)	0.411
Number of teeth <19	10 (11.1)	9 (10)	71 (73.6)	0.221
Use of dentures	10 (13)	9 (12.5)	53 (72.7)	0.54
Fixed prosthesis	5 (25)	2 (10)	13 (65)	0.525
Removable prosthesis	7 (14.8)	7 (14.8)	33 (70.2)	0.215
Total prosthesis	3 (8.3)	5 (13.8)	28 (77.7)	0.175
Misfit prosthesis	11 (15.4)	8 (11.2)	52 (73.2)	0.606
Presence of calculations	17 (17.7)	10 (10.4)	69 (71.8)	0.479
Presents root remains	2 (7.1)	2 (7.1)	24 (85.7)	0.246
Presents decayed teeth	15 (17.2)	10 (11.4)	62 (71.2)	0.318
Presents sealed teeth	16 (22.5)	6 (8.4)	49 (69)	0.116
Presents maladaptive seals	11 (18.9)	6 (10.3)	41 (70.6)	8,702
Presents TMJ problems	8 (18.1)	5 (11.3)	31 (70.4)	0.744

*P<0.05. TMJ: Temporomandibular joint

Table 5: Association between the oral health index and the sociodemographic variables and the oral health status of the study subjects

Characteristics	Univariate OR (95% CI)	Value	Multivariate OR (95% CI)
>5 members in the family	3.38 (1.34-8.49) *	0.009	2.94 (1.09-7.95)
Family functionality	0.34 (0.14-0.79)	0.01	-
Hypertension	4.44 (1.5-12) *	0.005	3.83 (1.29-11.36)
Endodontic origin	3.5 (1.4-8.4)	0.004	3.21 (1.28-8.02)
Traumatic origin	0.27 (0.097-0.77)	0.01	-
<19 teeth	0.4 (0.16-0.97)	0.04	-

*Estimates adjusted by logistic regression (χ^2=21.31; *P*=0.0001), OR CI: or CI. OR: Odds ratio, CI: Confidence interval

A psychosocial approach to oral health is needed that includes other factors that could jeopardize well-being.

enjoy their older adult stage with a good quality of life.[19,28]

CONCLUSION

This research confirms the impact of oral health on the quality of life of older adults. Endodontic problems compromise the quality of life of older adults.

Conflicts of interest
The authors of this manuscript declare that they have no conflicts of interest, real or perceived, financial or nonfinancial in this article.

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