

# The Quality of Oral Rehabilitation in the Partially Edentulous South Indian Population: A Cross Sectional Study

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## ABSTRACT

**Purpose of the study:** To assess the prevalence of the partially edentulous condition and the current treatment modalities in the south Indian population and to plan for further scope of improvement.

**Materials and Methods:** A clinical examination was done on patients who reported to the Department of Prosthodontics and the cases were assessed for the prevalence of partial edentulousness amongst the arches and the type of removable prostheses which were given. The data was analyzed by using descriptive statistics.

**Results:** Partial edentulousness is equally prevalent in the mandibular and the maxillary arches. Kennedy's Class I is the most common maxillary arch, whereas Class III is the most common mandibular arch. 96.9% of the removable prosthesis was made of acrylic resin frameworks and 3.1% was made of cast metal frameworks.

**Conclusion:** Non-metallic, removable prostheses remain a common prosthodontic treatment modality in the south Indian region. This data indicates a need to improve the quality of oral rehabilitation for the partially edentulous patients in south India.

**Key Words:** Oral rehabilitation, Partial edentulousness, Removable

## INTRODUCTION

Dental awareness and the access to preventive dental care have contributed significantly to a decrease in the edentulous population. Despite the decreasing rate of tooth loss, the demand for removable prosthodontic treatment remains high. This owes the relatively expensive modalities of treatments such as fixed partial dentures and dental implants, which may limit their availability to the lower socio-economic groups in whom the highest rates of tooth loss occur [1-6]. The long term clinical results suggest that it is believed that without the strength and established design principles of the cast metal framework removable partial dentures (RPD), the alternative frameworks have a reduced longevity and that they cause unfavourable periodontal consequences [7,8]. Bissada et al found that the inflammation was greater when acrylic resin came in contact with the gingival tissue than when metal was used [9]. These results seem to confirm a preference for metal framework RPDs in terms of the clinical performance and the periodontal health. In the removable prosthodontic treatment, the frequency of the use between the cast metal and the acrylic resin framework RPDs varies in different countries, thus reflecting the quality of the oral rehabilitation which is done for the partial edentulous patients [10-14]. In a developing country like India, documented data on the prevalence of partial edentulousness and the quality of oral rehabilitation is found to be lacking. Considering the previously mentioned factors, an analysis of the prevalence of various classes of partial edentulousness and various trends in oral rehabilitation would be of profound clinical interest. Hence, this study was done to investigate the patterns of tooth loss and to present the details regarding the quality of oral rehabilitation in partially edentulous patients in south India.

## METHODOLOGY

The study group consisted of 1800 consecutive patients from the Outpatients Department of Prosthodontics at the Thai

Moogambigai Dental College and Hospital, Chennai, during a study period of 6 months. Trained dental surgeons collected the data which was required for the study, by doing clinical examinations. The data which was collected, included the incidence of partial edentulousness among the arches, the type of Kennedy's Classification and the type of RPD treatment, if any, which was already given to the patients. The Kennedy's Classification with appropriate modification and space enumeration was listed according to Applegate's modifications [15]. Dental implants, if present, were considered as 'abutments', based on the Kennedy's Classification [16]. However, the third molars, fixed prosthesis pontics and closed spaces were not considered as missing teeth. The patients who were existing wearers of removable partial denture prostheses were divided into patients with acrylic resin partial dentures and those with cast partial dentures. An RPD was considered to be a metal framework if the major connector was cast in metal alloys and the RPD was considered to be acrylic resin if the major connector was processed in acrylic resin. The data which was collected was tabulated by using a computerized spreadsheet (Microsoft Excel 2010; Microsoft, Redmond, Wash) and it was analyzed by using descriptive statistics.

## RESULTS

A total of 1800 patients were examined for the incidence of partial edentulousness among the arches and for the type of Kennedy's Classification which was present in the arches [Table/Fig1]. Out of 1800 subjects, 889 were partially edentulous in the maxillary arch and 911 were partially edentulous in the mandibular arch, thus indicating a higher incidence in mandibular arch than in the maxillary arch. An incidence of 36.3% was reported for Kennedy's Class III classification, followed by the Class I (33.3%), Class II (25%) and the Class IV (5.4%) classifications. The modification spaces for the Classes I, II and III are summarized in [Table/Fig-2, 3, 4] respectively. Out of 593 class I RPD subjects, 47.8% had a

Arches	Class I	Class II	Class III	Class IV	Total
Maxillary	379	245	239	26	889
Mandibular	214	206	421	70	911
Total	593	451	660	96	1800
Percentage (%)	33.3	25	36.3	5.4	100

**[Table/Fig-1]:** Kennedy's Classification distribution of partially edentulous condition amongst the arches:

Arches	Modification 0	Modification 1	Modification 2	Modification 3+	Total
Maxilla	98	195	65	21	379
Mandible	67	89	49	9	214
Total	165	284	114	30	593
Percentage (%)	27.8	47.8	19.2	5	100

**[Table/Fig-2]:** Kennedy's Classification I distribution with Applegate's modification

Arches	Modification 0	Modification 1	Modification 2	Modification 3+	Total
Maxilla	52	111	72	10	245
Mandible	46	82	60	18	206
Total	98	193	132	28	451
Percentage(%)	21.7	42.9	29.2	6.2	100

**[Table/Fig-3]:** Kennedy's Classification II distribution with Applegate's modification

Arches	Modification 0	Modification 1	Modification 2	Modification 3+	Total
Maxilla	78	99	52	10	239
Mandible	192	152	56	21	421
Total	270	251	108	31	660
Percentage(%)	41.1	38.1	16.1	4.6	100

**[Table/Fig-4]:** Kennedy's Classification III distribution with Applegate's modification

single modification space, 19.2% subjects had two modification spaces, 27.8% had no modification space and 5% had 3 or more modification spaces. Out of 451 subjects, 42.9% Class II RPDs had a single modification space, 29.2% subjects had two modification spaces, 21.7% had no modification space and 6.2% had 3 or more modification spaces. 41.1% reported for Kennedy's Class III with no modification, 38.1% reported for a single modification, 16.1% reported for 2 modifications and 4.6% reported for 3 or more modification spaces which were present. Out of the 1800 subjects who were examined for the partially edentulous condition, 1097 subjects had either cast metal or acrylic resin RPDs [Table/Fig 5]. The acrylic resin RPDs outnumbered the cast metal ones in the number of subjects who reported with RPDs, with 96.9% wearing acrylic RPDs and only 3.1% of the subjects wearing cast metal RPDs.

## DISCUSSION

The prevalence of the partially edentulous condition indicates a lack of progress towards controlling dental disease or the patient's affordability of fixed prostheses. The prevalence of Kennedy's Class III was more common in contradiction to other studies which were reported by Al Jhony et al [16] and Anderson et al [17]. The presence of Kennedy's Classification with 2 or 3 modifications indicates a lack of awareness about preserving the edentulous state. The reduced incidence of the Class IV classification, in replacing only the anterior teeth, demonstrates the rejection of the removable prostheses in comparison to the fixed prostheses, owing to the improved aesthetics. The use of non metal major connectors was found to be extremely high in this study as compared to that in other international studies which were reported from north America and

south east Asia. Owall et al [11] and Deo K. Pun et al [12] reported a 28.5% and a 33.2% fabrication of non-metal major connectors in north America respectively and Cha et al [13] reported a 65% use of acrylic frameworks in the Vietnamese population. The information on the prevalence of partial edentulousness and the quality of oral rehabilitation, provided various demographically based data on the socio economic status of that community, its awareness and acceptance towards the treatment and the knowledge and skill of

RPD Type	Total	Percentage (%)
Cast metal	35	3.1
Acrylic Resin	1062	96.9
Total	1097	100

**[Table/Fig-5]:** Frequency of RPDs

the service provider, which included both clinical and laboratory services. In a developing country like India, the need to improve the quality of oral rehabilitation should be emphasized and reinforced in order to improve the overall well being of the individual and the community.

## CONCLUSION

The partially edentulous condition exists with equal incidence in the maxillary and in the mandibular arch. Kennedy's Class III remains the most common (36.3%) classification in the mandibular arch and Kennedy's Class I remains the most common one in the maxillary arch (33.3%). The incidence of non-metal frameworks was 96.9% in the south Indian population.

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