Oral health status and treatment needs in humaidat Village

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Abstract:

This study was part of a field work carried out by the University of Mosul in Humaidat village, which is located about 25km North West of Mosul on the river Tigris. The size of the sample was 310 individuals, 138 males and 172 females, their ages ranging between 6-57 years. The aim of the study was to determine the trends of dental caries and periodontal disease and compare the results with a previous study carried out in the same village.

Clinical examination was carried out in the village school using a portable dental chair and adequate light. Diagnosis of dental caries and assessment of dental treatment needs was performed according to WHO 1997 guidelines, while the gingival health status and periodontal treatment needs of the individuals was performed using the Community Periodontal Index Treatment Needs (CPITN) as recommended by WHO 1987.

Results showed that mean DMFT value for the sample was 5.81 with a statistically significant age difference, although females tended to have higher means than males, there was no significant differences between them, mean DMFT values were much less than a previous study in the same area, the dental treatment needs showed that one surface filling was needed as the highest mean for the total sample , followed by 2 or more surface fillings , extraction and finally pulp care .

The periodontal condition of the individuals was very bad, with the disease being prevalent in 99.7% of the population, which is much more than the previous study, more than three quarter of the sample had calculus as the highest CPITN score, in addition to the presence of a large percentage of individuals having pockets.

The periodontal treatment needs were massive with only 0.3% needing no treatment, health education was required at a range of (97.05-100) %, scaling was needed in 87.7% of the total sample and finally complex treatment needed in 3.88 % of the sample. The village is in need of intensive health educational programmes which may be carried out in the health center of the area or in school settings in order to increase the knowledge about dental disease, helping the individuals adopt positive attitude towards dental health care.

Keywords:

Dental caries, periodontal disease, DMFT, CPITN, treatment need.

Introduction:

Dental caries and periodontal disease are the most wide spread disease of mankind [1,2]. Dental caries is in essence a life style disease at the tooth level manifesting itself as an imbalance between main calcium and phosphate in the enamel and in saliva, mediated by plque microorganisms but influenced by

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fluoride and other factors [3]. Dental caries is a major problem in dentistry and should receive significant attention from restorative and preventive stand point [2].

On the other hand periodontal disease usually begin at childhood as gingivitis and increase in prevalence and severity to the early "teen" years and it may lead to the development of periodontitis which is associated with pocket formation and bone resorption in adult population [4,5].

There is a particular need for reports of dental disease in developing countries where it is specially desirable to measure disease levels over periods of time when dietary and social conditions are likely to change [6].

The investigation was performed partly to compare the results with a previous study performed in the same village 12 year before this study in order to assess the trends of dental caries and periodontal disease.

Materials and methods: -

The study was conducted in a rural area in Humaidat village in Province of Ninevah Governorate. A sample of 310 individuals aged from (6-57) years were examined randomly, clinical examination was carried out in the village school using a portable dental chair and adequate light.

Diagnosis of dental caries and assessment of dental treatment needs was performed using plane mouth mirrors and sickle shaped explorers, according to the WHO oral health survey basic methods 1997 [7], means of decayed, missing and filled teeth (DMFT) were calculated according to the DMFT index [8]. Assessment of the gingival health status and periodontal treatment needs of the individuals was performed using the CPITN as recommended by the WHO 1987 [9], with the use of a special designed light weighted periodontal probe [10].

The statistical analysis included the classification of data, calculation of the mean, standard deviation and frequencies, analysis of variance by Duncan's Multiple Range Test and Chi Square Test were used to determine the significant differences among the age groups, the differences were considered significant when the probability was less than (5%) level ($P<0.05$).

Results:

The sample was comprised of 138 (44.5%) males and 172 (55.5%) females and was divided in to five age groups (table 1).

Table (1): Distribution of the sample by age and gender.

Age years	Gender male	female	Total
6-14	58	34	92
15-24	22	28	50
25-34	16	46	62
35-44	14	32	46
45-54	16	24	40
55 above	12	8	20
Total	138	172	310

Table (2) demonstrates the mean DMFT values and its components ± standard deviation by age and gender, mean DMFT values were increasing with age for both gender with a statistically significant age difference ($P< 0.05$), although mean DMFT values for females were greater than that of males there was no significant

differences in mean DMFT between males and females.

Table (2): Mean DMFT and its components ± Standard deviation

Age years	Gender	DMFT ± (SD)	D ± (SD)	M ± (SD)	F ± (SD)
6-14	Male	2.49(1.45)^{a}	2.45(1.42)^{a}	0.04(0.17)^{a}	zero ^{a}
	Female	2.6(2.16)^{a}	2.6(2.16)^{a}	zero ^{a}	zero ^{a}
Total		2.55(1.98)^{A}	2.54(2.01)^{A}	0.01(0.17)^{A}	zero ^{A}
15-24	Male	4.3(2.16)^{ab}	4.1(2.02)^{a}	0.1(0.31)^{a}	0.1(0.30)^{a}
	Female	5.58(3.35)^{ab}	5.11(3.15)^{ab}	0.41(0.01)^{a}	0.06(0.24)^{a}
Total		4.99(3.35)^{B}	4.67(2.9)^{B}	0.24(0.2)^{A}	0.08(0.21)^{A}
25-34	Male	5.6(1.57)^{ab}	3.9(1.19)^{ab}	1.6(1.07)^{b}	0.1(0.29)^{b}
	Female	6.57(2.58)^{ab}	5.10(2.30)^{ab}	1.32(1.37)^{b}	0.02(0.51)^{a}
Total		6.04(2.11)^{AB}	4.55(2.03)^{AB}	1.44(1.21)^{B}	0.05(0.33)^{A}
35-44	Male	5.11(2.36)^{b}	3.88(2.5)^{ab}	1.11(1.83)^{a}	0.11(0.33)^{a}
	Female	7.78(3.83)^{b}	5.15(2.54)^{B}	2.11(2.66)^{ab}	0.52(0.86)^{a}
Total		6.33(3.71)^{AB}	4.42(2.23)^{AB}	1.52(1.33)^{B}	0.39(0.41)^{A}
45-54	Male	5.88(1.80)^{bc}	4.13(1064)^{b}	1.75(1.38)^{ab}	zero ^{a}
	Female	7.63(4.5)^{bc}	3.43(1.97)^{b}	4.13(4.7)^{b}	0.07(0.25)^{a}
Total		6.62(2.33)^{C}	3.71(1.32)^{AB}	2.90(2.39)^{B}	0.01(0.05)^{A}
55 above	Male	7.66(3.66)^{bc}	4(2.01)^{b}	3.5(2.66)^{b}	0.16(0.41)^{a}
	Female	8.9 (2.55)^{bc}	2.6(1.7)^{c}	6.3(3.6)^{c}	zero ^{a}
Total		8.13(3.11)^{D}	3.23(1.9)^{AB}	4.81(2.15)^{C}	0.09(0.1)^{A}
Total Males		5.13(1.81)$^{(A)}$	3.79(1.23)$^{(A)}$	1.27(1.26)$^{(A)}$	0.07(0.06)$^{(A)}$
Total Female		6.64(2.01)$^{(A)}$	4.05(2.7)$^{(A)}$	2.42(2.3)$^{(A)}$	0.17(0.19)$^{(A)}$
Total Sample		5.81	3.83	1.84	0.13

Means with the same letters are statistically not significant
Small letters compare between males and females will in the same age group (Gender)
Capital letters compare between total age groups (Age)
Capital letters between brackets compare between total males and females in the sample (Gender)
Age F= 6.33 P = 0.022 Sign
Gender F = 1.35 P = 0.271 Not Sign

Tables (3) display the number and mean per individual of dental treatment needs. Majority of the individuals were in need of one surface restoration with a mean of (2.3) per individual for the total sample followed by 2 or more surface restorations (1.03), than the need for extraction (0.32) and finally pulp care (0.21).

Table (3): Number and Mean / individual of dental treatment needs.

Age Years	Gender	*		**		***		****	
		No.	Mean	No.	Mean	No.	Mean	No.	Mean
6-14	Male	122	2.1	20	0.34	Zero	Zero	Zero	Zero
	Female	63	1.86	14	0.41	9	0.26	2	0.06
Total		185	2.01	34	0.37	9	0.2	2	0.02
15-24	Male	68	3.1	13	0.6	9	0.4	Zero	Zero
	Female	107	3.82	18	0.64	5	0.18	13	0.47
Total		175	3.5	31	0.62	14	0.28	13	0.26
25-34	Male	27	1.69	29	1.8	2	0.13	5	0.3
	Female	156	3.4	55	1.2	3	0.07	20	0.43
Total		183	2.95	84	1.35	5	0.08	25	0.4
35-44	Male	26	1.86	22	1.57	3	0.21	3	0.21
	Female	77	2.4	46	1.43	13	0.4	30	0.94
Total		103	2.24	68	1.48	26	0.57	33	0.72
45-54	Male	24	1.5	28	1.75	12	0.75	2	0.13
	Female	34	1.41	22	0.91	5	0.2	22	91
Total		58	1.45	50	1.25	17	0.43	24	0.6
55 above	Male	6	0.5	42	3.5	Zero	Zero	Zero	Zero
	Female	4	0.5	11	1.4	3	0.38	3	0.38
Total		10	0.5	53	2.65	3	0.15	3	0.15
Total Males		273	1.89	154	1.11	26	0.19	10	0.07
Total Females		441	2.56	166	0.97	38	0.22	90	0.5
Total Sample		714	2.3	320	1.03	46	0.21	100	0.32

* = One Surface Filling
** = Two or more Surface Filling
***= Pulp care
****= Extraction

The number and percentage of individuals distributed according to highest CPITN by age and gender is shown in table (4). it can be seen that only 0.3% of the sample had a healthy gingiva, the majority of the sample had calculus as the highest CPITN score, there was a significant age differences in the disease, while no differences between males and females was observed.

Table (4): Number and Percentage of individuals distributed according to highest CPITN by age and gender.

Age Years	Sex	No.	Healthy		Bleeding		Calculus		Pocket 4-5mm		Pocket 4-5mm	
			No.	%	No.	%	No.	%	No.	%	No.	%
6-14	Male	58			6	10.3	52	89.7				
	Female	34	1	2.95	5	14.70	28	82.3				
Total		22	1	1.1	11	12	80	86.9				
15-24	Male	22			2	9.1	18	81.8	2	9.1		
	Female	2.8			5	17.9	22	78.5	1	3.6		
Total		50			7	14	40	80	3	6		
25-34	Male	16			1	6.25	13	81.25	2	12.5		
	Female	46			3	6.5	40	87	3	6.5		
Total		62			4	6.5	53	85.5	5	8		
35-44	Male	14			1	7.1	10	71.6	2	14.2	1	7.1
	Female	32			2	6.25	22	68.75	6	18.75	2	6.25
Total		46			3	6.5	32	69.6	8	17.4	3	6.5
45-54	Male	16					7	43.75	6	37.5	3	18.75
	Female	24					18	75	5	20.8	1	4.16
Total		40					25	62.5	11	27.5	4	10
55 above	Male	12					5	41.7	4	33.3	3	25
	Female	8					5	62.5	1	12.5	2	25
Total		20					10	50	5	25	5	25
Total Males		138			10	7.2	105	6.71	16	11.6	7	501
Total Females		172	1	0.6	15	8.7	135	78.5	16	9.3	5	2.9
Total Sample		310	1	0.3	25	8.1	240	77.5	32	10.3	12	3.9

Age difference
$X^2 = 108.690$
Df = 15
P< 0.05
Sign

Gender difference
$X^2 = 10.344$
Df = 5
p> 0.05
Not Sign

Table (5) displays the periodontal treatment needs of the sample, only one female subject was found with a healthy gingiva in the whole sample, which only represented 0.3% that needed no treatment, oral hygiene education was needed in a range of (97.05-100)% for total sample, while scaling was needed at a range of (75-95.8)% while complex treatment was needed in 3.88 % of the total sample for the treatment of deep pockets (6 mm or deeper).

Table (5): periodontal treatment needs expressed as percentage of individuals distributed according to type of treatment required by age and gender.

Age years	Gender	No.	*		**		***		****	
			No.	%	No.	%	No.	%	No.	%
	Male	58			58	100	52	89.7		
	Female	34	1	2.95	33	97.05	28	82.3		
Total		22	1	1.1	91	98.9	80	86.8		
	Male	22			22	100	20	90.9		
	Female	2.8			28	100	23	82.14		
Total		50			50	100	43	86		
	Male	16			16	100	15	93.75		
	Female	46			46	100	43	93.48		
Total		62			62	100	58	93.5		
	Male	14			14	100	12	85.7	1	7.1
	Female	32			32	100	28	87.5	2	6.25
Total		46			46	100	40	86.96	3	6.3
	Male	16			16	100	13	81.25	3	18.75
	Female	24			24	100	23	25.8	1	4.16
Total		40			40	100	36	90	4	10
	Male	12			12	100	9	75	3	25
	Female	8			8	100	6	79	2	25
Total		20			20	100	15	75	5	25
Total Males		138			138	100	121	87.7	7	5.07
Total Females		172	1	0.6	171	99.4	151	87.8	5	2.9
Total Sample		310	1	0.3	309	99.7	272	87.7	12	3.88

* = No Treatment
** = Oral Hygiene Education
*** = Scaling + Oral Hygiene Education
**** = Complex treatment + Scaling + Oral Hygiene Education

Discussion:

Results of this study have shown that the mean DMFT figure for the youngest age group was (2.55), means began to increase with increasing age for both gender until it became (8.13) for the last age group , this may be attributed to the accumulative nature of the disease this is in agreement with other studies [11,12,13] . These figures are much less than that reported in previous studies in

this and other villages in Ninevah Province in the past [14,15,16,17], but the mean DMFT values of this study especially in the young age groups are comparable with a recent study performed in Kasa Fakhra and Al-Shamsiat villages in Ninevah , were also a decline in mean DMFT values was noticed [18].

This may be attributed to the reason of decrease in sugar availability due to the unfair embargo that was imposed on Iraq since 1990, in addition to that , this difference may be due to the alteration in diet after the embargo that has an important pre-eruptive effect resulting in a change in the caries susceptibility of the teeth [19] .Although females tended to have higher DMFT values, there was no statistically significant difference in mean values between males and females, this is in agreement with other studies [13, 17].

The decayed component formed the major part of the DMFT value (for all age group and total sample, followed by the missing teeth , that increased with advanced age until it became nearly 5 in the last age group) , while the filled component had the lowest mean of the DMFT component , this picture of the distribution of DMFT component is similar to other figures reported in studies in rural areas [14,15,16,17,18] this indicates that therapeutic restorative dentistry is restricted , which may be mostly due to limited dental awareness , in addition to limited utilization of dental services due to their unavailability or limited number of dental clinic in these areas and the cost of treatment .

Results also showed that for the dental treatment needs, one surface filling had the greatest mean for the total sample (but was decreasing with increasing age) followed by 2 or more surface restorations (that was increasing with advancing age) which may be explained due to the accumulative nature of dental caries and its progressiveness if not treated, then extraction and finally the need for pulp care.

Most of dental decay was found in pits and fissures so needed one surface fillings, this is in agreement with other studies in younger ages [18,20,21], therefore the use of pit and fissure sealant remains the newest caries preventive method [22].

The Community Periodontal Index of Treatment Needs was used to assess the periodontal status, this index has been used in many studies as a basic epidemiological tool for assessment of the nature and the magnitude of the need for planning dental services.

It is shown that the percentage of individuals with healthy gingiva was very low, as only 0.3% of the total sample showed it , which means that periodontal disease is 99.7% prevalent , which is much greater than that reported in other studies [14,15,16,17] . His may be due to bad or neglected oral hygiene measures undertaken by the villagers due to limited awareness about the importance of oral hygiene and dental care, also distances of areas of residence from dental health centers , traveling facilities and variation in dental manpower distribution according to their attention [23,24].

More than 77% of the total sample had calculus as the highest CPITN score, this is much more than that reported in other studies [15,17], but it is comparable with the results of other studies [25,26], results also showed that there was a statistically significant age difference of periodontal disease with no differences between males and female,

this is in agreement with other studies [15,26].

The periodontal treatment needs were very high, only 0.3% of the sample needed no treatment, while 99.7% were in need of oral hygiene education, professional scaling was needed in 87.7% of the sample , while complex treatment was needed in 3.88% , these figures are much more than that reported in other studies [15,17] also periodontal treatment needs increased with increasing age , this is in agreement with the results of other studies [7,26,27].

Conclusion:

The findings of this study indicated that mean DMFT values for the total sample was lower than that of previous studies in this and other villages mainly due to decrease sugar consumption, but there was an increase in the prevalence of periodontal disease which may be attributed to the poor oral hygiene measures, unavailability of tooth brushes, tooth paste and other oral hygiene aids because of the difficult conditions that confronted the villagers for more than a decade, they are in need of an efficient dental health care instruction programmes that should be constructed to achieve an acceptable standard of oral hygiene , so dental health educational programmes for this population is an essential activity for promoting their oral health and preventing oral disease , this can be done by taking advantages of the local health centers if available in the area in addition to the schools , because the most efficient way to prevent dental disease is to control them in childhood and young adults so it is especially important to take advantages of these settings when ever possible to reach a large number of individuals and children with well planned preventive measures .

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