

Prevalence and Distribution of Gingival Recession in Adult Population, Loni, Maharashtra: A Cross Sectional Prevalence Study – Part I

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Abstract:-

➤ Introduction

Gingival recession localized or generalized, is one of the clinical features of periodontal disease and is frequently associated with clinical problems such as root surface hypersensitivity, root caries, cervical root abrasions, erosions, plaque retention and aesthetic dissatisfaction.

➤ Aim

To evaluate the distribution, prevalence and etiology of gingival recession in adult population visiting the Out Patient Department of Rural Dental College, Loni during the period of 2017-2018. (For convenience two parts have been created this particular part of research paper focuses on association of age, gender, socio-economic status (SES) with prevalence of gingival recession).

➤ Materials and Methods

Across-sectional study was carried out on a sample size of 400. A structured case-record which included questions regarding demographic data, personal habits and intraoral distribution of gingival recession and its various predisposing factors were assessed. The data obtained were statistically analyzed.

➤ Results

Approximately 68.25% subjects examined exhibited gingival recession. Significant increase in prevalence of gingival recession with age was noted. A significant association between gender and patient's gingival recession was noted. Patients exhibiting gingival recession

belonged mostly from middle and lower middle-class SES.

➤ Conclusion

High prevalence of gingival recession demonstrates that dental professionals should help in identification of susceptible patients and evaluating them for the presence of modifiable risk exposures in developing action plans for appropriate interventions.

Keywords:- Gingival Recession, Prevalence, Risk Factors.

I. INTRODUCTION

Periodontal diseases are a group of lesions affecting the tissues surrounding and supporting the teeth in their sockets. Passive eruption, according to Gottlieb, is the apical migration of gingival epithelium after the completion of active tooth eruption. It was assumed to be physiological process that continues throughout life at a rate corresponding to the continuous occlusal movement of the tooth, in order to compensate for the attrition of the crown. ^[1]

Epidemiology is the study of health and disease in populations and the effect of various biologic, demographic, environmental, and lifestyles on these states. Epidemiologic studies are conducted to describe the health status of populations, elucidate the etiology of diseases, identify risk factors, forecast disease occurrence, and assist in disease prevention and control. ^[2]

The distribution of a statistical data set (or a population) is a listing or function showing all the possible values (or intervals) of the data and how often they occur.^[3]

Progressive gingival recession possess risk of root caries and loss of teeth that may interfere with patient's comfort, function and esthetics. Hence it is vital to identify and evaluate such patients who are more prone and charting a treatment plan accordingly.

Limited studies on prevalence of gingival recession and associated factors have been studied round the globe. The recent surveys revealed that the prevalence of gingival recession was 88 percent of people 65 years of age and older and 50 percent of people 18 to 64 years of age have one or more sites with recession and also the presence and extent of gingival recession also increases with age.^{[4], [5]}

Aim of our study was to perform a cross-sectional study to evaluate the distribution, prevalence and etiology of gingival recession. For convenience two parts have been created to better understand the various aspects pertaining to gingival recession, this particular part of research paper focuses on association of age, gender, socio-economic status (SES) with prevalence of gingival recession.

II. MATERIALS AND METHODS

A Cross Sectional study was performed in adult population visiting the Out Patient Department of Rural Dental College, Loni Tal. Rahata, Dist. Ahmednagar from April 2017-April 2018. Ethical clearance was obtained and following a pilot study among 30 random adult patients, prevalence value was obtained i.e., 76.66% \approx 77% that was utilized to calculate the final sample size at 95% confidence interval that came to 390, hence a round figure of 400 was finalized as the sample size.

The following formula was used to calculate the final sample size: $n = \frac{Z^2 p(1-p)}{d^2}$

Where:

n = Sample size

Z = Z value (1.96 for 95% confidence level)

p = Estimated prevalence or proportion

d = Level of precision

Therefore, Z= 1.96, p= 0.77, 1-p= 0.33, d= 0.05

All participants, selected using a random systematic sampling method were briefed about the objectives of the study and the study procedure and the participants who gave their voluntary informed (written) consent were included in the study.

➤ Inclusion Criteria:

1. Systematically healthy subjects with age from 18-74years (categorized into six age groups).
2. Subjects of both genders.
3. Subjects included irrespective of adverse habit (eg. any form of tobacco usage).
4. Subjects willing to cooperate for study.

➤ Exclusion Criteria:

1. Pregnant or lactating women.
2. Gingival Recession of Third molars.
3. Mentally and Physically handicapped patients.

III. STUDY PROTOCOL

A structured case record written in English and validated through a pilot survey was used in this study. Case record was filled with the help of few interns who were trained and calibrated prior to conduction of examination to prevent inter-examiner bias.

The data was recorded for each patient which included their demographic details, oral hygiene practices and clinical examination (such as visible root exposure (gingival recession) in millimeters, presence of malpositioned teeth, gingival phenotype, history of previous gingival surgery, presence of inflammation, normal/abnormal frenum).

For convenience, the data was recorded under six age groups: 18-24 years, 25-34 years, 35-44 years, 45-54 years, 55-64 years and 65-74 years. The six age groups so classified, also consists the information of the two out of four age groups classified by the World Health Organization (WHO) i.e. age groups: 35-44 years and 65-74 years.

Patient's socio-economic status is classified according to revision of BG Prasad socioeconomic classification scale, as on March 2018. Since, BG Prasad's classification includes monthly income of the family, therefore patients who were unemployed or students were conveniently classified using BG Prasad's classification.

History of previous gingival surgery has been considered as one of the parameter to be studied as studies have reported loss of attachment post gingival surgical procedures.

All teeth of each subject were examined under artificial light using intraoral mirror and graduated periodontal probe (UNC-15 probe, which is 15 mm long with markings at each mm and colour coding at the 5th, 10th and 15th mm).

Statistical analysis was done by descriptive statistics as mean, SD and percentage. Statistical analysis software namely, SYSTAT version 12 (by Crane's Software, Bangalore) was applied.

- Association between various variables / qualitative data was done by applying Chi-Square test at 5% (p, 0.05) and 1% (p, 0.01) level of significance.
- Comparison of quantitative data was done by applying Student's 't' test at 5% (p, 0.05) and 1% (p, 0.01) level of significance.
- Comparison of qualitative data was done by applying Z test of proportions at 5% (p, 0.05) and 1% (p, 0.01) level of significance.

IV. RESULTS

On the basis of pilot study that was conducted, a total of 400 patients were included in the study of which 244 were males and 156 were females (Graph 1). 273 patients out of 400 patients or 68.25% showed gingival recession (Graph 2).

- **AGE GROUP – 18-24:** Sixty male and forty-two female. Fifty patients or 49.01 percent of this group had gingival recession (Table 1, 2). Thirty-one male and nineteen female had receded gingiva (Table I, Graph 4).
- **AGE GROUP – 25-34:** Fifty-nine male and forty-two female. Fifty-five patients or 54.45 percent of this group had gingival recession (Table 1, 2). Thirty-six male and nineteen female had receded gingiva (Table 1, Graph 4).
- **AGE GROUP – 35-44:** Fifty-two male and thirty-six female. Seventy patients or 79.54 percent of this group had gingival recession (Table 1, 2). Forty-three male and twenty-seven female had receded gingiva (Table 1, Graph 4).
- **AGE GROUP – 45-54:** Thirty-seven male and twenty-two female. Fifty-two patients or 88.13 percent of this group had gingival recession (Table 1, 2). Thirty-four male and eighteen female had receded gingiva (Table 1, Graph 4).
- **AGE GROUP – 55-64:** Nineteen male and eight female. Twenty-six patients or 96.29 percent of this group had gingival recession (Table 1, 2). Eighteen male and eight female had receded gingiva (Table 1, Graph 4).
- **AGE GROUP – 65-74:** Seventeen male and six female. Twenty patients or 86.95 percent of this group had gingival recession (Table 1, 2). Fifteen male and five female had receded gingiva (Table 1, Graph 4).

Study performed showed a sequential increase in the prevalence of gingival recession as the age factor increases; from 49.01% to 96.29% (Table 2). By applying Z test of difference between proportions it was noticed that prevalence of gingival recession increases with age; (p<0.05).

Out of 400 patients, 177 males and 96 females presented with gingival recession. Gingival recession was more prevalent in males (64.83%) than in females (35.16%) (Table 3). By applying Chi-Square test, a significant association between age and gender in patients with and without gingival recession (value of $\chi^2 = 58.607$, $p < 0.0001$) and a significant association between gender and patients with gingival recession and without gingival recession (value of $\chi^2 = 4.820$, $p = 0.0281$ i.e. $p < 0.05$) was noticed.

The distribution of the sample and prevalence of gingival recession according to the socio-economic status is shown in Table 4. The results show that a total of 254 patients, 108 patients, 30 patients and 8 patients presented from upper, upper middle, middle and lower middle class respectively. Out of which 158 patients (62.20%), 81 patients (75%), 27 patients (90%) and 7 patients (87.50%) from upper, upper middle, middle and lower middle class respectively were affected with gingival recession (Table 4). No patients were encountered from lower class of SES. By applying Chi-Square test, a significant association between SES and gingival recession was noticed (value of $\chi^2 = 14.472$, $p = 0.0023$ i.e. $p < 0.05$).

V. DISCUSSION

Present study indicates that, among 400 patients examined, 273 patients or 68.25% showed gingival recession. Loe et al. [6] observed that by age 22 years, gingival recession occurred in approximately 65% of Norwegian and Sri Lankas groups. By 30 years of age, more than 75% of the Norwegians and 90% of the Sri Lankans exhibited one or more sites with gingival recession. Toker et al. [7] reported that in Turkey, the prevalence of gingival recession was 78.2%. Chrysanthakopoloulos et al. [8] concluded in their study performed on 18-45 year old, who attended a Dental Practice in Greece the prevalence of gingival recession was 62.7%.

In the current study, the individuals of all age groups had varying degrees of gingival recession. Study performed showed a sequential increase in the prevalence of gingival recession as the age increases from 49.01% to 96.29%. This was found similar to studies performed by Kitchen, [9] Enslie, [10] Gorman WJ [11] and AJ Khade et al. [12] that the frequency of gingival recession increased with age. The relationship between increased prevalence of gingival recession with age could be due to longer duration of exposure to the etiologic factors.

Study revealed gingival recession was more prevalent in males (64.83%) than in females (35.16%); which agree with the results of Gorman WJ, [11] Albandar and Kingman [13] and Paturu et al. [14] There was a significant association between gender and patients with gingival recession and without gingival recession. Findings of our study differ from

another study done by Kozłowska et al. [15] which showed 74% of females and 28% of males with gingival recession.

SES refers to an individual's position within a hierarchical social structure, which is one of the important determinants of health status. [16] Composite scales are generally used to measure the SES, which has a combination of social and economic variables. The advantage with BG Prasad's classification is that it takes into consideration only the income as a variable and is easy to calculate and it is applicable both for urban and rural families.

Patients, who exhibited gingival recession, belonged mostly from middle and lower middle-class SES. Susin et al. [17] reported teeth with recession in a higher percentage of lower SES individuals irrespective of age in Brazilian population. Probable reason could be lack of awareness and skills for a maintaining a proper oral hygiene.

Limitation of this study is that the study selected 400 patients and random systematic sampling was performed. Hence, an equal proportion of age groups/ gender/SES/ etiologic factors could not be achieved. Therefore, more research is required to appropriately understand the intensity of gingival recession affecting the population.

VI. SUMMARY AND CONCLUSION

This study was undertaken primarily to determine the distribution, prevalence of gingival recession in relation to age, gender, socio-economic status and various etiologies that can contribute for gingival recession among adult population visiting the Out - Patient Department or Rural Dental College, Loni.

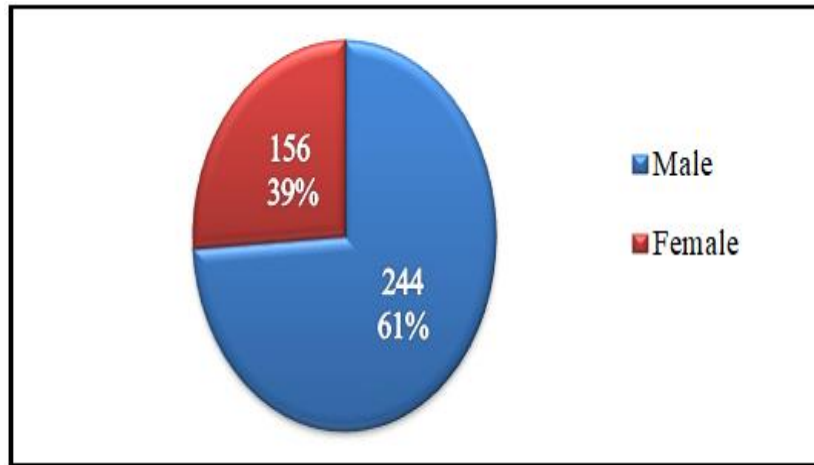
1. Present study indicates that, among 400 patients examined, 273 patients (68.25%) showed gingival recession.
2. A sequential increase in the prevalence of gingival recession was noticed as the age increases from 49.01% to 96.29%.
3. Gingival recession was more prevalent in males (64.83%) than in females (35.16%).
4. Patients, who exhibited gingival recession, belonged mostly from middle and lower middle-class SES.

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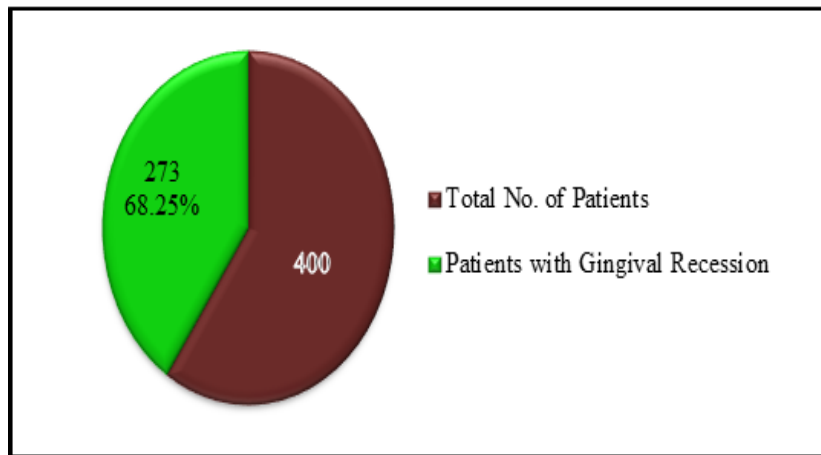
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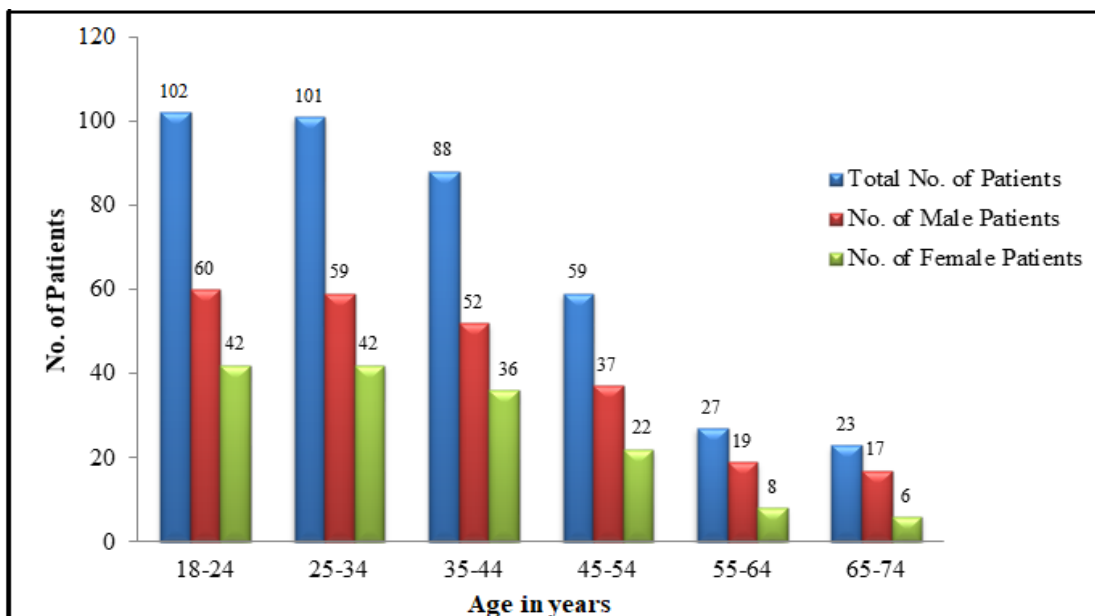
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Graph 1:- Distribution of Patients According to Gender



Graph 2: Prevalence of Gingival Recession



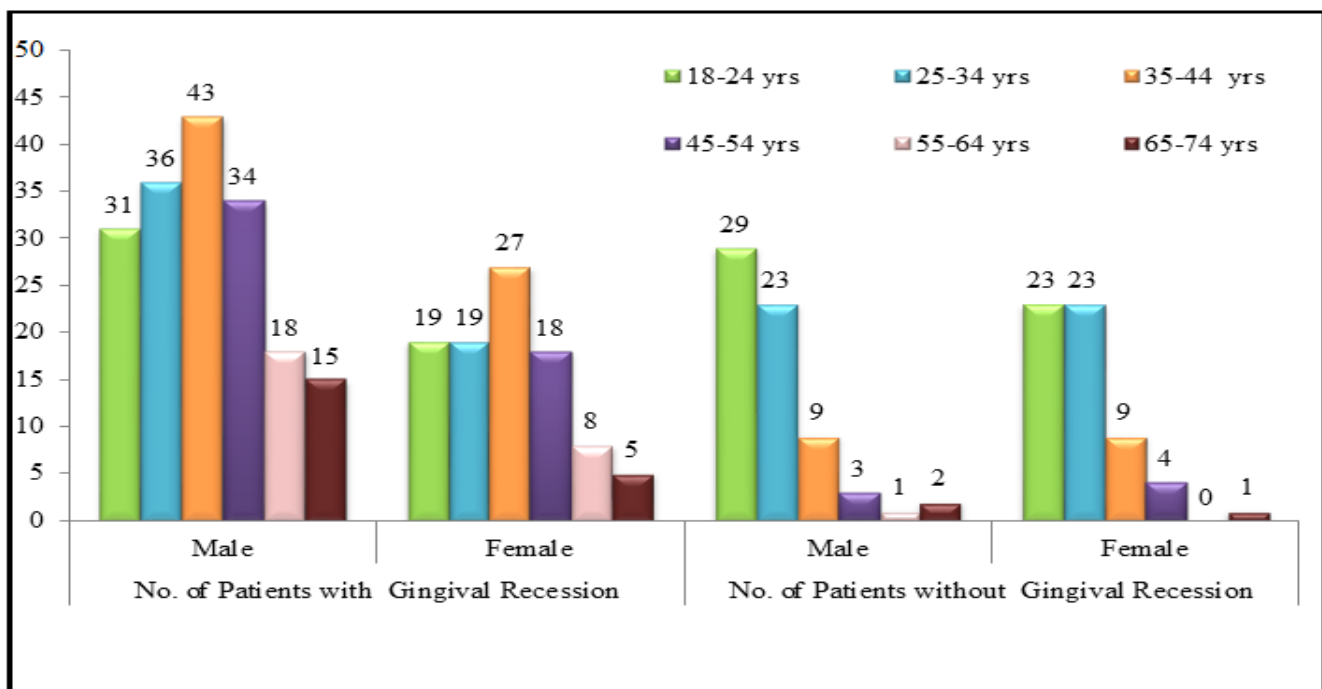
Graph 3:- Age and Gender Wise Distribution of Patients

Age Group (in Years)	No. of Patients with Gingival Recession			No. of Patients without Gingival Recession		
	Male	Female	Total	Male	Female	Total
18-24	31	19	50	29	23	52
25-34	36	19	55	23	23	46
35-44	43	27	70	9	9	18
45-54	34	18	52	3	4	7
55-64	18	8	26	1	0	1
65-74	15	5	20	2	1	3
TOTAL	177	96	273	67	60	127

Table 1:- Age and Gender Wise Distribution of Gingival Recession
 Value of $\chi^2 = 58.607$, $p < 0.0001$, significant

Age Group (in Years)	Prevalence of Gingival Recession (%)
18-24	49.01
25-34	54.45
35-44	79.54
45-54	88.13
55-64	96.29
65-74	86.95

Table 2:- Prevalence of Gingival Recession According to Age



Graph 4: Age and Gender Wise Distribution of Gingival Recession

	Male	Female	TOTAL
With Gingival Recession	177 (64.83%)	96 (35.16%)	273
Without Gingival Recession	67 (52.75%)	60 (47.24%)	127
TOTAL	244	156	400

Table 3:- Gender Wise Distribution With/Without Gingival Recession
Value of $\chi^2 = 4.820$, $p = 0.0281$, significant

Socio-Economic Status*	No. of Patients Without Recession	No. of Patients With Recession	% of Gingival Recession	TOTAL
I (upper class)	96	158	62.20	254
II(upper middle class)	27	81	75	108
III (middle class)	3	27	90	30
IV(lower middle class)	1	7	87.5	8
V (lower class)	0	0	0	0
TOTAL	127	273		400

Table 4:- Gingival Recession with Respect to Socio-Economic Status

* Pandey VK, Aggarwal P, Kakkar R. Modified BG Prasad's Socio-economic Classification 2018: The need of an update in the present scenario. *Indian J Comm Health*. 2018; 30(1): 82-84. Value of $\chi^2 = 14.472$, $p = 0.0023$, significant