Distribution of tooth wear among institutionalized residents (50-89 years old) in Baghdad city\ Iraq (Cross-sectional study)

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ABSTRACT

Background: Tooth wear is one of the most common problems in the older dentate population which results from the interaction of three processes (attrition, abrasion and erosion) and it affects all societies, different age groups, and all cultures. This study was achieved to evaluate the prevalence and distribution of tooth wear among institutionalized residents in Baghdad city\ Iraq.

Subjects and Methods: This survey was accomplished on four private and one governmental institution in Baghdad city. One-hundred twenty three (61 males, 62 females) aged 50-89 years were participated in this study. The diagnosis and recording of tooth wear were according to criteria of Smith and Knight.

Results: The prevalence of tooth wear was 100% with a mean (30.79± 19.39) and median (28). The highest grade of tooth wear recorded was grade 2 (56.9%), followed by grade 3 (26%), grade 4 (17.1%). There was no statistically significant difference of total tooth wear among age groups (P>0.05), astatistically significantdifference was seen regarding the severity of tooth wear among different age groups; for grade 2 and grade 4 (P <0.05), while a statistically highly significant difference recorded for both grade 1 and grade 3. A statistically highly significant difference of the total tooth wear was recorded between the total males and females (P <0.01).

Conclusion: The occurrence of tooth wear among those subjects was high thus they need oral health policy makers for promotion, prevention and restorative care.

Key words: Tooth wear, institutionalized elderly. **(J Bagh Coll Dentistry 2014; 26(1):180-183).**

INTRODUCTION

Older people suffer from many oral health problems as studied by previous Iraqi studies like coronal and root caries [1,2], edentulism[1], periodontal diseases [2], dry mouth, soft tissue lesions and age related odontometric changes as tooth wear [3].

Tooth wear describes the non-carious loss of tooth tissue, and is one of the most common problems in the older dentate population which results from the interaction of three processes (attrition, abrasion and erosion) [4, 5]. Tooth wear seems to affect all societies, different age groups, and all cultures [6, 7]. The clinical significance of this increase negatively impacts on aesthetics and/or function [8]. As available, this is the first Iraqi cross-sectional study to determine the prevalence, distribution of tooth wear among institutionalized residents in Baghdad city. Such a study may provide a baseline data aids for future comparison with other studies, as well as putting strategies for monitoring, prevention and treatment of tooth wear among this group of adults.

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SUBJECTS AND METHODS

This study was conducted during the period between the fourth of November on 2012 and twelfth of January on 2013 among five institutions in Baghdad city. There were about 214 institutionalized residents (91males, 123 females) distributed in four private and one governmental institution, with age range about 50-89 years old according to the report of Ministry of Labor and Social Affairs. After getting approval of the Ministry of Labor and Social Affairs to carry out this study, contacts with institution's authorities were made to explain the purpose of the study. The exclusion criterion was cognitive impaired individuals who were 13 subjects (5 males, 8 females). The initial step and before data collection, examiners explained to the participants the aims and details of the study to participate for a detailed interview and a clinical examination. Every subject was informed of his or her right to refuse participation or to withdraw from the study at any moment. The authority of Dar Anya totally refused the examination with unexplained reasons thus the number of residents who refused was 45 (9 males, 36 females) thus the participants was 156 (77 males, 79 females) and those 33 subjects were divided into completely edentulous (17, 51.5%) and those with complete denture wearers (16, 48.5%) were excluded thus the net number of individuals for tooth wear examination was 123 subjects.

Clinical examination was performed inside the institution with the aid of dental mirror and

explorer. Teeth were dried using cotton rolls. The exclusion criteria were as follows: any participants received restorative treatment for tooth surface loss, badly carious tooth and teeth received fixed prosthesis Al-Zarea, [12]. The surfaces of all teeth were scored according to tooth wear index by Smith and Knight [9].

Intra and inter calibration were performed to overcome any problem that could be faced during the research, and to ensure proper application of diagnostic criteria used in recording dental status through inter calibration. Statistical Analysis and processing of the data were carried out using SPSS version 18. The statistical tests that were used in are Pair sample T-test, Z-test, Mann-Whitney U- test, Kruskal- Wallis H test, Spearman correlation coefficient and Chi-square. The level of significance was accepted at $P< 0.05$, and highly significance when $P< 0.01$.

RESULTS

In this study, not all the elderly individuals were involved in the diagnosis and recording of tooth wear as those 33 subjects were divided into completely edentulous (17, 51.5%) and those with complete denture wearers (16, 48.5%) were excluded. Concerning the remaining dentate individuals as those 123 subjects (61 males, 62 females), the percentage of individuals with tooth wear in this study was 100% with a mean (30.79± 19.39) and median (28) as all the elderly examined were having one or more types of tooth wear. Results illustrate that the distribution of subjects by their highest grades of tooth wear was grade 2 and seen in 56.9% (70 subjects) of the examined subjects followed by those with grade 3 (26%, 32 subjects), the lowest was those with grade 4 (17.1%, 21 subjects) followed by those with grade 1 which was completely absent. Regarding age; results in Table **1** show that rating of total tooth wear among age groups was found to be statistically not significant ($P >0.05$) when Kruskal-Wallis H test was applied. Tooth wear by grades of severity according to age groups is demonstrated in Table **2**. Results indicate that the differences in the severity of tooth wear among age groups were found to be statistically significant for grade 2 and grade 4 ($P <0.05$) and highly significant for grade 1 and grade 3 ($P <0.01$).

Table **3** illustrates that tooth wear according to gender in different age groups. Males demonstrated a high tooth wear values compared to females in all ages, however differences were found to be statistically not significant ($P >0.05$), while the difference was statistically highly significant between the total males and females ($P <0.01$) according to Mann-Whitney U test.

DISCUSSION

The prevalence of tooth wear among elderly population as seen by this study was 100% which is higher than that found by Taiwo et al [11] 92.8% among Nigerian individuals, aged 65 years and above. In this study, results demonstrate that grade 2 was the highest score, while the least was grade 1, this is in agreement with Al-Zarea[12]whose sample's age was from 15-65 among Saudian adults, and disagree with Daly et al [13] who found that the highest grade was grade 1 (81%), among 18-80 years Malizian adults.

Results in this study demonstrated that rating or ranking total tooth wear among age groups was not significant although all tooth wear values decreased with the increase of age, except at the last age group, a tooth wear increased. Previous Studies, concluded that tooth wear was an accumulative process throughout life and was an age-related phenomenon [10, 14-16]; but severe tooth wear is not and could happen during any period of life [17]. Many studies recorded that severe levels of wear could be observed in each age group, and it could be argued that this was independent of age [7,18,19]. The increase teeth exposure to environmental factors (local or systemic, erosive, attritive or abrasive factors) may cause more tooth wear rather than age per say [16,20,21]. Further longitudinal studies are needed among single age group to explore the effect of aging and determine the accumulation of tooth wear throughout their life.

Results recorded that total tooth wear values were higher among males than those of females with a highly significant difference. This may due to increased muscle mass and muscular strength seen in males in general [5, 17], other results found that males had higher magnitude of bite forces than females [15, 22, 23]. Studies of tooth wear among adults revealed that tooth wear is also significantly more prominent in men than women [9, 24], due to different dietary patterns between the two genders [25]. Females may care more about their dentition and visit dentists more than males and this allows early detection with possible preventive program being introduced to stop progression [12].

Institutionalized older adults suffer from tooth surface loss thus they need public health campaigns aimed at reducing the incidence of and progression of tooth wear lesion among them.

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Table 1: Descriptive and statistical results of tooth wear according to age

Age group	NO.	Mean	±SD	Median	Mean rank	Chi-square	Df	P-value
50-59	26	32.04	17.12	32.00	66.71	1.093	3	0.779^
60-69	34	30.94	18.31	31.500	63.97			
70-79	35	30.09	21.78	21.00	57.81			
80-89	28	30.36	20.48	27.00	60.46			
Total	123	30.79	19.39	28.00				

^= Not significant at P >0.05.

Table 2: Descriptive and statistical results of tooth wear by grades of severity according to age

	Age groups (years)	NO.	Mean	±SD	Median	Mean rank	Chi-square	df	P-value
Grade 1	50-59	26	6.89	6.55	5.00	83.02	17.947	3	0.000**
	60-69	34	3.62	4.99	1.00	62.82			
	70-79	35	1.34	2.59	0.00	45.87			
	80-89	28	3.00	4.11	1.00	61.64			
Grade 2	50-59	26	12.15	8.86	11.00	72.13	7.911	3	0.048*
	60-69	34	11.29	7.47	9.50	69.46			
	70-79	35	7.05	5.11	6.00	49.87			
	80-89	28	8.31	5.39	7.00	58.70			
Grade 3	50-59	26	0.30	0.97	0.00	43.60	13.690	3	0.003**
	60-69	34	1.26	3.00	0.50	60.59			
	70-79	35	4.23	6.09	2.00	72.71			
	80-89	28	2.18	3.22	1.00	67.41			
Grade 4	50-59	26	0.00	0.00	0.00	52.00	9.798	3	0.020*
	60-69	34	0.23	0.78	0.50	59.19			
	70-79	35	0.48	1.24	1.00	65.83			
	80-89	28	0.82	1.94	2.00	69.91			

Table 3: Descriptive and statistical results of tooth wear according to gender

Age group (years)	Gender	No.	Mean	±SD	Median	MR#	SR##	Z-value	P-value
50-59	Males	14	34.57	4.39	34.00	15.25	213.50	-1.262	0.207^
	Females	12	29.08	18.17	27.50	11.46	137.50		
60-69	Males	22	31.68	14.42	33.00	18.66	410.50	-0.920	0.358^
	Females	12	29.58	24.62	22.50	15.38	184.50		
70-79	Males	19	36.95	25.86	28.00	20.50	389.50	-1.577	0.115^
	Females	16	21.94	11.93	19.00	15.03	240.50		
80-89	Males	6	44.00	25.19	47.50	19.33	116.00	-1.625	0.104^
	Females	22	26.63	17.90	23.50	13.18	110.34		
Total	Males	61	35.19	19.95	33.00	70.55	4303.50	-2.639	0.008**
	Females	62	26.47	17.97	23.50	53.59	3322.50		

 # = mean rank, ##=sum rank, ^ =Not significant at P>0.05, **=highly significant at P<0.01.