

Epidemiological study on prevalence of plaque and gingivitis among adolescents and adult population (15-54) years in Hamam–Allel villages, Ninevah, Iraq

Tarik Y KHAMRICO*

ABSTARCT

The aim of the study was to estimate the prevalence of periodontal disease (gingivitis) and oral hygiene condition among adolescents and adult population (15-54) years in Hamam – Allel villages in Ninevah city:

A sample of (402) individuals aged (15-54) years (10 males and 292 females) were selected randomly and examined using plaque index score by Silness and Loe and gingival index by Loe and Silness . The results revealed that mean plaque score was(1.21) for the total sample , and it was increase with age, the males reported lower mean than females with no significant difference between them . The mean gingival score was low (.54) for the total sample and it was increase with age significantly , the mean gingival score was slightly better in females than males , however , there was no statistically significant differences between them .

The study indicated that about 2/3 of the total sample did not brush their teeth or brush infrequently , So the population can be educated in effective and regular oral hygiene , therefore dental health education orogram for those population is an essential activity for promoting their oral health and preventing oral disease .

Key words: Oral hygiene, dental plaque, gingival health, adolescent, adults, rural area.

الخلاصة

إن الهدف من هذه الدراسة هو لمعرفة انتشار التهاب اللثة ونظافة الاسنان لمجموعة من الأشخاص المراهقين والبالغين تتراوح أعمارهم (١٥-٥٤) سنة في قرى حمام العليل في محافظة نينوى .

* Tarik Yousif KHAMRICO ; BDS, DDPH(RCS), MSc: Prof. Department of Pedodontics, Orthodontics, and Preventive Dentistry, College of Dentistry, University of Mosul, Mosul, IRAQ.

جرت الدراسة على عينة من (٤٠٢) شخص تتراوح أعمارهم بين (١٥-٥٤) سنة (١٠ ذكر و ٢٩٢ أنثى) تم اختيارهم عشوائياً ، تم فحصهم باستعمال دليل اللويحات الجرثومية ودليل التهاب اللثة . أظهرت النتائج بان معدل اللويحات الجرثومية كان (١ و ٢١) لمجموع العينة وكان المعدل يزداد مع زيادة العمر ، وان المعدل كان عند الذكور اقل من الإناث ولكن بدون دلالة إحصائية .

أما معدل التهاب اللثة فقد كان قليلاً (٠,٥٤) لمجموعة العينة وكذلك ازداد مع زيادة العمر بدلالة إحصائية ، أما المعدل للإناث فقد كان افضل قليلاً من الذكور ولكن بدون دلالة إحصائية .

تبين من الدراسة بان ثلثي مجموع العينة لا ينظفون أسنانهم أو ينظفونها أحياناً ، ولهذا فان العينة تحتاج إلى تنظيف أسنانهم بصورة فعالة ومنتظمة وافضل طريقة من خلال التنقيف الصحي الفموي وذلك لتحسين صحة الفم والوقاية من أمراض الفم والأسنان .

INTRODUCTION

Better epidemiologic data are needed for the implementation programs of control and prevention of periodontal disease.

Many studies performed in different developed countries show reduction in periodontal disease due to the implementation of preventive control programs. (1-4)

As periodontal disease is one of the most wide spread dental disease all over the world (5,6), and more prevalent among population of the developing countries (7,8), particularly in rural areas (9,10).

So the objective of this study was to estimate the prevalence of periodontal disease (gingivitis) and oral hygiene condition among adolescents and adult population (15-54) years in Hamam –Allel villages.

MATERIALS AND METHODS

The study is conducted in Hamam-Allel (Rural area): It is (25) Km far from central city of Mosul.

Four hundred and two individual aged (15-54) years were selected randomly using random cluster sampling technique in which the village divided into (6) zones and selected (3) zones randomly and examined all individuals aged (15-54) years in these zone.

The clinical examination is carried out in their houses under natural daylight. Mouth mirror and WHO periodontal probe was used (5) to detect the dental plaque and gingival health.

The indices used for assessment of dental condition were as follow:

- 1-Plaque index by Silness and Loe⁽¹¹⁾: To evaluate the oral hygiene of the individuals.
- 2-Gingival index by Loe and Silness⁽¹²⁾: To evaluate the gingival health of the individuals.

Additional information relevant to this study was recorded as age, sex, tooth brushing frequency.

The statistical analysis of the data included: -

- 1- Calculation of statistical parameters: the mean, standard deviation and percentage.
- 2- The differences in plaque score and gingival health between age groups and between males and females were tested statistically using student t-test.
- 3- The differences were considered significant when the probability (p) was less than 5% level ($p < 0.05$).

RESULTS

There were (402) individuals comprising [110 (27.3%) males and 292 (72.6%) females], the population sample are divided into four groups (table 1).

Table (1): The number of individuals distributed according to sex and age groups

Age group	Males	Female	Total
15 - 24	58	126	184
25 - 34	20	80	100
35 - 44	17	47	64
45 - 54	15	39	54
Total	110	292	402

The number of subjects according to frequency of tooth brushing by sex and age group is shown in table (2). The study indicated that about 75% of males and 63.9% of females no brush their teeth or brush infrequently. The females reported more frequently brush the teeth than males, also the younger age group reported more frequently than the older age groups.

Table (2): Frequency distribution of subject according to tooth brushing by sex and age groups

Age Group	Males				Females			
	Never	Infrequent	Once	Twice or More	Never	Infrequent	Once	Twice or More
15-24	22	21	10	5	28	40	43	15
25-34	8	7	4	1	26	29	16	9
35-44	7	6	3	1	20	14	11	2
45-55	7	5	3	--	24	8	6	1
Total	44	39	20	7	98	91	76	27
%	40	35.5	18.2	6.3	33.5	31.2	26	9.3

Mean plaque index scores are shown in-table (3) according to sex and age group. The study revealed that the mean plaque is increase with age. The mean plaque for the total males reported lower mean than females with no significant difference between them.

Table (3): The mean and standard deviation of plaque index according to sex and age group

Age group	Males	Females	Total
15-24	1.01 ± 0.412*	1.15 ± 0.432	1.11 ± 0.427
25-34	1.17 ± 0.430	1.22 ± 0.428	1.21 ± 0.428
35-44	1.48 ± 0.483	1.34 ± 0.455	1.38 ± 0.464**
45-54	1.35 ± 0.476	1.41 ± 0.436	1.39 ± 0.450**
Total	1.15 ± 0.466	1.23 ± 0.437	1.21 ± 0.440

*Significant difference between males and females for age groups (15-24)

** Significant difference between age groups (35-44,45-54) and other groups .

Table (4) shows the mean gingival score according to sex and age groups. Although the mean of gingival index increase with age .The age group (15-24) years reported the lower mean and it was significant difference from age group (25-34 and 45-54), while the age group (45-54) years reported the higher score and it was significant difference from age groups (15-24 and 35-44) years .The mean gingival index was very slightly less in females than males in the total sample .The study reveal that (63) person has healthy gingiva (score = 0), and (16) person are free from dental

plaque (score = 0) from the total sample , while only (12) person had both healthy gingiva and free from dental plaque .

Table (4): The mean and standard deviation of gingival index according to sex and age groups

Age Group	Males	Females	Total
15- 24	0.54 ± 0.382	0.45 ± 0.321	0.48 ± 0.344
25- 34	0.55 ± 0.320	0.59 ± 0.353	0.58 ± 0.341
35- 44	0.48 ± 0.402	0.56 ± 0.384	0.54 ± 0.392
45-54	0.76 ± 0.426	0.68 ± 0.461	0.70 ± 0.448
Total	0.56 ± 0.391	0.53 ± 0.362	0.54 ± 0.371

*Significant difference at 0.05 level ($p < 0.05$) between age group (15-24) years and (25-34), (45-55) years.

* Significant difference at 0.05 level ($p < 0.05$) between age group (45-55) years and (15-24), (35-44) years.

DISCUSSION

Inflammatory periodontal disease is a dental plaque – induced disease^(13,14), when periodontal disease is limited to the surface tissues (gingiva), it is referred to as gingivitis. Gingivitis can usually be reversed with primary preventive measures including mechanical and chemical plaque control, mechanical by thoroughly and regularly tooth brushing with using of other dental aids^(15,16,17).

In spite of (32.3%) of the total sample brush their teeth once or more daily and (32.3%) brush their teeth infrequently .The results of the present study have demonstrated that the healthy gingiva is found only in (63) person (15.6%) for the total sample and (16) person (4%) are free from dental plaque. While only (12) person (3%) have healthy gingiva and free from dental plaque. This indicated that their method of tooth brushing is ineffective to remove their dental plaque and maintain healthy gingiva.

The tooth brushing habit of the sample indicated that more than two thirds of them didn't brush their teeth or brush infrequently. The percentage of subject brushes their teeth is slightly less than other studies carried out in Iraq^(18,19) and highly differences than many studies carried out in developed countries^(20,21).

The study revealed that the total females (35.3%) reported higher frequency brushes their teeth once or more daily than males (24.5%),

specially in younger age groups. These differences between females and males was not significant and it was in agreement with other studies ^(22,23,24)

The mean plaque score for the total sample was moderate (1.21), and it was increase with age and there was a significant difference between the younger age groups (15-24 and 25-34) years and older age group (35-44 and 45-54) years, this findings seem to be well in accordance with other studies ^(19,25,26)

The females reported slightly higher mean plaque score than males; however, there was no statistically significant difference of oral hygiene condition by sex in all age groups and the total sample except for the younger age group (15-24) years. This finding is in agreement with other studies ^(19,27)

The mean gingival score was low (54) for the total sample and it was increase slightly but significant from age group (15-24) years to (25-34) year and then increase for age group (45-54) and it was significantly differ from age group (15-24 and 35-44) years.

Also the study shows no significant sex variation in relation to gingival health. This confirms the finding of other studies carried out in Iraq ^(19,28,29)

The study indicated that the younger age group have healthy gingival and less dental plaque than older age group, although more frequency of tooth brushing because in adolescent tooth brushing is an integral part of personal hygiene and grooming behaviour and it is health related (brushing teeth to be more attractive) ⁽³⁰⁾

The study revealed that (2/3) of samples stated that they brush their teeth. Nevertheless, while effective plaque control is essential to maintain gingival health over (80%) of the sample have gingivitis. This suggests that people's ability to control plaque effectively is impaired and there is a need to improve the effectiveness of tooth brushing. It has been shown that gingival inflammation can be prevented with adequate oral hygiene ⁽³¹⁾. The population can be educated in effective and regular oral hygiene one could expect an improvement in their oral health. Therefore an efficient dental health care instruction program should be constructed to achieve an acceptable standard of oral hygiene. So dental health education program for those populations is an essential activity for promoting their oral health and preventing oral diseases.

Therefore, the most efficient way to prevent periodontal disease is to control them in childhood and in young adult life. It is especially important to take advantage of the school setting program for it is possible to reach large number of school children with well planned preventive measures.

REFERENCES

- 1-Sheiham A. The epidemiology of dental caries and periodonal disease. *J Clin Periodontol.* 1979; 6: 7- 15.
- 2-Anerud A, Løe H, Boysen H, Smith M. The natural history of periodontal disease in man. Changes in gingival health and oral hygiene before 40 years of age. *J Periodont Res.* 1979; 14: 526-540.
- 3-Soada – Infirri J, Barmes DE. Epidemiology of oral disease differences in national problems. *Int Dent J.* 1979; 29: 183- 190.
- 4-Axelsson P, Lindhe J. Effect of controlled oral hygiene procedures on caries and periodontal disease in adults. *J Clin Periodontol.* 1981; 8: 239-248.
- 5-World Health Organization. Epidemiology, etiology and prevention of periodontal disease. Report of a WHO scientific group. Geneva, WHO 1978 (WHO Technical Report Series, No. 621).
- 6-Miyazaki H, Pilot T, Ledercq M, Barmes DE. Periodontal profiles: An overview of CPITN date in the WHO Global Oral Data Bank for the age group 15-19 years, 35 – 44 years and 65–74 years. Geneva, WHO. 1992.
- 7-Rahimah AK. Profile of periodontal conditions in selected west Malaysian adults. *Singapore Dent J.* 1994; 19: 4-7.
- 8-Peterson P, Razanamihaga N. Oral health status of children and adults in Madagascar. *Int Dent J.* 1996, 46: 41 – 47.
- 9-Manji F, Baelum V, Fejerskov O. Tooth mortality in an adult rural population in Kenya. *J Dent Res.* 1988; 67: 496-500.
- 10-Baelum V, Manji F, Fejerskov O, Wanzala P. Validity of CPITN's assumptions of hierochical occurrence of periodontal conditions in a Kenyan population aged 15- 65 years. *Community Dent Oral Epidemiol.* 1993; 21: 347- 353.
- 11-Silness J, Løe H. Periodontal disease in pregnancy II: correlation between oral hygiene and periodontal condition. *Acta Odontol Scand* 1964; 22: 121-135 .
- 12-Løe H, Silness J. Periodontal disease in pregnancy prevalence and severity. *Acta Odontol Scand.* 1963; 21: 533-551.
- 13-Loesche WJ, Syed SA, Schmidt EF, *et al.* Bacterial profiles of subgingival plaques in periodontitis. *J Peridont.* 1985; 56: 447- 456.
- 14-Socransky SS, Haffajee AD. The bacterial etiology of destructive periodontal disease. *J Periodont.* 1992; 63: 322- 331.
- 15-Woodull IR, Dafoe BR, Young NS, *et al.* Comprehensive Dental Hygiene Care. 3rd Edn. St Louis. Mosby. 1989.
- 16-Graves RC, Disney JA, Stamm A. Comparative effectiveness of flossing and brushing in reducing inter proximal bleeding. *J Periodont.* 1989; 60: 243- 247.

- 17- Garranza FA. Glickman's Clinical Periodontology. 7th Edn. Philadelphia. WB Saunders. 1990.
- ١٨- خمركو، طارق يوسف؛ مكاني، ليلي عزيز. حالة صحة الفم والأسنان في قريتي السادة وبعويزة. مجلة طب الاسنان العراقية. ١٩٩٧؛ ٢٠: ٣-٢٣.
- 19-Makani LA. Oral hygiene and gingival health among adolescents and adult population (15-44) years in Sharkhan village, Ninevah, Iraq. *Al-Rafidain Dent J.* 2001; 1: 1-7.
- 20-Honkala E, Freeman R. Oral hygiene behavior and periodontal status in European adolescents an overview. *Community Dent Oral Epidemiol.* 1988; 16(4): 194-198.
- 21-Honkala E, Kannas L, Rise J. Oral health habits of school children in 11 European countries. *Int Dent J.* 1990; 40(4): 211-217.
- 22-Honkaja E. Oral health promotion with children and adolescents. In: Shou L, Blinkhorn A (Eds). Oral Health Promotion. Oxford University Press. 1993; Pp: 669-687.
- 23- Chen M, Andersen R, Barmes M, *et al.* Comparing oral health care system. A second international collaborative study. World Health Organization. Geneva. 1997.
- 24- Makani LA. Evaluation of trials of dental health education in improving gingival health. MSc thesis submitted to the College of Dentistry. University of Mosul. 1998.
- 25-Athanassouli T, Koletsi KH, Mami H, Panagopulous H. Oral health status of population in Athens, Greece. *Community Dent Oral Epidemiol.* 1990; 18(2): 82-84.
- ٢٦- الشيخ عبدال، عبد الخالق؛ خمركو، طارق يوسف. حالة صحة الفم والأسنان في قرية شريخان. مجلة كلية طب الاسنان. ٢٠٠٠؛ ٦: ١٥٠ - ١٥٦.
- ٢٧- خمركو، طارق يوسف. دراسة مقارنة صحة الفم والأسنان بين طلاب المدارس في المدينة والريف في محافظة نينوى، العراق. مجلة الراقدين لطب الأسنان. ٢٠٠١؛ ٧: ١-١٥.
- 28-Khamrco TY, Salman K. Dental health status among 4th -8th school children in the center of the Mosul - Iraq. *Iraqi Dent J.* 1998; 23: 77-88.
- ٢٩- خمركو، طارق يوسف؛ مكاني، ليلي عزيز. حالة صحة الفم والأسنان والاحتياجات لعلاجية لمواطني قرية يارمجة، نينوى/العراق. مجلة الراقدين لطب الاسنان. ٢٠٠١؛ ٢: ١٦-٣٠.
- 30- Sheiham A, Croucher R. Current perspective on improving chairside dental health education for adults. *Int Dent J.* 1994; 44: 202- 206.
- 31-Löe H, Theilade E, Jensen S. Experimental gingivitis in man. *J Periodont.* 1965; 36: 177-187.