Assessment of Periodontal Status among Premenopausal and Postmenopausal Women in Mosul City

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الخلاصة

لزيادة معرفة عوامل صحة الفم المتعلقة بسن اليأس للنساء . يفحص هذا البحث صحة الفم بأستخدام مؤشرات (مؤشر الأسنان المتسوسة والمفقودة والمعالجة، مؤشر التهاب اللثة، مؤشر التكلسات والترسبات وعمق الجيب) والمؤشرات الفيزياوية (نسبة الجريان ودرجة الحامضية للعاب) للأشارة بالتغيرات التي تحدث للنساء عقب سن اليأس في مركز مدينة الموصل و مقارنتها بالفترة قبل سن اليأس.

تضم العينة ١٢٣ أمرأة (٤٧ قبل سن اليأس و ٧٦ بعد سن اليأس) للأعمار بين ٣٠ و ٦١ سنة. يضم الفحص السريري قياس مؤشر الأسنان المتسوسة والمفقودة والمعالجة، مؤشر التهاب اللثة، مؤشر التكلسات والترسبات وعمق الجيب والمؤشرات الفيزياوية (نسبة الجريان ودرجة الحامضية للعاب) لكل أمرأة.

كان هناك تغيرات معنوية في   بعض المؤشرات السريرية والفيزياوية عند   المقارنة

بالأعمار ٤٦ – ٦١ سنة عند درجة (0.05 $>p$) وعالي المعنوية عند (0.001 $>p$).

يجب اعتبار صحة الفم للنساء قبل و عقب سن اليأس مشاكل منعزلة عن امراض الفم .

حيث تتغير الصورة السريرية من كونها موضعية الى التهاب عام يؤخذ بعين الأهتمام من قبل

اخصائي الفسيولوجي والغدد الصم لما له قيمة لدى أطباء الأسنان.

ABSTRACT

To increase the understanding of oral health factors associated with menopause women, this research sought to examine the oral hygiene including clinical parameters (DMFT, gingival, calculus, plaque and pocket depth indices) and physical parameters (flow rate and pH) to show changes in postmenopausal women in Mosul City center in relation to premenopausal women.

The sample chosen included 123 women 47 premenopausal and 76 postmenopausal women in age range from 30 – 61 years old. Clinical examination was carried out to detected DMFT, gingival, calculus, plaque and pocket depth indices, also measures physical parameters about flow rate and pH of saliva for each women.

There was significant changes in the clinical and physical parameters when compared with age 46 – 61 years old, at $p < 0.05$ and highly significant at $p < 0.001$.

Oral health in pre and post menopausal women should be considered as a separate problem from oral diseases. The clinical picture may vary from a localized to generalized inflammation would be of interest to physiologists and endocrinologists and might also prove to be value to the practicing dentists.

Key Words: Oral health, premenopausal and postmenopausal women.

INTRODUCTION

Females through certain stages in their reproductive life cycle, undergo alterations and fluctuating levels arise in the level of sex (steroid) hormones circulating in their blood stream, especially variation in the level of progesterone and estrogen in women may have direct and indirect effects on oral health in form of inflammation, gingivitis, periodontitis and altered microorganism.[1,2]

Sex hormones affect females starting from puberty, peaking in pregnancy and persisting up to and even after menopause. During these periods of fluctuating hormone levels, many medical and dental problems may arise.[1,3]

Sex hormones may alter the female's periodontium. As in progesterone level may change vascular permeability and then result in

gingival swelling and inflammation and reduce resistance to dental plaque (i.e. bacteria). While change in estrogen hormone level can cause alteration in immunfunction and changes in estrogen hormone level. This can cause alteration in immunfuction and changes in flora ecology of the mouth. [1-4]

The most common oral manifestations of menopause are oral discomfort that has been described as pain, burning, dryness and a bad taste in the mouth. Women's health has become an international focus, because oral health is an integral part of general health. [2,5,6]

MATERIALS AND METHODS

Total 123 females were included in this study, females were divided into two groups.

❖ **Group I:** Premenopausal period. Forty seven females, with age 30 – 45 years old.

❖ **Group II:** Postmenopausal period. Seventy six females, with age 46 – 61 years old.

All were selected randomly from periodontal clinic in College of Dentistry, University of Mosul and some other private clinics.

The clinical examination was carried out in a conventional dental chair by using sterile dental mirrors and WHO periodontal probes were used to detect dental plaque, gingival health and pocket depth.

The indices used for assessment of oral health the DMFT index to evaluate decayed, missing and filling teeth, while gingival index to evaluate the gingival health, calculus, plaque and pocket depth to assess of calculus, plaque deposition according to Silness and Löe, Löe and Silness and Ramfjord.[7-9] While the examination of pocket depth was assessed by using community periodontal index of treatment need CPITN. [10]

For flow rate and pH salivary sample was carried out 2 hours after breakfast apiece paraffin was chewed for 2 minutes, and the saliva was collected, immediately after that, then measured flow rate by using graduate tubes while pH by using electronic pH meter (Philips) British; PW (9420), by putting electrode of pH meter inside the tube which contain at least (3) ml of saliva; using distilled water and standard solution (1994).

RESULTS

To minimize the effect of individual variation, diurnal effect and other general factors, the method of sample collection, the time of their collection and the posture of the women were standardized as possible to be the same for all subjects.

Statistical analyses of data were carried out using mean ± standard deviation (SD), p – value, t – test and coefficient of variability (CV%)

between two age groups; 30 – 45 years old (premenopausal period) and 46 – 61 years old (postmenopausal period).

For DMFT, gingival index found a significant difference $p<0.05$ between two groups as shown in Tables and (1 and 2).

While for calculus index, plaque index, pocket depth, flow rate and pH found a highly significant difference $p< 0.001$ between two groups as shown in Tables (3, 4, 5, 6 and 7).

In Figure (1) found there is a positive relationship between indices and age, that's mean DMFT, gingival, calculus, plaque indices and pocket depth increase with age.

While in Figure (2) found there is a negative relationship between physical parameters and age, that's mean flow rate and pH decrease with age.

DISCUSSION

Premenopausal and postmenopausal involve complex changes, every system is altered to some degree including saliva and oral cavity health. [11]

Pre and postmenopausal is a physiological process associated with many functional and compositional alterations in almost all systems of the body to varying extents. It is a state of physiological stress which is accompanied by profound hormonal, biochemical and metabolic changes.[3,5,11,12]

The bad oral health status according to clinical parameters in postmenopausal women can be explained on the basis of the hormonal changes and decreased immunity and immunoglobulins especially IgA. Thus the less immunity lead to higher dental caries, missing teeth, gingival inflammation, calculus and plaque deposition also increase pocket depth.[3-6]

The physiological changes in concentrations of sex hormones influences the periodontal status from anatomical, histological and metabolic functions which lead to marked increase in dental caries and periodontal inflammation.[1,12,13]

For physical parameters, the reduction in flow rate during postmenopausal period due to sex hormones especially HCG which lead to reduction in a more acidic pH also is related to the effect of progesterone hormone which lead to decrease plasma biocarbonate level during postmenopausal period which increase the susceptibility to oral diseases.[11,12, 14-17]

The variety of physiological changes occurring during premenopausal and postmenopausal periods influence salivary secretion and composition and oral health. Since, the oral cavity and its contained structures are important parts that serve as indicators for the general health status of the body. The oral health is a very important public health problem during pre- and post menopausal widespread an endemic in most population.[13,18]

CONCLUSIONS

Oral health in pre- and post- menopausal women should be considered as a separate problem from oral diseases. The clinical picture may vary from a localized to generalized inflammation. It will be of interest to physiologists and endocrinologists and may also prove to be a value to the practicing dentists and obstetricians.

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Table (1): Mean ± SD , t- test and P – value of DMFT index of two groups

Age	No.	$\overline{X}$ ± SD	t - test	P - value
30 – 45	47	4.81 ± 1.31		0.05
46 – 61	76	9.33 ± 2.21	2.68	S
Total	123	14.41 ± 3.52		

$\overline{X}$: mean.

SD = standard deviation

S = Significantly

Table (2): Mean ± SD , t- test and P – value of gingival index of two groups

Age	No.	$\overline{X}$ ± SD	t - test	P - value
30 – 45	47	1.85 ± 0.32	2.85	0.05
46 – 61	76	4.29 ± 0.39		S
Total	123	6.14 ± 0.71		

$\overline{X}$: mean.

SD = standard deviation

S = Significantly

Table (3): Mean ± SD , t- test and P – value of calculus index of two groups

Age	No.	$\overline{X}$ ± SD	t - test	P - value
30 – 45	47	2.43 ± 0.73	6.62	0.01
46 – 61	76	5.21 ± 0.82		H.S
Total	123	7.64 ± 1.55		

$\overline{X}$: mean.

SD = standard deviation

H.S = Highly Significant

Table (4): Mean ± SD , t- test and P – value of plaque index of two groups

Age	No.	$\overline{X}$ ± SD	t - test	P - value
30 – 45	47	2.01 ± 0.20	6.78	0.001
46 – 61	76	4.82 ± 0.31		H.S
Total	123	6.82 ± 0.51		

$\overline{X}$: mean.

SD = standard deviation

H.S = Highly Significant

Table (5): Mean ± SD , t- test and P – value of pocket depth of two groups

Age	No.	$\overline{X}$ ± SD	t - test	P - value
30 – 45	47	3.21 ± 0.12	7.82	0.05
46 – 61	76	6.35 ± 0.24		S
Total	123	9.56 ± 0.36		

$\overline{X}$: mean.

SD = standard deviation

S = Significantly

Table (6): Mean ± SD , t- test and P – value of flow rate and pH (physical parameters) of two groups

Age	No.	$\overline{X} \pm SD$	t - test	P - value
30 – 45	**47**	0.58 ± 0.22	7.01	0.001
46 – 61	**76**	0.25 ± 0.07		H.S
Total	**123**	0.83 ± 0.29		

$\overline{X}$: mean.
SD = standard deviation
H.S = Highly Significant

Table (7): Mean ± SD , t- test and P – value of pH parameters of two groups

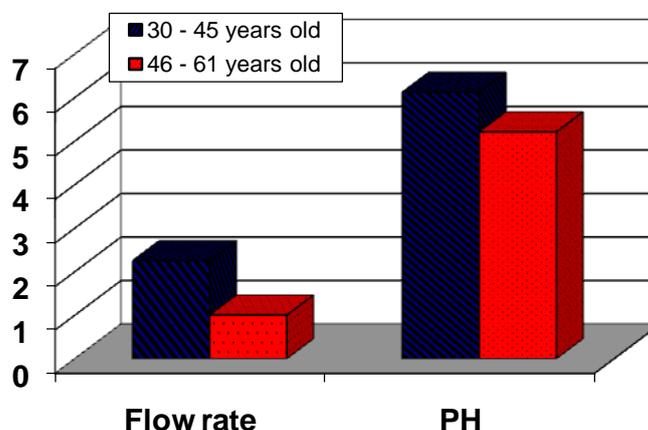| Age	No.	$\overline{X} \pm SD$	t - test	P - value
30 – 45	**47**	6.12 ± 0.35	6.92	0.001
46 – 61	**76**	5.21 ± 0.23		H.S
Total	**123**	11.33 ± 0.58		

$\overline{X}$: mean.
SD = standard deviation
H.S = Highly Significant
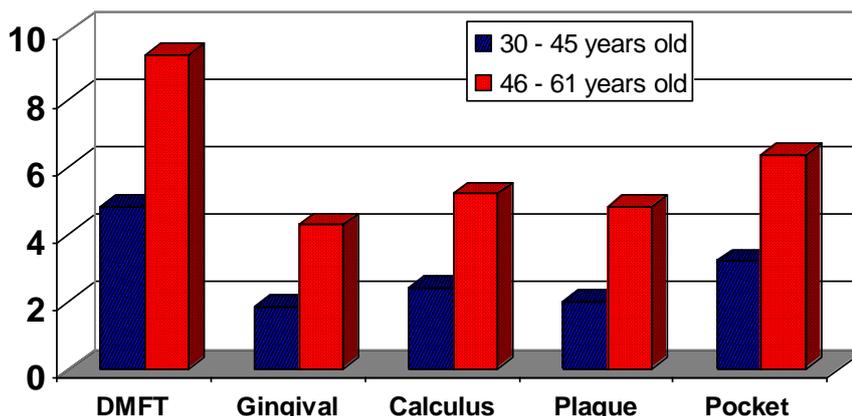
Figure (1): Distribution of DMFT, gingival, calculus, plaque indices and pocket depth. Mean values in two age groups.

Figure (2): Distribution of physical parameters. Mean values in two age groups.