

## PREDISPOSING FACTORS AND PATTERN OF GINGIVAL RECESSION AMONG THE PATIENTS ATTENDING THE PERIODONTAL DEPARTMENT AT DHAKA DENTAL COLLEGE: AN OBSERVATIONAL STUDY

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### Abstract

**Background:** Gingival recession is defined as the displacement of the gingival margin apical to cemento-enamel junction leading to exposure of the root's surfaces of the teeth. Thus, it creates an aesthetic problem as well as hypersensitivity of the tooth and roots carries. Objectives of this study were to explore the distributions, the severity and contributory factors of the gingival recession. **Materials and methods:** In this study, we studied 60 patients aged between 14 to 70 years of both sex. The presence of gingival recessions were recorded using Miller's classification of gingival recession. Chi-square test and Students paired t-test was done to assess the association between dependent and independent variables. **Results:** In this study, the most frequent gingival recession was found within the age group 20-30. Higher frequency of gingival recession was seen in male (68.33%) compared to female (31.67%). Again, Miller's class one was the most frequent recession. As a whole, anterior teeth (38%) showed more recession than premolars (25%) and molars (37%) respectively. Plaque accumulation (85%) was found as the most contributory factor for gingival recession. Length of gum recession, before and after scaling, not extending beyond the mucogingival margin were statistically correlated and found significant. **Conclusion:** The information found in this study would probably help in adopting long term strategies to prevent the occurrence of gingival recession.

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### Key words

Gingival recession; Aesthetic; Miller's classification.

### Introduction

A beautiful smile is the best ornament for the face and is the most primitive forms of human communication. The harmony of the smile is determined by the shape, the position and the color of the teeth<sup>1</sup>. Gingival recession is one of the most common and undesirable condition of the gingiva. It is characterized by displacement of gingival margin apically from Cemento-Enamel Junction (CEJ) exposing the root surface to the oral environment<sup>2</sup>. Gingival recession usually creates an esthetical problem, especially when such problem affects the anterior teeth. It may also be associated with dentine hypersensitivity, root caries and, abrasion. Because of exposure of root surface to the oral environment it also increase an accumulation of dental plaque on the root surface<sup>3</sup>. The etiology of gingival recession are multifactorial. Several factors may play role in the gingival recession development, such as, vigorous faulty teeth brushing, destructive periodontitis, tooth mal-position, high muscles attachment, frenum pull and occlusal trauma<sup>4-5</sup>. Iatrogenic factors also important (Such as orthodontic and prosthetic treatment)<sup>6</sup>. Dental plaque is also equally important in the etiology of gum recession<sup>7</sup>. The mucogingival complex consists of free gingiva, attached gingival and mucogingival junction. An adequate mucogingival tissue can make biomorphological integrity and maintain a long lasting attachment to the tooth and underlying soft tissue and bone. When a mucogingival problem occurs, clinically it is evident in two ways. First, as a close disruption of mucogingival complex, resulting in pocket formation. Second, as an open disruption of mucogingival complex, resulting in gingival cleft and gingival recession. It is frequently observed in adult subject. The occurrence and severity of gingival recession shows

considerable differences between study populations. To prevent gingival recession, it is essential to detect underlying etiology. Hence, the aim of the present study was to determine the occurrence of gingival recession and to identify the factors associated with the gingival recession.

**Materials and methods**

The study was conducted in the department of Periodontology at Dhaka Dental College, Mirpur-14, Dhaka, from January to December 2017, among the patients attending the out-patient department. Using convenience sampling technique 60 patients were selected of both gender aged 15 years to 70 years having gum recession. Inclusion criteria involved both the genders, within specified age range of 15-70 years & having gum recession in one or both jaw. All the participants were informed about the study procedure and those who gave their informed consent were included in the study. However, the patients who were non cooperative, having no gum recession and medically compromised (Such as diabetes mellitus, AIDS, hepatitis, renal failure, and tuberculosis) were excluded from the study.

The study populations were comprised of 41 men and 19 women. The selected patients were grouped according to their age range. A pre-tested mixed questionnaire was used to collect data. All the patients were evaluated by meticulous history taking. Data were collected by an interview and clinical examination after obtaining consent with the help of structured questionnaires. Each subject was examined in dental chair by the authors using dental chair light, mouth mirror, William’s periodontal probe (Figure-2a). Presence of gingival recession was recorded using Miller’s classification of gingival recession (Figure-2). Data were analyzed using software (SPSS 19.0 version). Chi square test and paired t test was carried out to see the association among the variables.

**Results**

Distribution of the respondents by Gender and Age in a group

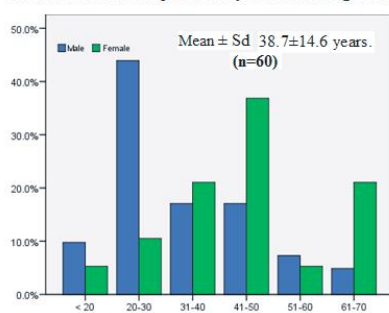


Fig 1 : Age and Gender

**Table I :** Distribution of gingival recession by tooth type (n=60)

Type of Teeth	Grades of gingival recession			
	Class I	Class II	Class III	Class IV
Anterior	10	5	4	4
Premolars	8	4	2	1
Molars	10	7	3	2
Total	28	16	9	7



**Fig 2:** Different types of Gum Recession (a-Miller’s Class-i, b- Miller’s Class-ii, c- Miller’s Class-iii, d- Miller’s Class-iv)

**Table II :** Distribution of the respondents by etiology of gum recession (n=60)

Etiology of gum recession	Frequency	Percentage (%)
Plaque induced	51	85.0
Anatomic factors	7	11.7
Habits	2	3.3
Total	60	100.0

**Table III :** Distribution of the respondents by Miller’s classification of gum recession

Miller’s classification of gum recession by paired t-test	Mean ± SD	R	95% CI Intervals		t	df	p value
			Lower	Upper			
Length of Marginal gum recession not extending from CEJ before and after scaling (n=32)	-.922±.89	.563	-1.243	-.601	-5.860	31	.000
Width of Marginal gum recession not extending from CEJ before after scaling (n=28)	-.661±.594	.892	-.891	-.430	-5.886	27	.000

Length of Marginal gum recession not extending from MGJ before and after scaling (n=11)	-1.36±.778	.736	-1.88	-.84	-5.817	10	.000
Width of Marginal gum recession not extending from MGJ before and after scaling (n=5)	-1.1±0.652	.799	-1.90	-.291	-3.77	4	.02

**Table IV :** Distribution of the respondents by Miller's classification of tissue recession

Miller's classification of tissue recession by p aired t-test	Mean ± SD	R	95% CI Intervals		t	df	p value
			Lower	Upper			
Length of marginal tissue recession not extending from MGJ before and after scaling (n=9)	-1.389±.601	.884	-1.851	-.927	-6.934	8	.000
Width of marginal tissue recession not extending from MGJ before and after scaling (n=9)	-.889±.782	.712	-1.490	-.288	-3.411	8	.009

Gingival recession was observed in 41 males (68.33%) and 19 females (31.67%). Of 60 subjects 28 (46.7%) had Millers class I recession, 16 (26.7%) class II recession, 9 (15.0%) class III recession, 7 (11.7%) class IV recession. The most frequent affected teeth with gingival recession were incisors followed by the molars (Table I).

Age and gender distribution of respondents shows that the mean age and sd. was 38.7±14.6 years. Maximum 33.3% (n=20) patients belong to age group 20-30 years followed by 23.3% (n=14) patients were in age group 41-50 years (Figure 1).

When the etiologic factors causing gingival recession were examined in 60 teeth, the most common factor was found to be dental plaque accumulation (85.0%) followed by anatomical factors (11.7%) habits such as smoking, betalnut chewing, mouth breathing and use of smokeless tobacco (3.3%) respectively (Table II). The mean plaque index in subjects without gingival recession was low compared to subjects with gingival recession. But it was not statistically significant. Overall, brushing was found to be associated with recession compared to other device used for cleaning teeth. But the type of brushing method, duration of brushing and frequency of brushing are not investigated separately.

Length of gum recession, before and after scaling, not extending beyond the mucogingival margin were statistically correlated and found statistically significant (Table III and IV).

## Discussion

The present study included 60 respondents where, 41 (68.3%) males and 19 (31.7%) female showed gingival recession. This finding is in agreement with the findings of a study conducted by Hosan-guan C et al which also significantly showed males exhibited greater level of recession than female<sup>8</sup>. Gender differences regarding the prevalence of gingival recession could be attributed to the fact that females visit their dentists more frequently than males. Ainamo et al on the other hand found that gingival recession was equally common in both the genders in 17 years age group<sup>9</sup>.

In the present study, frequency of gingival recession was not found to increase with age. In older age group (41–50 years), the gingival recession was 23.3% and in younger age group (20–30 years), it was 33.27%. The result is not comparable to the study by other authors where, they observed both frequency and severity of gingival recession is increased with the increase of age<sup>10,9</sup>. Perhaps this may be attributed to small sample size.

Manchala et al & Banihashemrad et al found gingival recession more common among having smoking habit. It is in agreement with the present study finding that is 33.3%, also the most frequent contributory habit<sup>10,11</sup>.

The present study shows the maximum 76.7% respondents used brush and paste to clean the teeth. Of them, 51.7% used to brush twice a day. Vehkalahti et al in their study have reported a significantly increased recession who brush two times than one<sup>12</sup>. So, the finding of the present study is comparable to most of the study findings.

Another observation was the association of mal-alignment and gingival recession. It was found that the number of gingival recession associated with labially placed teeth was more prone to gum recession<sup>2,4,13</sup>. In this study too, gum recession associated with mal-aligned teeth was found second most frequent (11.7%) associated factor.

Regarding dental plaque, gingival inflammation and pocket depth, this study showed association with gingival recession but was not statistically significant ( $p$  value  $> 0.05$ ). Majority of the respondents in the present study represented with high plaque (62%) and supragingival calculus (78%) index. Bhoomika Khosya found 32.84% supra gingival and 67.16% subgingival calculus in their study<sup>14</sup>. These findings were in agreement with other studies which reported that calculus play an important role in the etiology of gingival recession.

In the present study, Miller's distribution of recession was studied before and after scaling and root planning that showed significant difference (Table III and IV). This may be explained as that, through scaling, root planning and oral hygiene decrease in crevicular depth, gain in attachment level and gingival recession<sup>15-17</sup>.

#### Limitations

This study was conducted with a small sample size over a short period of time. That is why even with all sincere and supportive efforts we couldn't study many more variable. Hence, the exact scenario among the population were least established in some aspects.

#### Contribution of Authors

MR-Conception, design, acquisition of data, drafting the article and final approval.

MKU - Design, analysis, critical revision and final approval.

TR - Interpretation of data, drafting and final approval.

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#### Recommendations

Further study in more centers with large sample size should be undertaken. Long time follow up studies are also needed to establish the relationship between variables.

#### Conclusion

The information found in this study would probably help in adopting long term strategies to prevent the occurrence of gingival recession. The etiology of

gingival recession is multifactorial, and its appearance is always the result of more than one factor acting together. At the community level, adequate awareness and education in oral hygiene maintenance should prove to be fruitful in long run.

#### Disclosure

All the authors declared no competing interest.

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