# Correlation between life style and gingival health in adult patients in Erbil city-Iraq

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## Abstract

ABSTRACT Back ground and Objective: Gingivitis conceder as one of the most common, gum diseases. lifestyle choices can related to gingivitis such as diet, oral hygiene practices, regular dental visits and smoking . The objective of this study was to determine the relationship between life style and gingivitis of adult population in Erbil city. Methods: effect of life style on gingival health was determined for 360 patients age between 20-70years of both genders, visiting Erbil medical centers. Clinical examination of the gingival health was performed by reporting plaque, gingival indices by periodontal prob. Lifestyle was detected by questions about dietary habits, smoking habits, and physical activity ,frequency of tooth brushing were also recorded . Results: Demonstrated that ; the highest mean for plaque(.857) ,gingival (.942) scores were increased with increasing vegetable taking per week with statistical significant differences for plaque score (P-value =0.000) and gingival score (P-value =0.000) while mean plaque(.563 )score gingival(.663) score were decrease with increasing fruit taking per week with statistical significant differences for plaque (P-value =0.000) and gingival score (P-value =0.000) . higher means of plaque(1.145) and gingival(1. 000) scores were reported among individuals who were take 0-1 times per week of egg and butter with statistical highly significant differences between all for plaque and gingival indices (P-value =0.000) . The highest mean of plaque (1.109), gingival (1.04) scores were seen related to 0-1 time per week of meat taking with highly statistical significant difference between groups (P-value =0.000). The highest mean of plaque (.745) were reported among non smoker groups with statistically no significant difference (P-value =0.149) and gingival (.790) scores, were seen related to heavy smoker groups with significant differences between both groups. (P-value =0.041). The lowest mean of plaque (.630) and gingival (.629) scores were among persons who performing daily exercise with statistical significant differences (P-value =0.069) (P-value =0.049) for plaque and gingival indices respectively. The lowest mean of plaque (.518) and gingival (.588) scores were reported among individuals with regular daily tooth brushing with statistical significant differences (P-value =0.011) for plaque index and highly significant differences for gingival index (P-value =0.001). Conclusions: There was a positive correlation between life style and gingival health.

## Keywords

**POLYTECHNIC**
**JOURNAL**

# correlation between life style and gingival health in adult patients in Erbilcity-Iraq

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## ABSTRACT

**Background and objective**: Several factors may affect gingival and oral health these factors may include smoking, diet, physical activities and oral hygiene The purpose of present study was to determine the correlation between gingival health and lifestyle among adult individuals in the city of Erbil.

**Method:** The correlation between lifestyle and gum health were determined in 378 patients, their ages were ≥18 and both genders who attended medical centers in Erbil. The individuals interviewed by researcher using a researcher-designed questionnaire. The medical examinations were included: plaque index (Silness J & Löe, 1964) gingival index (Löe H & Silness, 1963) examinations of teeth were selected by (Ramfjord SP, 1959) were used.

**Results: T**hat has been proven; the highest mean value for plaque (PLI)(0.867), gingival scores(GI) (0.942) increased by increasing consumption of vegetables per day with statistically significant differences (p value = 0.000). Mean plaque (0.573) gingival score (0.673) increased with the increasing fruit consumption per day with statistically significant differences for both scores (P value = 0.000). Mean plaque (1.155) and gingival (1.010) The indices were higher in subjects ingested eggs and butter once a day, with statistically highly significant differences (p-value = 0.000). Also mean plaque (1.119), gingival scores (1.14) observed more among meat consumption once a week with a statistically highly significant difference (p-value = 0.000). mean plaque value (0.755) observed higher in the non-smoking groups without statistically significant differences (p- value = 0.149) and gingival scores (0.860), among the heavy smokers groups (p value = 0.041). Mean plaque (0.640) and gingiva (0.639) index were low in subjects whom perform daily exercise (p- value = 0.069) (p- value = 0.049) for plaque score and gingival score. Mean plaque (0.528) and gingival (0.598) indices were low in people whom performing their daily tooth brushing with statistical significant difference (P value = 0.011) plaque score and statistical highly significant difference (P value = 0.001) for gingival score.

**Conclusions**: There was a positive correlation between lifestyle and gingival health

**Key words:** Gingival health, smoking, lifestyle, exercise and diet

## INTRODUCTION
### Background

Periodontitis is characterized by microbial-associated, host mediated inflammation that results in loss of periodontal attachment. (Maurizio S T etal , 2018) . Periodontal and disease of the gums, with their inflammatory process, steadily spread, and increase by way of the presence of dental plaque and tartar. (Corbet E, 2007).Marginal gingival Inflammation is not unusual circumstance the volume and severity can be variable. Gingival inflammation that produce by plaque may be changed by means of systemic and local affects. gingivitis can be reversed if oral hygiene are delivered. (Martha E. Nunn,2000,2003). Numerous research has been determined periodontal diseases and the effect of plaque as etiological factor. (Albander JM,2000,2002), ( Löe H,2000). The most broadly danger thing is dental plaque that accumulate on the enamel due to the lack of oral hygiene. (LöeH,2000), (Pihlstrom BL,2005).

Lifestyles commonly manner; man or woman practices and private behavioral selections which are related to increased or reduced oral health. (Tolsma D,2009). Dental health behavior has been related to well known fitness behavior, gender, schooling, smoking, alcohol consumption, profits, nutritional habits, physical and social activity, and behavior of parents. (Tada A, Matsukubo T,2003), ( Banoczy J etal,2001). Periodontitis consequences from an unbalanced immune reaction of the host in opposition to plaque biofilm. Periodontal pathogenic microorganism secret metabolites and enzymes that worsen tissue harm and, on the same time, leukocytes and fibroblasts produce numerous anti-inflammatory mediators, together with cytokines, prostaglandins, reactive oxidative

species (ROS), protolithic enzymes and metalloproteinase (O'Keefe JH etal,2008). Previous researches have related dental health with tobacco smoking, alcohol consumption, and physical activities. The buildup of plaque and calculus, related to bad oral hygiene, is one of the factors in the improvement of periodontal disease, there has been evidence of a dose-reaction courting between dental hygiene and periodontal health in several disputes. As a result, both good and bad dental hygiene significantly increase the risk of periodontitis. when compared to proper oral hygiene (Lertpimonchai A,etal ,2017).

Wrong brushing techniques, failure to use interdentally and abnormal dental visits will lead to plaque accumulation. in a different study, regular brushing was discovered to have a protective effect on oral health, with rare enamel brushing significantly increasing the risk of periodontal inflammation. (Zimmermann H etal,2013) Vegetables and fruits are major sources of nutrients and have antioxidants, which have a effects on periodontal health. Researches detected that a healthy and balanced diet has positive effects on periodontal health. (Simona S etal,2021)Oral health is always associated with popular fitness and numerous studies inside the beyond have clarified an association between socioeconomic factors and oral health. (Jorgensen EB,2000)

Study objectives: is to established relationship between plaque and gingival rates in lifestyle choices. to a person in the city of Erbil.

## METHODS AND MATERIALS

The total sample were consisted of 378 individuals their ages were ≥18 and whom in search of dental treatment who attended the only four medical centers of the Ministry of Health, which are represented in of the city of Erbil in different regions.

Individuals interviewed by researcher using a researcher-designed questionnaire The interviewer involved the following variables:

Inhalation of smoke related products. (smokers were categorized as smokers (smoked ≥ 10 cigarettes per day) and non-smokers (Riordan M., Arizona, 2008)

Physical activity Substances in this study were defined as whether to exercise (walking, swimming, jogging, cycling) (Qian, J. Cai et al., 2010)

Sport includes an activity normal physical activity or skill performed according to agreed rules and for recreational purposes: for competition, for personal gain, excellence in skill development or a combination thereof (Ibrahim H Mustafa, et al, 2011)

The nutritional status of the patient was indicated based on

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servings meat taking per week and dairy milk products. (butter and yogurt), eggs, vegetables and fruits (WordiQ, 2010).

The medical examinations were included plaque index (Silness J & Löe, 1964) gingival index (Löe H & Silness, 1963) examinations of teeth were selected by (Ramfjord SP, 1959) were used Patients with fewer than 20 teeth were excluded from the study.

**Statistical analysis**: Data management and statistical analysis: Data will be recorded on a specially designed questions, collected and entered in the computer and then analyzed using appropriate data system which is called statistical package for social science (SPSS) (ANOVA and two independent samples t-test) version 22 and the result will be compared between groups with different variables with statistical significance level of < 0.05.

**Procedures:**

The correlation between lifestyle and gum health were determined in 378patients there ages were ≥18 and both genders who attended medical centers in Erbil. All participants were sub divided into three categories for (vegitable,fruit,meat and eggs and butter) while for ( smoking, exercise and tooth brushing) they were subdivided into two groups. All participants were under go plaque and gingival examination each group hold 21

individual evenly detached. Table (1): shows descriptive statistics for all parameters containing means, standard deviation, standard error, minimum & maximum values. In more detailed comparative (table 2), a t-test for paired samples for the study parameters when consuming vegetables at a day indicated that the differences in PLI and GI were very significant between sub groups.

**Table (1): parameters descriptive Statistics in all study categories**

|  | Indices | subgroups | No | Mean | Min | Max | SD | SE |
|---|---|---|---|---|---|---|---|---|
| Vegetable /day | PLI | 1-3 | 21 | .762 | 0 | 3 | .764 | .159 |
|  |  | 3-6 | 21 | .710 | 0 | 2 | .616 | .125 |
|  |  | ≥6 | 21 | .867 | 0 | 2 | .707 | .146 |
|  | GI | 1-3 | 21 | .827 | 0 | 2 | .649 | .133 |
|  |  | 3-6 | 21 | .942 | 0 | 2 | .751 | .155 |
|  |  | ≥6 | 21 | .847 | 0 | 2 | .766 | .159 |
| Fruit/day | PLI | 1-3 | 21 | .867 | 0 | 3 | .831 | .174 |
|  |  | 3-6 | 21 | .587 | 0 | 1 | .514 | .103 |
|  |  | ≥6 | 21 | .573 | 0 | 2 | .689 | .142 |
|  | GI | 1-3 | 21 | .823 | 0 | 2 | .687 | .141 |
|  |  | 3-6 | 21 | .733 | 0 | 2 | .677 | .139 |
|  |  | ≥6 | 21 | .673 | 0 | 2 | .677 | .139 |
| Egg&butter /day | PLI | 0-1 | 21 | 1.155 | 0 | 3 | .799 | .166 |
|  |  | 1-2 | 21 | .872 | 0 | 2 | .660 | .135 |
|  |  | 2-3 | 21 | .978 | 0 | 3 | .865 | .181 |
|  | GI | 0-1 | 21 | 1.010 | 0 | 2 | .728 | .166 |
|  |  | 1-2 | 21 | .885 | 0 | 2 | .659 | .135 |
|  |  | 2-3 | 21 | .871 | 0 | 2 | .865 | .125 |
| Meat/week | PLI | 0-1 | 21 | 1.119 | 0 | 3 | .779 | .158 |
|  |  | 1-2 | 21 | .994 | 0 | 3 | .823 | .179 |
|  |  | 2-3 | 21 | .849 | 0 | 2 | .659 | .135 |
|  | GI | 0-1 | 21 | 1.14 | 0 | 2 | .709 | .146 |
|  |  | 1-2 | 21 | .991 | 0 | 2 | .713 | .147 |
|  |  | 2-3 | 21 | .985 | 0 | 2 | .727 | .150 |
| Smoking /day | PLI | 0 | 21 | .755 | 0 | 2 | .625 | .127 |
|  |  | ≥10 | 21 | .623 | 0 | 1 | .528 | .106 |
|  | GI | 0 | 21 | .783 | 0 | 2 | .653 | .134 |
|  |  | ≥10 | 21 | .860 | 0 | 2 | .742 | .154 |
| Exercise /day | PLI | 0 | 21 | .832 | 0 | 3 | .791 | .164 |
|  |  | 1 | 21 | . 640 | 0 | 2 | .596 | .121 |
|  | GI* | 0 | 21 | .918 | 0 | 2 | .644 | .132 |
|  |  | 1 | 21 | .639 | 0 | 2 | .610 | .123 |
| Toothbrush /day | PLI | 0-1 | 21 | 1.52 | 0 | 3 | .765 | .129 |
|  |  | ≥2 | 21 | .528 | 0 | 2 | .561 | .123 |
|  | GI | 0-1 | 21 | 1.220 | 0 | 3 | .744 | .154 |
|  |  | ≥2 | 21 | .598 | 0 | 2 | .649 | .133 |

**Table (2): comparative analysis of vegetable taking/day individuals**

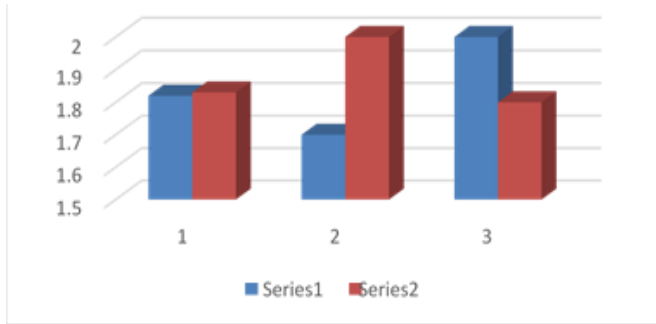| indices | vegetables/ day | mean | S e | P -value |
|---|---|---|---|---|
| PLI | 1-3&3-6 | 1.762 | .159 | .000 |
|  | 1-3 &≥6 | 1 .710 | .125 | .000 |
|  | 3-6& ≥6 | 1 .867 | .146 | .000 |
| GI | 1-3&3-6 | 1 .827 | .133 | .000 |
|  | 1-3 &≥6 | 1.942 | .155 | .000 |
|  | 3-6& ≥6 | 1.847 | .159 | .000 |

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Figure1:Plaque &gingival indices in vegetable taking/day

Table (3) test of paired samples    in fruit consumption per day clarified that the differences in PLI and GI between all subgroups were very significant.

**Table (3): comparative analysis of fruit taking/day.**

| indices | fruit/day | mean | S.e | P-value |
|---------|-----------|------|-----|---------|
| PLI | 1-3&3-6 | 0.783 | .278 | .000 |
| | 1-3&≥6 | 1.11 | .343 | .000 |
| | 3-6& ≥6 | 1.830 | .103 | .000 |
| GI | 1-3&3-6 | 0.732 | .250 | .000 |
| | 1-3&≥6 | 1.307 | .338 | .000 |
| | 3-6& ≥6 | 1.830 | .123 | .000 |
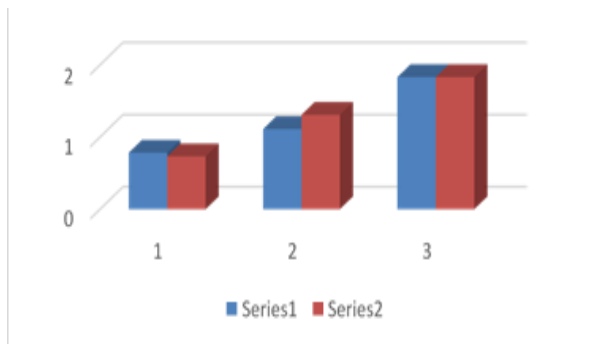


Figer 2: Plaque&gingival indices according to fruit taking /day

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While (table 4) reveled that paired sample t-test for each participant were highly significant for both indices in egg and butter taking per day in all subgroups.

**Table (4): comparison analysis in egg& butter taking/day.**

| indices | egg&butter/week | mean | S.e | P-value |
|---|---|---|---|---|
| PLI | 1&2 | .586 | .243 | .001 |
| | 1&3 | .944 | .309 | .000 |
| | 2&3 | 1.585 | .226 | .000 |
| GI | 1&2 | .449 | .226 | .001 |
| | 1&3 | 1.011 | .305 | .000 |
| | 2&3 | 1.568 | .230 | .000 |
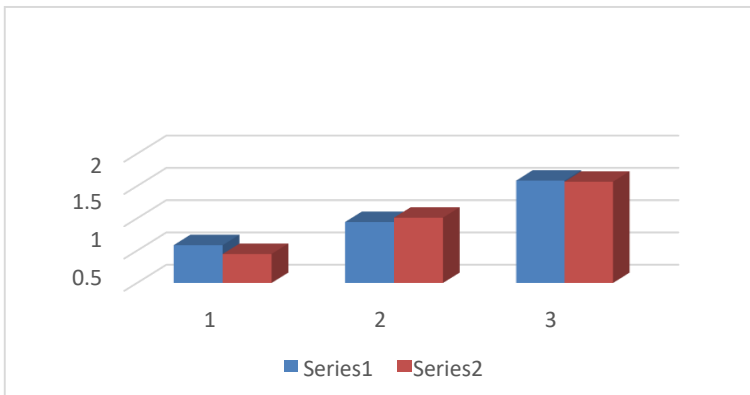


Figer 3:Plaque &gingival indices in egg& butter taking/day.
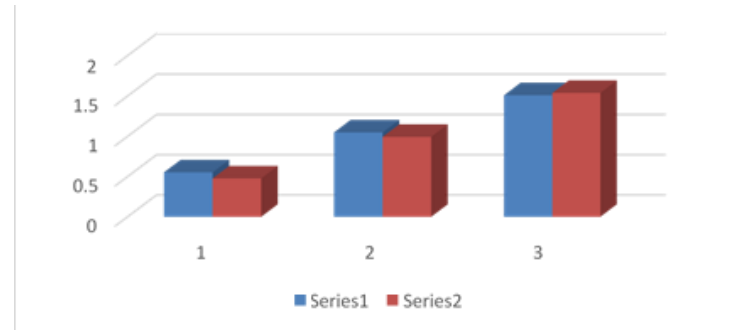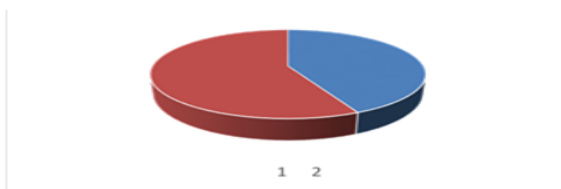


Figer4: Plaque &gingival indices in relation to meat taking/week

Table (5) showed that paired sample t-test in meat taking per week for PLI and GI were highly significant between all subgroups.

**Table (5): comparing study analysis in meat taking/week.**

| indices | meat/week | | mean | S.e | P-value |
|---|---|---|---|---|---|
| PLI | 1&2 | | .552 | .240 | .003 |
| | 1&3 | | 1.049 | .302 | .000 |
| | 2&3 | | 1.509 | .239 | .000 |
| | 1&3 | | .994 | .291 | .000 |
| | 2&3 | | 1.538 | .220 | .000 |



Figer5:Plaque&gingival indices in smoker and nonsmoker/day

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Figer 6:Plaque &gingival
indicesin daily exercise
or do not exercise

**Table (7) :compares analysis in individual dailyexercise or
do were also significant**.

| smoking/day | | | | |
|---|---|---|---|---|
| | indices | mean | S.e | P-value |
| Smoking& nonsmoking | PLI | .274 | .128 | .149 |
| Smoking& nonsmoking | GI | .364 | .135 | .041 |

Table (6). According to this table, the differences in PLI
between both groups were not significant, whereas the
differences in GI between both groups were significant

**Table (6): a comparison analysis in smoker
andnonsmoker/day**

| smoking/day | | | | |
|---|---|---|---|---|
| | indices | mean | S.e | P-value |
| Smoking& nonsmoking | PLI | .274 | .128 | .149 |
| Smoking& nonsmoking | GI | .364 | .135 | .041 |

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Figer 7: Plaque & gingival indices in daily tooth
brushing /day

Table (8): detailed that the matched test showed statistical significant difference in PLI and GI amongpersons frequently doing their daily brushing or unpredictably

**Table (8): compaired study parameters among dailytooth brushing /day individuals.**

| indices | tooth brushing/day | mean | S.e | p-value |
|---------|--------------------|------|-----|---------|
| PLI | Regular& irregular | .801 | .211 | 0.011 |
| GI | Regular &irregular | .711 | .201 | .001 |

## DISCUSSION

The oral health is associated with popular general health. When oral health is compromised Many systemic illnesses can be manifested in the oral cavity (Akhtar H. Bokhari,2006)

current study begins that, the amount of plaque and gingivitis were more among persons with compounding vegetable consumption in a day, this is may be because of their bad oral hygiene, and the amount of plaque and gingival health were diminishment with expanded daily fruit

consumption this is because of vitamins and antioxidant contains of fruit in which reduce gingival inflammation. (Iwasaki M etal ,2012), (Muniz F.W etal,2015)

Other debates by (Chapple,I.L. C,2010) explain the results of ingesting of vegetable and fruit in disintegrated capsular shape during non-surgical periodontal therapy in 60 non-smokers they have been blundering from slight and moderate periodontitis. They detected small despite the fact that big deduction declines in periodontal depths.

Besides researches by (Vander Velden,2011) concluded that to confer periodontitis and gingivitis, calcium, vitamin diet D and enough Antioxidants retaining nutrients need to be dispatched like fruit, vegetable and berries.

The current debate concluded that mean plaque scoreand gingival health were more among 0-1 time daily eating butter and egg, this is because ofbutter and egg calcium content and vitamin D enhance innate immunity towards inflammation. current study is in accordance with (Dietrich, T,2005) study.

Lowest mean plaque score and gingival score were among persons whom eating meat 2-3 times in week. This is because of the iron and O-mega 3(fish canvas)and nutritional vitamins content of meat have antibacterial and anti-oxidant impact, this is in accordance with (Van der Velden U eta1,2011).

Former study by ((Nishida, M etal ,2005) determinedthat for the averting and therapy of gingivitis and periodontitis enough daily input of natural antioxidants, fish (omega-3PUFAs), diet D and calcium are bore. Theydecided that vitamin D

might again demark the gingival inflammation through its anti-inflammatory impact.

Exercising data from the third National Health and Nutrition Examination Survey (NHANES III) it has been come out that deceased daily consumption of calcium movable in higher periodontal destruction by (Nishida M etal,2005).

The instant study also intimated that plaque accumulating advanced in nonsmoking while progressive mean of gingivitis was in smoker categories persons un healthy life style have effect on periodontal health the improper brushing forms and harming resultants of smoking. (Chapple, I. ,2007), (Vijay K Chava, 2010).

The connection between smoking and an augmented circumstance of periodontitis decided in some examination (Holde, G.E,2017) must no manner longer befall validated. Smokers tend to have a further adverse life- style in all-around. It skill that the relation of tobacco with periodontal condition was associated not alone to mise rable oral hygiene but further to miserable typical lifestyle. While study by (Miyuki K etal,2007) whom decide that smoking display the formal effectiveness on periodontitis hazard among life- style components. Smoking might again affect the host- defense system, which can additionally affect periodontal health. The subsisting study about concluded that higher plaqu e accumulating have been amongst individuality that

would no longer operating exercise
daily besides gingival score had been progressive
inpeople who no longer acting exercise. This is
due to some degree in practicing greater oxygen
will extend to body.

Several studies decided that deceased physical exerciseis
associated with periodontal disease (Samnienge, P. etal,2013),
(Torrejon Moya, A etal ,2021)
  Current study appears that  plaque accumulation
washigh  in objects that not performing their
daily tooth brush, additionally gingival
inflammationwas advanced in individualities
their daily tooth brushing.
  Current advisement is in accordance with (S.
AkhtarHussain Bokhari,2006). In
some former advisement, ordinary brushing was oncelocated
to have defensive holdings on oral health in occasional tooth
brushing

significantly compounding the imminence of
periodontal inflammation. (Zimmermann H,2015)

## CONCLUSION

In conclusion, the outcomes of the current study
materialized that gingivitis is definitely illiberal is more in
individuals with un healthful life style.

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