

## ORIGINAL ARTICLE

# Prevalence of Gingival Recession among Young Adults Attending at Rajshahi Medical College Hospital

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## ABSTRACT

**Background:** Gingival recession, the apical displacement of the gum margin, is a common condition that can cause sensitivity, aesthetic concerns, and increased risk of root problems. It is influenced by anatomical factors, poor oral hygiene, trauma, and tobacco use. Despite its prevalence, data on young adults in Bangladesh are limited. This study assesses its occurrence and associated behavioral, dietary, and socioeconomic factors among patients at Rajshahi Medical College Hospital. **Methods & Materials:** A cross-sectional study of 80 young adults (14–35 years) at Rajshahi Medical College Hospital measured gingival recession and recorded oral hygiene habits. Recession was classified as mild, moderate, or severe. Data were analyzed using SPSS, with ethical approval and participant confidentiality maintained. **Results:** Among 80 young adults, most were males (67.5%), aged 21–28 years (48.8%), with higher or secondary education. Most brushed >2/day (56.2%) using toothpaste and toothbrush (77.5%), while floss (10%) and mouthwash (13.8%) use was low. Plaque (70%) and calculus (60–62.5%) were common. Gingival recession affected mainly mandibular teeth (76.3%), especially anterior (41.3%), with moderate recession most frequent (45%). Severity was significantly associated with incorrect brushing, malocclusion, tobacco use, and periodontitis. **Conclusion:** Gingival recession is common among young adults, especially in mandibular anterior teeth, with moderate (45%) and severe (37.5%) cases predominating. Severity was significantly linked to incorrect brushing, malocclusion, tobacco use, and periodontitis, emphasizing the need for better oral hygiene education and early periodontal care.

**Keywords:** Gingival Recession, Young Adults, Prevalence, Oral Hygiene, Etiological Factors

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## INTRODUCTION

Dental conditions often go unnoticed until advanced stages, presenting with pain or significant symptoms. However, gingival recession is frequently visible and prompts individuals to seek dental care [1]. Gingival recession is defined as the apical displacement of the gingival margin below the cemento-enamel junction (CEJ) of a tooth or the platform of a dental implant [2]. Although commonly associated with middle-aged and older adults, gingival recession can affect younger populations as well [3].

This condition not only raises aesthetic concerns, particularly when anterior teeth are involved, but also increases the risk of dentine hypersensitivity, root caries, cervical abrasion, erosion, and plaque accumulation due to exposed root surfaces [4]. The prevalence of gingival recession varies widely, with reports indicating that approximately 64% of individuals are affected,

although both higher and lower rates have been documented [5]. Its etiology is multifactorial, involving anatomical, inflammatory, traumatic, and iatrogenic factors, with tobacco use recognized as a major contributor linked to periodontal disease and gingival recession [6].

Globally, gingival recession is common among young adults, although prevalence estimates differ across populations. In an Israeli cohort of young adults, 14.6% of subjects and 1.6% of all teeth examined exhibited gingival recession, with higher rates associated with past orthodontic treatment and oral piercings [7]. Similarly, a large study in Greece reported a 63.9% prevalence of gingival recession among young adults, indicating that the condition is frequent even in generally healthy populations [8]. A systematic review and meta-analysis further demonstrated that gingival recession is highly prevalent worldwide, with approximately 85% of individuals having at

least one site with  $\geq 1$  mm recession; buccal recession was particularly common, with a pooled prevalence of 75% [9]. In Bangladesh, clinic-based studies also highlight the significance of this condition. A study of 100 adults reported an average gingival recession depth of 1.8 mm, with greater recession associated with more frequent tooth brushing, emphasizing the importance of correct brushing techniques [10]. Surveys of children have shown that gingivitis prevalence is higher among males, children from lower socioeconomic backgrounds, and those in rural areas, while regular use of a toothbrush and toothpaste was associated with lower prevalence [11]. Behavioral and dietary factors are also influential, with high consumption of sweets (80%) and fast food (14%), as well as smoking (48%), tobacco use (8%), and betel nut chewing (28%) reported in young adults, most of whom had gingivitis for at least one year [12].

Despite these findings, there is limited population-based data on gingival recession among young adults in Bangladesh, and the influence of behavioral and socioeconomic factors remains underexplored. Therefore, this study aims to determine the prevalence of gingival recession among young adults attending Rajshahi Medical College Hospital and to examine the behavioral, pathological, and socioeconomic factors contributing to its development.

**METHODS & MATERIALS**

**Study Design**

This was a cross-sectional observational study conducted at the Rajshahi Medical College Hospital from September 2024 to June 2025.

**Study Population**

The study included young adults aged 14–35 years attending the hospital for routine dental check-ups or treatment.

**Sample Size**

A total of 80 participants were included in the study. The sample size was calculated using an expected prevalence of 85% based on previous global studies, with a 95% confidence level and 8% margin of error.

**Inclusion Criteria**

- Young adults aged 14–35 years
- Both males and females
- Participants who provided informed consent

**Exclusion Criteria**

- Patients with systemic diseases affecting periodontal health
- History of periodontal surgery in the past six months

- Individuals on medications affecting gingival health (e.g., anticonvulsants, immunosuppressants)

**Data Collection**

- Participants underwent a clinical oral examination using a mouth mirror and periodontal probe.
- Gingival recession (GR) was measured as the distance from the cemento-enamel junction (CEJ) to the free gingival margin in millimeters (mm).
- Oral hygiene practices, including tooth brushing habits, were recorded using a structured questionnaire.
- Recession severity was categorized into three groups:
  - Mild: 0–2 mm
  - Moderate: 2.1–3.5 mm
  - Severe: >3.5 mm

**Data Analysis**

- Data were entered into SPSS for statistical analysis.
- Descriptive statistics (frequency, percentage) were used to present the prevalence and severity of gingival recession.

**Ethical Considerations**

- Ethical approval was obtained from the institutional review board of Rajshahi Medical College Hospital.
- Written informed consent was obtained from all participants before enrollment.
- Participants’ confidentiality and anonymity were maintained throughout the study.

**RESULTS**

Table 1 shows that the majority of the study participants were aged 21–28 years (48.8%), followed by those aged 29–35 years (33.7%), indicating that most respondents were in early adulthood. There was a clear male predominance (67.5%) compared to females (30.0%). Regarding educational status, the largest proportion of participants had higher education (37.5%), followed by secondary education (35.0%), while a smaller proportion had primary education (18.8%) or no formal education (8.8%). In terms of monthly income, most participants belonged to the 20,000–40,000 BDT income group (41.3%), followed by 41,000–60,000 BDT (26.3%), suggesting that the majority were from middle-income households. Overall, Table 1 reflects that the study population consisted predominantly of young, educated, middle-income males attending the dental outpatient department.

**Table - I: Socio-demographic Characteristics of the Study Participants (n = 80)**

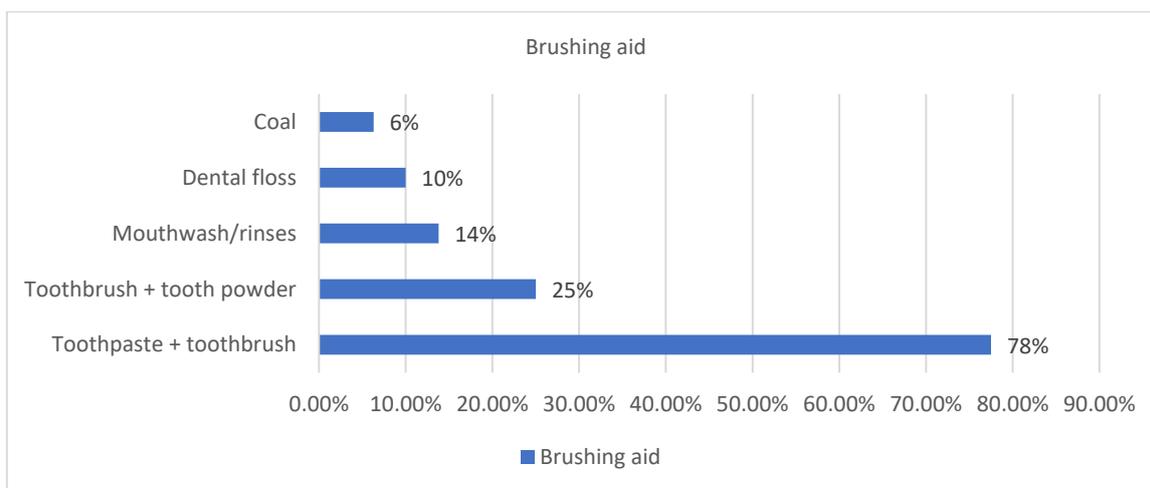
Variable	Category	Frequency (n)	Percentage (%)
Age (years)	14–20	14	17.5
	21–28	39	48.8
	29–35	27	33.7
Gender	Male	54	67.5
	Female	24	30.0
Education level	No education	7	8.8
	Primary	15	18.8
	Secondary	28	35.0
	Higher education	30	37.5
Monthly income (BDT)	<20,000	4	5.0
	20,000–40,000	33	41.3
	41,000–60,000	21	26.3
	61,000–80,000	14	17.5
	80,000–100,000	5	6.3
	>100,000	3	3.8

Table II shows that only 23.8% of participants had a history of previous dental visits, indicating low utilization of professional dental services. More than half of the participants (56.2%) reported brushing their teeth more than twice daily. Regarding

brushing technique, the most commonly practiced method was horizontal brushing (40.0%), followed by circular (25.0%) and vertical techniques (22.5%), while a smaller proportion (12.5%) reported using mixed or irregular brushing methods.

**Table – II: Dental Visit History and Oral Hygiene Practices of the Study Participants (n = 80)**

Variable	Category	Frequency (n)	Percentage (%)
Previous dental visit	Yes	19	23.8
	No	61	76.3
Brushing frequency	<2 times/day	24	30.0
	2 times/day	11	13.8
	>2 times/day	45	56.2
Brushing technique*	Horizontal	32	40.0
	Vertical	18	22.5
	Circular	20	25.0
	Mixed/irregular	10	12.5



**Figure – 1: Brushing Materials and Aids Used\* (Multiple Responses)**

Figure 1 shows that the majority of participants used toothpaste with a toothbrush (77.5%) for oral hygiene. One-quarter (25.0%) reported using toothbrush with tooth powder. The use of adjunctive oral hygiene aids such as mouthwash/rinses (13.8%) and dental floss (10.0%) was relatively low. A small proportion of participants (6.3%) reported using coal for tooth cleaning, indicating that

traditional oral hygiene practices are still present but less common in this study population.

Table III shows that a substantial proportion of the participants had poor oral hygiene status. Plaque accumulation was present in 70.0% of the study population, while only 30.0% were plaque-free. Subgingival calculus was detected in 60.0% of participants, and supragingival calculus was observed in 62.5%, indicating widespread calculus deposition.

**Table – III: Oral Hygiene Status of Participants (n = 80)**

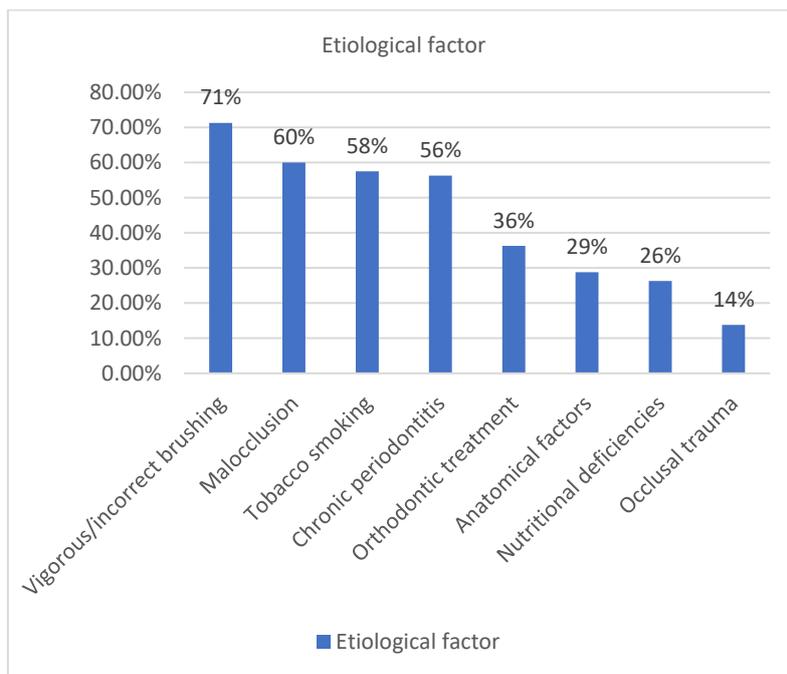
Variable	Category	Frequency (n)	Percentage (%)
Plaque	Present	56	70.0
	Absent	24	30.0
Subgingival calculus	Present	48	60.0
	Absent	32	40.0
Supragingival calculus	Present	50	62.5
	Absent	30	37.5

Table IV shows that gingival recession was predominantly observed in the mandibular teeth (76.3%), with the mandibular anterior region (41.3%) being the most affected.

The mandibular posterior teeth also had a high prevalence (35.0%). In the maxilla, the anterior teeth accounted for 12.5% and posterior teeth for 11.3% of cases.

**Table – IV: Site and Location Distribution of Gingival Recession (n = 80)**

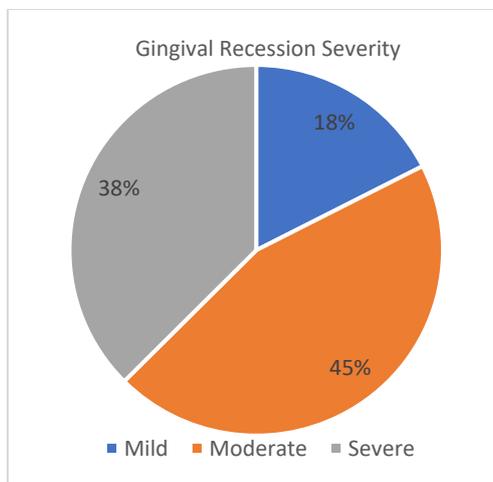
Jaw	Location of Teeth	Frequency (n)	Percentage (%)
Maxilla	Anterior	10	12.5
	Posterior	9	11.3
Mandible	Anterior	33	41.3
	Posterior	28	35.0
Total	—	80	100.0



**Figure - 2: Etiological Factors Associated with Gingival Recession\* (Multiple Responses)**

Figure 2 shows that the most commonly identified etiological factor associated with gingival recession was vigorous or incorrect tooth brushing (71.3%). This was followed by malocclusion (60.0%), tobacco smoking (57.5%), and chronic periodontitis (56.3%), indicating that both behavioral and pathological factors play a significant role in the development

of gingival recession. A considerable proportion of participants also reported a history of orthodontic treatment (36.3%) and anatomical factors (28.8%), while nutritional deficiencies (26.3%) and occlusal trauma (13.8%) were less frequently observed. Overall, the findings suggest that gingival recession in this population is multifactorial in origin.



**Figure - 3: Distribution of Gingival Recession Severity Among Study Participants (n = 80)**

Moderate gingival recession was the most common (45%), followed by severe (37.5%) and mild (17.5%), indicating a higher prevalence of moderate to severe tissue loss in the study population. (Figure 3)

The association between etiological factors and gingival recession severity (Table V) showed that vigorous or incorrect brushing ( $p = 0.018$ ), malocclusion ( $p = 0.031$ ), tobacco smoking ( $p = 0.022$ ), and chronic periodontitis ( $p = 0.009$ ) were significantly associated with higher severity of gingival

recession, with participants exhibiting these factors more likely to have moderate to severe recession. In contrast, orthodontic treatment ( $p = 0.071$ ), anatomical factors ( $p = 0.082$ ), nutritional deficiencies ( $p = 0.065$ ), and occlusal trauma ( $p = 0.109$ ) were not significantly associated with severity.

These results suggest that both behavioral factors (like brushing technique) and pathological factors (like periodontitis, malocclusion, and smoking) play a critical role in the progression of gingival recession among young adults.

**Table – V: Association Between Etiological Factors and Gingival Recession Severity (n = 80)**

Etiological factor	Mild n (%)	Moderate n (%)	Severe n (%)	p-value
Vigorous/incorrect brushing	8 (50.0)	26 (72.2)	23 (82.1)	0.018*
Malocclusion	6 (37.5)	24 (66.7)	18 (64.3)	0.031*
Tobacco smoking	5 (31.3)	22 (61.1)	19 (67.9)	0.022*
Chronic periodontitis	4 (25.0)	20 (55.6)	21 (75.0)	0.009*
Orthodontic treatment	3 (18.8)	12 (33.3)	14 (50.0)	0.071
Anatomical factors	2 (12.5)	8 (22.2)	13 (46.4)	0.082
Nutritional deficiencies	1 (6.3)	6 (16.7)	14 (50.0)	0.065
Occlusal trauma	0 (0.0)	3 (8.3)	8 (28.6)	0.109

\*Chi-square test applied; p < 0.05 considered statistically significant.

**DISCUSSION**

The present study found that most dental outpatients were young adults, with 48.8% aged 21–28 years and 33.7% aged 29–35 years, and a clear male predominance (67.5%). Similarly, Kassebaum et al. (2017) reported that oral conditions peaked in the 20–44-year age group, accounting for about 55% of global cases, with males showing a higher burden of severe periodontal disease [13]. Most participants had higher education (37.5%), supporting better dental service use among educated individuals, similar to Reda et al. (2018) who reported 1.7-fold higher utilization with higher education [14]. Likewise, 41.3% belonged to the middle-income group, consistent with Listl (2012) showing 2–3 times higher dental service use among middle- and high-income groups [15].

In this study, only 23.8% of participants had previously visited a dentist, reflecting low utilization, similar to Olusile et al. (2014), who reported that 28% of Nigerian adults had ever sought dental care. While 56.2% of participants brushed more than twice daily, horizontal brushing (40%) was most common, compared with Olusile et al., where 62% of adults brushed at least twice daily but only 30% used recommended circular or vertical techniques [16].

In our study most participants (77.5%) used toothpaste with a toothbrush, while 25.0% used tooth powder. Adjunctive aids were less common, with mouthwash (13.8%) and dental floss (10.0%), and 6.3% used coal. Similarly, Olusile et al. (2014) reported 72% of adults used a toothbrush with toothpaste, with floss (12%) and mouthwash (9%) rarely used, and Almas et al. (2002) found 10–15% still used toothpowder or traditional materials. These results highlight the need to promote proper use of adjunctive oral hygiene aids [16,17].

Our study shows a high prevalence of poor oral hygiene, with 70.0% of participants having plaque, 60.0% subgingival calculus, and 62.5% supragingival calculus. These results are comparable to Carvajal et al. (2016), who reported that 68.3% of South American adults had visible plaque, 61.2% had subgingival calculus, and 63.5% had supragingival calculus [18]. In present study shows that gingival recession was most common in the mandibular teeth (76.3%), particularly the anterior region (41.3%), while maxillary teeth were less affected (12–13%). This aligns with Cortellini and Bissada (2018), who reported over 70% of recession in mandibular teeth with 40–45% affecting incisors [19].

The present study shows that gingival recession is largely multifactorial. The most common factors were vigorous or incorrect brushing (71.3%), malocclusion (60.0%), tobacco smoking (57.5%), and chronic periodontitis (56.3%). Other contributors included orthodontic treatment (36.3%), anatomical predisposition (28.8%), nutritional deficiencies (26.3%), and occlusal trauma (13.8%). These findings align with previous studies: improper brushing occurs in 65–70% of cases, malocclusion and anatomical factors in 30–40%, and smokers have 2–3 times higher risk of recession [2021], Chronic periodontitis, orthodontic treatment, occlusal trauma,

and thin gingival biotype increase localized susceptibility by compromising periodontal support or applying mechanical stress [19].

Our study shows that moderate gingival recession (45%) was most common, followed by severe (37.5%) and mild (17.5%), indicating substantial tissue loss among participants. This aligns with Albandar and Kingman (1999), shows that 40–45% moderate and 30–38% severe cases [20].

The study found that vigorous/incorrect brushing (p = 0.018), malocclusion (p = 0.031), tobacco smoking (p = 0.022), and chronic periodontitis (p = 0.009) were significantly associated with moderate to severe gingival recession. Consistently, smoking increases the risk of recession by 1.8 times (OR = 1.84), and periodontitis shows a much higher risk (OR ≈ 9.9) in multistudy analyses, highlighting their strong role in progression [22]. According to Tomina et al. (2021), malocclusion is a key factor in gingival recession, with over 70% of teeth with occlusal interferences affected [23]. Although occlusal trauma itself was not statistically significant in the present sample (p = 0.109), meta-analytic data suggest occlusal trauma can still increase recession risk by over 3 times (OR = 3.20) [22]. Vigorous brushing and plaque accumulation are major contributors to gingival recession, with rough brushing increasing the risk by 1.43-fold [17]. In this study, anatomical factors (28.8%), nutritional deficiencies (26.3%) contributed to gingival recession. Comparable studies reported these factors in 20–30% of affected adults, highlighting their role as secondary contributors to tissue loss [19,20].

**CONCLUSION**

Gingival recession is highly prevalent among young adults attending Rajshahi Medical College Hospital, with moderate (45%) and severe (37.5%) cases being most common. Recession was most frequent in the mandibular anterior teeth. Behavioral factors such as vigorous or incorrect brushing, along with malocclusion, tobacco use, and chronic periodontitis, were significantly associated with greater severity. These findings highlight the need for improved oral hygiene education and early periodontal care to prevent progression of gingival recession in this population.

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