



PREVALENCE, SEVERITY, DISTRIBUTION AND RISK INDICATORS OF GINGIVAL RECESSION IN QENA GOVERNORATE (UPPER EGYPT): AN EPIDEMIOLOGICAL STUDY

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ABSTRACT

Objective: The present study estimated the prevalence of gingival recession (its severity and distribution) and assessed the association of potential risk indicators with the occurrence of gingival recession in Qena governorate, Egypt. **Subject and methods:** A representative sample of 1959 patients aged from 18 -90 years old (984 males and 975 females) from different areas in Qena governorate, Egypt were examined. A descriptive questionnaire was prepared for the examinations and full personal data were recorded. **Results:** The prevalence of gingival recession was 32.8%; Class I recession was (24.2%) followed by Classes II, III and IV (7.2, 1.3 and 0.1%) respectively. The most affected quadrants were the lower left quadrant while the least affected quadrant was the upper right quadrant. The most affected teeth were lower anterior teeth while the least commonly affected teeth were lower right posterior teeth. **Conclusion:** Prevalence of gingival recession showed more frequently in males than in females. Gingival recession was found to be more common in mandibular arch than maxillary. Lower anterior teeth than posterior ones and Left side of the arch was more commonly affected. This is a preliminary basis toward establishing a complete epidemiological study regarding the prevalence, severity as well as manifestations of oral diseases in Egypt. Hopefully, this help toward planning effective, preventive as well as therapeutic measures in this regard.

KEY WORDS: Prevalence, severity, distribution and risk indicators of gingival recession

INTRODUCTION

Gingival recession (GR) manifested clinically by an apical displacement of gingival tissues leading to root surface exposure, which often causes poor esthetics. It is characterized by the displacement of the gingival margin apically from Cemento-enamel junction (CEJ)⁽¹⁾. GR has a multifactorial etiology

and is always result of more than one factor acting together^(2,3). In this respect, tobacco smoking has been considered risk factors for development of destructive forms of periodontal disease as well as associated with GR⁽²⁾.

It has been documented that^(4,5) GR was associated with a high level of dental plaque. Similarly, a study

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observed that the plaque index (PI) was associated with the extent of GR⁽⁶⁾, although, another study recorded a negative correlation between dental plaque on the buccal tooth aspect and GR⁽⁷⁾, which may be associated with dentine hypersensitivity, root caries, abrasion and/or cervical wear, erosion because of exposure of root surface to the oral environment and an increase in accumulation of dental plaque⁽⁸⁾. The presence and extent of gingival recession reported to be increased with age⁽⁹⁾.

Miller in 1985 proposed a classification for gingival recession which is the most widely used today⁽¹⁰⁾. In 2010 Mahajan modified Miller's classification of GR that based on the severity of soft and hard tissue loss in the inter-proximal area. Based on the class of recession prognosis was suggested, Class I and Class II with thin gingival profile has good prognosis, Class III with thick gingival profile has fair prognosis and Class III and Class IV with thin gingival profile has poor Prognosis⁽¹¹⁾. Despite the frequent observation in adult subjects, the occurrence and severity of the gingival recession presents considerable differences between study populations. A new classification of gingival recession with reference to interdental clinical attachment loss has been advised⁽¹²⁾; *Recession Type 1 (RT1)*: Gingival recession with no loss of interproximal attachment. Interproximal CEJ is clinically not detectable at both mesial and distal aspects of the tooth, *Recession Type 2 (RT2)*: Gingival recession associated with loss of interproximal attachment. The amount of interproximal attachment loss (measured from the interproximal CEJ to the depth of the interproximal sulcus/pocket) is less than or equal to the buccal attachment loss (measured from the buccal CEJ to the apical end of the buccal sulcus/pocket), *Recession Type 3 (RT3)*: Gingival recession associated with loss of interproximal attachment. The amount of interproximal attachment loss (measured from the interproximal CEJ to the apical end of the sulcus/

pocket) is higher than the buccal attachment loss (measured from the buccal CEJ to the apical end of the buccal sulcus/pocket).

Epidemiology is a useful means of establishing a need for treatment or for preventive intervention. A number of studies have been carried out on the prevalence and occurrence of gingival recession among different populations⁽¹³⁻¹⁵⁾. A prevalence of 90% was reported in older institutionalized subjects⁽¹⁶⁾, 58% in a US study⁽¹⁷⁾ and in Germany, gingival recession occurred in 76–87% of middle-aged subjects⁽¹⁸⁾. Therefore, it is important to collect detailed information, to assess the tendency and epidemiology of this condition, identify the etiological factors and establish preventive measures.

In fact, regarding to Egypt it seems to be of hard task to find clear information that will aid in giving figures in that regarded. In view of this knowledge, present study was designed to estimate the prevalence, severity, distribution of gingival recession and to assess the association of potential risk indicators with the occurrence of gingival recession in one of Egyptian governorates (Qena governorate).

SUBJECTS AND METHODS

A representative sample of 1959 patients were selected to be examined aged from 18 -90 years old. These subjects consisted of 984 males and 975 females in different areas in Qena governorate, Egypt according to the data below (Table 1). These subjects were subjected to full clinical examination of oral and para-oral structure by some examiners. Then the individuals fill in an appropriate questionnaire regarding several aspects of their medicine and dental history and they also are being examined.

TABLE (1) Demographic data of included sample.

Area	Males above 18 years	Females above 18 years	Total population above 18 years	Males Estimated Sample Number	Females Estimated Sample Number	Total Estimated Sample
Abotesht	129109	138174	546712	129	138	267
Farshout	51005	54118	211084	51	54	105
NagaHamamady	174407	181828	593724	174	182	356
Alwaqf	27477	26932	90682	27	27	54
Qena	212565	199059	685708	213	201	414
Qoft	53552	52936	177479	54	53	107
Qous	144365	144469	481391	144	144	288
Naqadah	47342	51871	184294	47	52	99
Deshna	145162	123799	448268	145	124	269
TOTAL	973186	984984	1958170	984	975	1959

Questionnaire :

The descriptive questionnaire was prepared for the examinations and full personal data were recorded. The questionnaire included questions concerning age, socio-economic level, systemic and oral health status, smoking habits, information related to toothbrush type and tooth-brushing technique and frequency of each patient. Tooth-brushing frequency should be scored as follows: 1: less than once a day; 2: once a day and 3: twice a day or more. After the questionnaire had been completed, each patient will receive a full mouth examination for assessing gingival recession (site, severity, and distribution), dental plaque and calculus, frenum attachment, and presence of traumatic tooth-brushing. Every subject will be examined in a dental chair using dental chair light, mouth mirror, explorer, periodontal probe; entire mouth will be examined in a uniform pattern.

Presence of gingival recession were recorded according the criteria of Miller's classification (1985)^[10]. This study was carried out from May to December 2019.

Ethical concern:

All included subjects were informed about the nature of the research and they asked to give a written consent to participate in the study. A detailed verbal and written explanation of the purpose of the study was provided. The subjects were advised that the diagnostic phase and treatment protocol would not adversely affect the outcome of treatment.

RESULTS**Gingival Recession**

The prevalence of recession was 32.8%; Class I recession was (24.2%) followed by Classes II, III and IV (7.2, 1.3 and 0.1%, respectively). The most affected quadrants were the lower left and right quadrants (83, 82.2%, respectively) where recession affected considerably more teeth in anterior area than posterior while the least affected quadrant was the upper right quadrant (52.8%). The most affected teeth were lower anterior teeth (76.9%) followed by upper left posterior teeth (46%) then upper right posterior teeth (45.3%). The least commonly affected teeth were lower right posterior teeth (29.9%). These data are presented in Table 2 and Figure 1.

TABLE (2) Frequencies (n) and percentages (%) for gingival recession findings among the study participants

Gingival recession	N	%
Overall prevalence of recession	642/1959	32.8
Gingival recession classification		
Class I	475/1959	24.2
Class II	141/1959	7.2
Class III	25/1959	1.3
Class IV	1/1959	0.1
Affected quadrants		
Upper right	339/642	52.8
Upper left	342/642	53.3
Lower left	533/642	83
Lower right	528/642	82.2
Affected teeth		
Upper anterior teeth	207/642	32.2
Lower anterior teeth	494/642	76.9
Upper right posterior teeth	291/642	45.3
Upper left posterior teeth	295/642	46
Lower right posterior teeth	192/642	29.9
Lower left posterior teeth	213/642	33.2

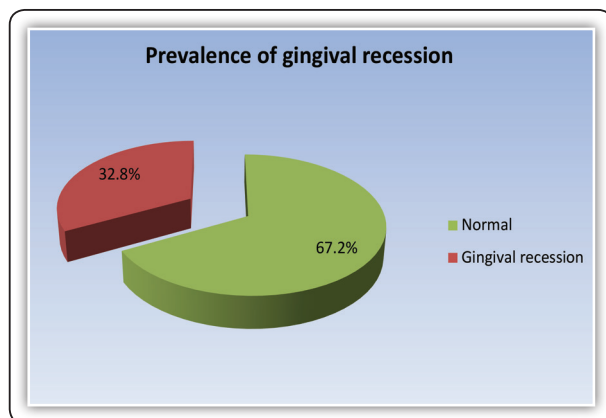


FIG (1) Pie chart representing prevalence of gingival recession (n = 1959)

Tooth mobility

Prevalence of tooth mobility was 10.6%; Grades I and II showed almost the same prevalence (4.9 and 4.8%, respectively) while Grade III was only found in 0.9% of the participants. The most affected quadrants were the lower left and right quadrants (60.1, 58.7%, respectively) while the least affected quadrant was the upper right quadrant (33.7%). The most affected teeth were lower anterior teeth (42.8%) followed by lower left posterior teeth (37.5%) then lower right posterior teeth (33.7%). The least commonly affected teeth were upper anterior teeth (18.3%) (Table 3 and Fig. 2).

TABLE (3) Frequencies (n) and percentages (%) for tooth mobility findings among the study participants

Tooth mobility	N	%
Overall prevalence of tooth mobility	208/1959	10.6
Tooth mobility grades		
Grade I	96/1959	4.9
Grade II	94/1959	4.8
Grade III	18/1959	0.9
Affected quadrants		
Upper right	70/208	33.7
Upper left	72/208	34.6
Lower left	125/208	60.1
Lower right	122/208	58.7
Affected teeth		
Upper anterior teeth	38/208	18.3
Lower anterior teeth	89/208	42.8
Upper right posterior teeth	60/208	28.8
Upper left posterior teeth	65/208	31.3
Lower right posterior teeth	70/208	33.7
Lower left posterior teeth	78/208	37.5

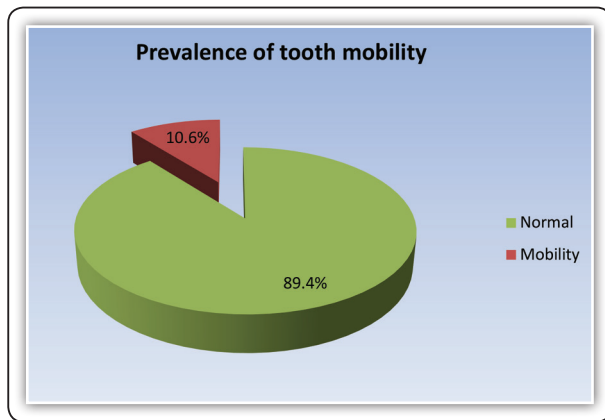


FIG (2) Pie chart representing prevalence of tooth mobility (n = 1959)

Gingival bleeding

Prevalence of gingival bleeding was 32.1% (Fig. 3). Bleeding of the gingiva was measured by probing positively or negatively. But, it wasn't graded or tabulated.

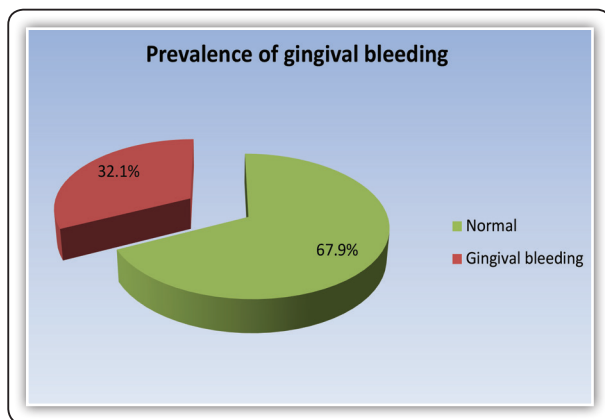


FIG (3) Pie chart representing prevalence of gingival bleeding (n = 1959)

Geographic area and gingival recession:

There was a statistically significant association between location and gingival recessions (P -value <0.001, Effect size = 0.128). Qena showed the highest prevalence of gingival recession (25.9%) followed by Nagaa Hamadi (20.4%) then Qous

(13.7%). The least prevalence of gingival recession was found in Farshout (5.1%), Naqada (4.8%) then Elwaqf (3.3%), Fig. 4 representing these data.

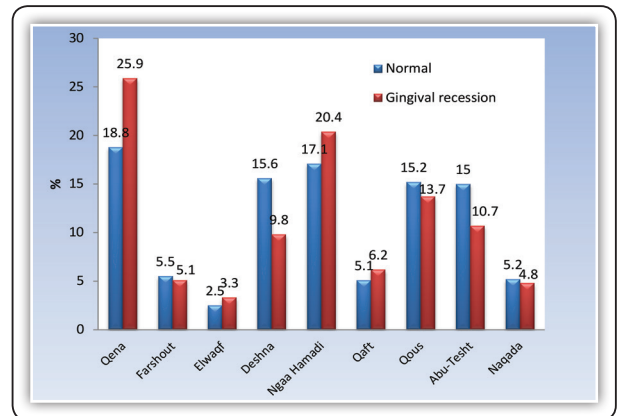


FIG (4) Bar chart representing the percentage distribution of gingival recession among different geographic areas

Gender and gingival recession:

There was a statistically significant association between gender and gingival recessions (P -value = 0.003, Effect size = 1.210). Males showed statistically significantly higher prevalence of gingival recession than females. Males are 1.21 folds prone to gingival recession than females, Fig. 5 showing these data.

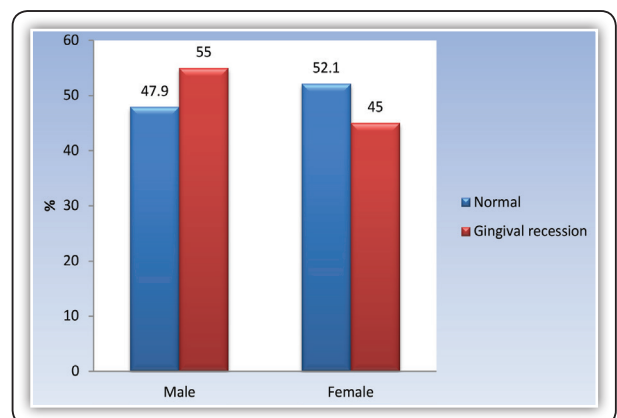


FIG (5) Bar chart representing the percentage distribution of gingival recession among males and females

DISCUSSION

Epidemiology is a useful means toward establishing an effective and useful treatment or for planning preventive measures. It often deals with correlations between two or more findings. However, correlations are not a means of showing cause and effect relationship but only a means of showing a relationship.

Gingival Recession (GR) is a common and undesirable condition, concerns individuals of all ages throughout the world and its presence is disturbing for patients regarding esthetic, psychological as well as functional problems.

The overall prevalence of gingival recession in the present study showed a value of 32.8%, as Class I recession was the most followed by Classes II, III and IV respectively. The mandible was most affected than the maxilla. These findings were in agreement with the previous studies⁽¹⁹⁻²³⁾, Areas with deficient keratinized mucosa have been demonstrated to be more susceptible to gingival recession, due to less amount of connective tissue available at this area. Hence, localized inflammatory reactions which are triggered by different processes that affect the entire extension of the tissue, ultimately leading to gingival recession.

It was evident from the obtained results that, the most affected quadrants were the lower left and right quadrants and most affected teeth were lower anterior teeth, these results were consistent with another study⁽²⁴⁾ reported that gingival recession was more common in mandibular anterior teeth. However, few other studies showed that gingival recession was more in maxillary first molar^(14,25). This finding may be attributed to the angulations of the root in the bone, which can influence recession incidence observed in maxillary molars area.

The gingival recession was more on the left side compared to right side, which can be attributed to the more vigorous tooth brushing on this side by the right handed patients. Additionally, most of

patients use their right side in eat which, lead to self cleaning process by the movement of foods, while more accumulation of debris and calculus can occur on the less used side, i.e: the left side .

The present study sample was 1959 people [984 males (50.2%) ,975 females (49.8%)], ranging in age between 18 and 88 years old [mean (SD) values for age were 37.1 (13.4)]. The prevalence of GR was overall 32.8%, Males showed statistically significantly higher prevalence of gingival recession than females (55% in males and 45% in females) i.e. Males were 1.21 folds prone to gingival recession than females. Studies showed that GR prevalence between 22.5% and 27.7%^(26,27). Similar findings regarding the distribution of GR by gender were found in previous reports^(6,18), although other studies recorded prevalence range of 50% and more^(4,14,18). Clearly, most of the studies showed that the gingival recession prevalence with higher rates in males than in females. Only one study⁽²⁸⁾ observed that 31.7% of females and 24.3% of males showed GR. This finding may be attributed to the fact that females can be motivated more regarding the oral hygiene practices and, thus, brush their teeth more frequently than males.

The results of this study showed statistically significant association between, geographic areas and gingival recessions, as Qena showed the highest prevalence of gingival recession (25.9%), while least prevalence of gingival recession was found in Elwaqf (3.3%).

Significantly higher frequency of GR was observed in smokers than in non-smokers. This finding is in accordance with those of previous studies, in which tobacco smoking was regarded as one of the main risk factors for the development of destructive forms of periodontal disease⁽²⁹⁾, while a combination of smoking and supragingival calculus was associated with localized and generalized gingival recession^(3,4,30-32). However, this is not always the case as Muller et al⁽³³⁾ revealed that smoking status was not identified as a risk factor

for the development of GR, and similar studies have suggested a negative impact on GR and periodontal health from tobacco^(29,34,35). This controversy awaits further clarification through performing other studies on larger samples with clear inclusion and exclusion criteria.

It should be emphasized that, the vast majority of information in field epidemiology of various dental/oral disease comes from studies performed in populations outside the Arab world. This area of research seems to be deficient, as it will be a hard task to find clear, firm as well as reliable data from oral epidemiological studies performed in various Arabian countries. Hence, the present work was designed and performed toward establishing a source of data regarding the prevalence as well as severity of periodontal disease in a part of Egypt.

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