

## Partial Edentulism And Its Association With Socio-Demographic And Systemic Factors (September 2025–February 2026): A Cross-Sectional Study Of Patients Attending A Dental Teaching Institution

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### Abstract

**Background:** Partial edentulism remains a significant oral health concern in developing countries. It adversely affects mastication, phonetics, esthetics, and overall quality of life. The etiology is multifactorial, including dental caries, periodontal disease, trauma, systemic conditions, and socio-behavioural determinants.

**Aim:** To assess the prevalence and pattern of partial edentulism and its association with socio-demographic and systemic factors among patients attending a dental teaching institution.

**Materials and Methods:** A cross-sectional institutional study was conducted at C.S.M.S.S. Dental College and Hospital, Aurangabad, from September 2025 to February 2026. A total of 4200 patients aged 20–70 years were examined. Data were collected using a structured questionnaire and intraoral clinical examination. Variables recorded included age, gender, education, occupation, socioeconomic status (Modified Kuppusswamy Scale), smoking habits, systemic diseases (diabetes and hypertension), and Kennedy's classification. Statistical analysis was performed using SPSS (Version 25.0). Chi-square test was applied with significance level set at  $p < 0.05$ .

**Results:** The prevalence of partial edentulism was 62.4% (2620 patients). Kennedy Class III (48.1%) was the most common pattern, followed by Class I (21.3%), Class II (18.6%), and Class IV (12%). Significant associations were observed with age ( $p < 0.001$ ), socioeconomic status ( $p < 0.01$ ), smoking ( $p < 0.01$ ), and systemic diseases ( $p < 0.05$ ).

**Conclusion:** Partial edentulism is significantly associated with socio-demographic and systemic factors. Preventive strategies including awareness, early intervention, tobacco cessation, and systemic disease control are essential.

**Keywords:** Partial edentulism, Kennedy classification, tooth loss, socioeconomic factors, cross-sectional study, systemic diseases

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### I. Introduction

Oral health is an integral component of general health and well-being. Tooth loss, particularly partial edentulism, remains one of the most prevalent chronic conditions worldwide. Unlike complete edentulism, partial edentulism affects individuals across various age groups and has profound functional, psychological, and social consequences.

Partial edentulism is defined as the absence of one or more natural teeth while other teeth remain present in the dental arch. The primary etiological factors include dental caries, periodontal disease, trauma, and systemic illnesses such as diabetes mellitus. Additionally, socioeconomic determinants such as education, income, occupation, and access to dental care significantly influence its occurrence.

The Kennedy classification system remains the most widely accepted method for categorizing partially edentulous arches and plays a vital role in diagnosis and treatment planning.

In developing countries like India, the burden of partial edentulism is amplified due to limited awareness, financial constraints, delayed dental visits, and tobacco use. Understanding its distribution and associated factors is essential for planning preventive and rehabilitative strategies.

## **II. Aim And Objectives**

### **Aim**

To evaluate the prevalence and pattern of partial edentulism and its association with socio-demographic and systemic factors.

### **Objectives**

1. To determine the prevalence of partial edentulism
2. To classify patterns using Kennedy's classification
3. To evaluate association with age and gender
4. To assess relationship with education and socioeconomic status
5. To determine association with smoking and systemic diseases

## **III. Materials And Methods**

### **Study Design**

Institutional-based cross-sectional observational study

### **Study Duration**

September 2025 to February 2026 (6 months)

### **Study Setting**

Department of Prosthodontics, C.S.M.S.S. Dental College and Hospital, Aurangabad

### **Sample Size**

4200 patients aged 20–70 years

### **Inclusion Criteria**

- Patients aged 20–70 years
- Presence of one or more missing teeth
- Willingness to participate

### **Exclusion Criteria**

- Completely edentulous patients
- Congenital absence of teeth
- Patients undergoing orthodontic extractions

### **Data Collection**

- Structured questionnaire
- Intraoral clinical examination

### **Variables Recorded**

- Age
- Gender
- Education
- Occupation
- Socioeconomic status (Modified Kuppaswamy Scale)
- Smoking habits
- Systemic diseases (Diabetes, Hypertension)
- Kennedy's classification

### **Statistical Analysis**

Data analysed using SPSS Version 25.0.

Chi-square test applied.

Significance level set at  $p < 0.05$ .

#### **IV. Results**

##### **Prevalence**

- Total examined: 4200
- Partial edentulism: 2620 patients (62.4%)

##### **Age Distribution**

- 51–60 years: 34%
- 41–50 years: 28%
- Significant association ( $p < 0.001$ )

##### **Gender Distribution**

- Males: 54%
- Females: 46%
- Slight male predominance

##### **Kennedy's Classification**

- Class III: 48.1%
- Class I: 21.3%
- Class II: 18.6%
- Class IV: 12%

##### **Socioeconomic Status**

- Higher prevalence in lower and upper-lower classes
- Significant association ( $p < 0.01$ )

##### **Smoking**

- 41% smokers among affected patients
- Significant association ( $p < 0.01$ )

##### **Systemic Diseases**

- Diabetes: 18%
- Hypertension: 22%
- Significant association ( $p < 0.05$ )

#### **V. Discussion**

The present study demonstrated a high prevalence (62.4%) of partial edentulism, consistent with previous institutional studies in India. Kennedy Class III was the most prevalent pattern, indicating localized tooth loss, primarily due to dental caries.

Age showed a strong positive correlation, reflecting cumulative oral disease burden. Socioeconomic status significantly influenced prevalence, indicating disparities in access to dental care.

Smoking showed a strong association due to its role in periodontal destruction and tooth loss. Systemic diseases such as diabetes and hypertension were also significantly associated, highlighting the interrelationship between oral and systemic health.

#### **VI. Limitations**

- Institutional-based study
- Self-reported systemic history
- Cross-sectional design limits causality

#### **VII. Conclusion**

Partial edentulism is significantly associated with:

- Advancing age
- Low socioeconomic status
- Smoking habit
- Systemic diseases

Kennedy Class III is the most prevalent pattern. Preventive strategies focusing on awareness, early treatment, tobacco cessation, and systemic disease control are essential.

#### **VIII. Clinical Significance**

Early prosthodontic rehabilitation prevents:

- Supra-eruption
- Pathologic migration
- Temporomandibular joint disturbances

- Occlusal imbalance

Public health programs should emphasize preventive dentistry and routine dental screening.

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