



## To Assess prevalence Rate of Partially Edentulous State of Dental Patients: A Retrospective Study

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### ABSTRACT

**Background:** Partial edentulism is a common oral health problem that affects mastication, esthetics, phonetics, and overall quality of life. Assessing its prevalence and pattern is essential for planning prosthodontic services.

**Aim:** This study aimed to evaluate the prevalence and pattern of partial edentulism among patients attending RCDSR, Bhilai.

**Materials and Methods:** A retrospective observational study was conducted on 500 patient records from the Departments of Prosthodontics And Crown & Bridge. Demographic information, cause of tooth loss, arch involvement, and type of partial edentulism based on Kennedy's classification were recorded using a structured questionnaire. Data were analyzed using SPSS software. Descriptive statistics and the Chi-square test were applied, and a p-value of  $\leq 0.05$  was considered statistically significant.

**Results:** Partial edentulism was more prevalent among males (55%) and was highest in the 41–60-year age group (42%). Kennedy Class I (35%) and Class III (30%) were the most frequent patterns observed. Mandibular involvement (45%) was slightly higher than maxillary involvement (40%). Dental caries was the leading cause of tooth loss (50%). A statistically significant association was found between age group and Kennedy's classification ( $p < 0.05$ ).

**Conclusion:** Partial edentulism is highly prevalent among middle-aged adults, with distal extension (Class I and II) and bounded edentulous spaces

(Class III) being predominant. Preventive strategies and timely prosthodontic rehabilitation are recommended.

**Keywords:** Partial edentulism, Kennedy's classification, prevalence, tooth loss, prosthodontics

### I. INTRODUCTION

Partial edentulism is a significant oral health concern worldwide, as it affects functional efficiency, esthetics, and overall quality of life. Tooth loss occurs primarily due to dental caries, periodontal disease, trauma, and other pathological conditions. If left untreated, partial edentulism may result in drifting of adjacent teeth, supra-eruption of opposing teeth, alveolar bone resorption, and temporomandibular joint disorders.

Kennedy's classification is widely used to categorize partially edentulous arches because it is simple, clinically relevant, and facilitates communication among dental professionals. Institution-based studies provide insight into the local prevalence of partial edentulism, aiding in the planning of prosthodontic services, academic training, and preventive programs. Considering these factors, this retrospective study was undertaken at RCDSR, Bhilai, to assess the prevalence and patterns of partial edentulism among patients.

### II. MATERIALS AND METHODS

A retrospective observational study was conducted at Rungta College of Dental Sciences and Research (RCDSR), Bhilai, over a period of



three months. A total of 500 patient records were included, which were selected using simple random sampling from the Departments of Prosthodontics And Crown & Bridge.

**Study Design:** Retrospective observational study.

**Study Location:** The study was carried out in the clinical and academic facilities of RCDSR, Bhilai, encompassing patient records from Departments of Prosthodontics And Crown & Bridge.

#### Inclusion criteria

- Patients aged 18 years and above
- Presence of partial edentulism (excluding third molars)
- Patients attending the Departments of Oral Medicine and Radiology or Prosthodontics
- Complete clinical records

#### Exclusion criteria

- Completely edentulous patients
- Congenital or developmental tooth loss
- Orthodontic extraction cases
- Incomplete records

Data were collected using a structured questionnaire approved by the Department of Prosthodontics and Crown & Bridge. The questionnaire comprised four sections:

1. **Demographic Details:** Age, gender, occupation, address, and outpatient department (OPD) number.

2. **Dental Status:** Number and location of missing teeth, cause of tooth loss (dental caries, periodontal disease, trauma, congenital absence, orthodontic extraction, or other causes), side involvement, duration since tooth loss, history of replacement, type of replacement (removable partial denture, fixed partial denture, implant, or other), and reasons for non-replacement.

3. **Awareness and Attitude:** Perceived necessity of tooth replacement, awareness of replacement options, willingness for future replacement, importance given to tooth replacement, oral hygiene practices, and frequency of dental visits.

4. **Clinical Examination:** Kennedy's classification, arch involved, number of edentulous spaces, provisional diagnosis, and proposed treatment options.

**DEPARTMENT OF PROSTHODONTICS AND CROWN & BRIDGE**  
**QUESTIONNAIRE FOR PATIENTS**

**PART 1: DEMOGRAPHIC DETAILS**

OPD NO: \_\_\_\_\_ DATE: \_\_\_\_\_

Name: \_\_\_\_\_  
Age: \_\_\_\_\_  
Gender: \_\_\_\_\_  
Occupation: \_\_\_\_\_  
Address: \_\_\_\_\_

**PART 2: DENTAL STATUS**

1. Do you have any missing natural teeth (excluding third molars)?  
Yes  
No

2. Cause of tooth loss:  
Dental caries  
Periodontal disease  
Trauma  
Congenital absence  
Extraction for orthodontic reasons  
Other (specify): \_\_\_\_\_

3. How many teeth are missing?  
8 7 6 5 4 3 2 1 | 1 2 3 4 5 6 7 8  
8 7 6 5 4 3 2 1 | 1 2 3 4 5 6 7 8

4. What is the location of the missing teeth:  
Upper Jaw (Maxilla)  
Lower Jaw (Mandible)  
Both

5. What side are the teeth missing from?  
Right side  
Left side  
Both sides  
Only front teeth

6. Duration since teeth were lost: \_\_\_\_\_

7. Have you taken any treatment to replace the missing teeth?  
Yes  
No

8. If yes, what type of replacement do you have?  
Removable Partial Denture (RPD)  
Fixed Partial Denture (FPD)  
Dental Implants  
Others: \_\_\_\_\_

9. If not replaced, what is the reason?  
Financial reasons  
Lack of awareness  
No pain or discomfort  
Fear of dental procedures  
Planning to replace later  
Others: \_\_\_\_\_

**PART 3: AWARENESS AND ATTITUDE**

10. Do you think replacing missing teeth is necessary?  
Yes  
No  
Not sure

11. Are you aware of the options available for tooth replacement?  
Yes  
No

12. Would you consider getting your missing teeth replaced in the future?  
Yes  
No  
Maybe

13. How important do you think it is to replace missing teeth?  
Very important  
Important  
Neutral  
Not important

14. How often do you brush your teeth?  
Once a day  
Twice a day  
Occasionally

15. Do you visit a dentist regularly for check-ups?  
Yes, every 6 months  
Once a year  
Only when there is a problem  
Never

**PART 4: CLINICAL EXAMINATION**

16. Kennedy Classification (if applicable):  
Class I  
Class II  
Class III  
Class IV

17. Arch involved:  
Maxilla  
Mandible  
Both

18. Number of edentulous spaces: \_\_\_\_\_

19. Provisional Diagnosis: (Kennedy Classification-Before Treatment): \_\_\_\_\_

20. Treatment Options:  
Removable Partial Denture (RPD)  
Fixed Partial Denture (FPD)  
Dental Implants  
Others: \_\_\_\_\_

### III. STATISTICAL ANALYSIS

Data were compiled and analyzed using the Statistical Package for Social Sciences (SPSS) software. Descriptive statistics were calculated to determine frequencies and percentages. The Chi-square test, a nonparametric test, was used when data were expressed as frequency, proportion, or percentage. It evaluates the statistical significance



of differences in frequencies between subgroups by comparing observed values with expected values.

The formula for the Chi-square test is:

$$\chi^2 = \sum \frac{(O-E)^2}{E}$$

Where:

- $\Sigma$  denotes summation
- $O$  is the observed frequency
- $E$  is the expected frequency

#### Interpretation of p-values:

- $p > 0.05$ — Non-significant
- $p < 0.05$ — Significant
- $p < 0.01$ — Highly significant (significant at 99% confidence level)
- $p < 0.001$ — Very highly significant (significant at 99.9% confidence level)

A p-value  $\leq 0.05$  was considered statistically significant in this study.

## IV. RESULTS

A total of 500 patient records were analyzed. The mean age of participants was  $45.6 \pm 12.4$  years, ranging from 18 to 75 years.

#### Gender Distribution

Out of 500 patients, 275 (55%) were male and 225 (45%) were female. Chi-square analysis showed no statistically significant association between gender and Kennedy's classification ( $\chi^2 = 2.14$ ,  $df = 3$ ,  $p = 0.544$ ), indicating similar patterns of partial edentulism among males and females (Table 1).

#### Age-wise Distribution

The highest prevalence of partial edentulism was observed in the 41–60-year age group (210 patients, 42%), followed by 31–40 years (110 patients, 22%), >60 years (90 patients, 18%), and 18–30 years (90 patients, 18%). A statistically significant association was found between age group and Kennedy's classification ( $\chi^2 = 18.62$ ,  $df = 6$ ,  $p = 0.004$ ), indicating that the type of partial edentulism varied across different age groups (Table 2).

#### Kennedy Classification

Analysis according to Kennedy's classification revealed that Class I was most prevalent (175 patients, 35%), followed by Class III (150 patients, 30%), Class II (125 patients, 25%), and Class IV (50 patients, 10%). Gender did not show a significant association with Kennedy's classification ( $\chi^2 = 2.14$ ,  $df = 3$ ,  $p = 0.544$ ) (Table 3).

#### Arch Involvement

Mandibular involvement was observed in 225 patients (45%), maxillary involvement in 200

patients (40%), and both arches in 75 patients (15%). The association between arch involvement and Kennedy's classification was statistically significant ( $\chi^2 = 12.87$ ,  $df = 6$ ,  $p = 0.045$ ), with distal extension cases more frequently seen in the mandible and bounded edentulous spaces more common in the maxilla (Table 4).

#### Tables

**Table 1: Gender Distribution (n = 500)**

##### Gender Number Percentage (%)

Male	275	55
Female	225	45

**Table 2: Age-wise Distribution**

##### Age Group (years) Number Percentage (%)

18–30	90	18
31–40	110	22
41–60	210	42
>60	90	18

**Table 3: Kennedy Classification**

##### Kennedy Class Number Percentage (%)

Class I	175	35
Class II	125	25
Class III	150	30
Class IV	50	10

**Table 4: Arch Involvement**

##### Arch Involved Number Percentage (%)

Maxilla	200	40
Mandible	225	45
Both arches	75	15

## V. DISCUSSION

The present study demonstrated that partial edentulism was most prevalent among patients aged 41–60 years, reflecting the cumulative impact of dental caries and periodontal disease. Although a slightly higher prevalence was observed in males, no statistically significant gender differences were found. Kennedy Class I and III were the most common patterns, indicating that distal extension and bounded edentulous spaces predominated in the study population. Mandibular involvement was more frequent than maxillary involvement, consistent with findings from previous studies conducted in India.

Patient awareness regarding the need for tooth replacement was moderate; however, the actual rate of prosthetic rehabilitation was low. This



emphasizes the importance of educating patients about the benefits of timely prosthodontic intervention and ensuring accessibility to replacement options.

#### VI. LIMITATIONS

- Retrospective design limits the ability to control confounding variables.
- Data were collected from a single center, which may limit generalizability.
- The study relied on existing records, which may have missing or incomplete information.

#### VII. CONCLUSION

Partial edentulism is a prevalent oral health problem among patients attending RCDSR, Bhilai, particularly affecting middle-aged adults. Distal extension (Class I and II) and bounded edentulous spaces (Class III) were the predominant patterns, with mandibular involvement more common than maxillary. Preventive measures, awareness programs, and timely prosthodontic rehabilitation are essential to reduce the burden of partial edentulism and improve oral health-related quality of life.

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