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Review Article

Prevalence of Partial Edentulism in Indian Population and it's Correlation with Arch Predominance, Gender And Socio-Economic Status- A Literature Review

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Abstract: Kennedy's classification is based on incidence of partial edentulousness proving Class I most prevalent and Class IV least. With changing scenario of dental awareness and health providers, the most prevalent Kennedy's classification need to be addressed regularly. Several studies of trends in removable prosthodontics service showed that the number of complete dentures is declining; number of partial dentures is increasing. This reflects the changes in dental treatments provided which encourage the preservation of natural teeth and decrease in the number of cases require complete dentures. Also such studies focusing on prevalence of partial edentulism and its correlation with other factors in Indian population is reviewed less. This literature reviews about the studies done in Indian population and its correlation with other parameters like arch prevalence, gender and socio-economic status.

Keywords: Partial edentulism, Kennedy's classification, prevalence of partial edentulousness in Indian population.

INTRODUCTION

Teeth are the vital functional component of stomatognathic system. Apart from mastication it also helps in speech and aesthetics. According to World Health Organization adult should have minimum of 21 functional teeth for maintaining above mentioned functions [1]. Clinically, it results in:

- Drifting and tilting of adjacent teeth,
- Supra-eruption of opposing teeth,
- Altered speech,
- Arch space loss,
- Changes in facial appearance, and
- TMDs [2, 3].

Furthermore, above factors will only increase the difficulty to achieve an adequate restoration in such patient [4]. On the lifestyle compromises:

- It restricts dietary options, which leads to weight loss
- Lack of confidence and confined social activities, which may adversely affect the quality of life and lead to psychological dissatisfaction [2].

Despite dramatic improvements in patient awareness about dental care as well as ease in provision of dental treatment around the world, a substantial portion of population loses natural teeth and is a candidate for prosthodontic rehabilitation [5]. Partial edentulousness is defined as a dental arch in which one or more but not all natural teeth are missing. Generally, it occurs by caries, periodontal problems, traumatic injuries, impactions, supernumerary teeth, neoplastic and cystic lesions [2, 3, 6]. Some studies have reported caries as the main cause for tooth loss [7-9]. According to Zaigham *et al*., and Abdel Rahman *et al*., dental caries and periodontal disease were the major causes of tooth loss in early childhood and adolescence [3, 6]. Also, studies have shown direct proportionality of age

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with partial edentulism [2, 6]. Several studies of trends in removable prosthodontic service showed that the number of complete dentures is declining; number of partial dentures is increasing. This reflects the changes in dental treatments provided which encourage the preservation of natural teeth and decrease in the number of cases require complete dentures [10]. Epidemiological surveys are done globally to ascertain the impact of oral diseases and its association between socio-demographic factors, lifestyles, and tooth loss. The loss of teeth is an end product of oral disease and reflects the attitude of the patients, the dentists in a society, the availability, and accessibility of dental care as well as the prevailing philosophies of care. However, in developing countries like India, documented data on prevalence of partial edentulism is found to be lacking. A simple estimation of the proportion of partially edentulous persons is a rough indication of the prevalence of dental diseases and the success or failure of dental care. The need for classification of partially edentulous arches arises so as to easily communicate about present partial edentulous condition and its designing [11, 12]. A classification of partially edentulous arches helps to:

- Identify potential combinations of teeth to edentulous ridges, thus facilitating communication, discussion, and comprehension of the indicated prosthetic treatment among dental colleagues, students and technicians,
- Facilitates case history recording and
- Simplifies information exchange between dentists and the auxiliary staff [13].

Among the various classifications like Kennedy, Applegates, Avant, Neurohar, Eichner, ACP (American College of Prosthodontics) etc, Kennedy's classification is widely studied and clinically accepted by Dental Community [3, 5, 14]. Kennedy's classification was originally proposed by Edward. Kennedy in 1925. Kennedy's classification permits immediate visualization of partially edentulous arches and distinction of tooth supported and tooth-tissue supported cases. As per Kennedy's classification, there are four main types of partially edentulous arches as Class I, Class II, Class III and Class IV as per prevalence rate. The patterns in the incidence of the various Classes of removable partial dentures should be reviewed periodically to serve as teaching guidelines [3, 15]. The aim of this literature review was to analyze the prevalence of partial edentulousness and its correlation with gender, socio-economic factors, arch predominance and incidence of various Kennedy's Classes by reviewing various surveys to identify the factors of significant influences.

SELECTION OF STUDIES

There are numerous scholarly articles available on partial edentulism in various national and international journals. For this review, articles were selected by web searching with key words like "partial edentulism in Indian population", "incidence of Kennedy's classification in India" etc. Studies with surveys on partial edentulism and its various impacting factors like gender, socio-economic status, arch predominance and incidence of Kennedy's classes in Indian population were selected.

List of studies reviewed are as below:

Sr. No	Study by	Study done at	Sample size
1	R. Nirupama *et al.*, [16]	A.B. Shetty Memorial Institute of Dental science, Karnataka	100
2	M. Bharathi *et al*., [17]	PRDCH, Kurnool, Andhra Pradesh	1420
3	R. A. Devishree *et al*., [18]	Saveetha Dental College, Tamil Nadu	200
4	Geetha Prabhu KR *et al*., [19]	Thai Moogambigai Dental College, Tamil Nadu	1800
5	Raisa Rashid *et al*., [20]	GDC Srinagar, J&K	389
6	JY Patel *et al*., [14]	Priyadarshini Dental College, Tamil Nadu	100
7	N Simhachalam Reddy *et al.*, [8]	SRDental College, Tamil Nadu	500
8	Shivani Jandial *et al*., [4]	District Hospital, Kathua, J&K	600
9	Prashanti Eachempati *et al*., [21]	Mangalore, Karnataka	171
10	Kathleen M D'Souza *et al*., [22]	GDC Goa	423
11	Surender Kumar *et al*., [23]	Rajendra Institute of Medical Science, Ranchi, Jharkhand	1550
12	Nayana Prabhu [7]	Manipal Dental College, Karnataka	350
13	Gopal Krishna Choudhury *et al.*, [24]	SJM Dental College, Chitradurga, Karnataka	314
14	Seenivasan MadhanKumar *et al.*, [25]	SRDental College, Tamil Nadu	561
15	Suneel V Vadavadagi *et al*., [26]	SJM Dental College, Chitradurga, Karnataka	384
16	Maqsood Ahmed Soomro *et al.*, [27]	Isra Dental College, Hyderabad	395
17	Javed Ashraf *et al.*, [28]	Tamil Nadu	3000

Incidence of Various Kennedy's Classes

Nirupama *et al.*, concluded that Kennedy's Class III as highest in both maxillary and mandibular arches [16]. Even prosthodontic treatment need awareness was highest in Class III. The same results were found in study done by Bharathi *et al*., (66% in maxilla and 59% in mandible) due to the reason that first molar is first permanent tooth to erupt into the oral cavity, having higher caries percentage and a higher chance of extraction [17]. On the contrary to study by Nirupama *et al*., the study also concluded that Class III had less percentage of replacement, which could be because they had an option of getting their teeth replaced with a FPD or Implant which might have been beyond their affordability [16]. Study by R. A. Devishree *et al*., Prabhu *et al.*, (36.3% incidence of Class III) [18, 7]. R. Rashid *et al*., found higher incidence of Class III in age group of 20-39years and Class II in age above 50years. Incidence of 56.7% was reported for Class III followed by Class II (18%), Class I (16.7%) and Class IV (8.6%) in study done by JY Patel *et al.*, Study by D'Souza and Aras showed dominance of Class III (50.30%), followed by Class II (23.94%), Class I (19.27%) and Class IV (6.49%) [14]. Surender Kumar, et al. as well as Prabhu *et al*., S V Vadavadagi *et al.*, Javed Ashraf *et al*., reported maximum cases of Kennedy's Class III followed Class II, Class I and Class IV respectively [7, 28]. Madhan Kumar *et al*., reported maximum cases of Class III followed by Class III modification I which were predominant among younger population pf 31-40 years, while in geriatric population between 70 and 85 years Class II modification I was present [29].

In contrast to above studies, a study by Maqsood Soomro *et al.*, [27] high prevelance of Kennedy's Class IV (32%) among sample followed by Class I (23.3%), II (19.2%) and III (12.7%).
Eachempati *et al*., reported Class I (39%) dominance followed by Class II, Class III and least was Class IV respectively.

Prevalence of partial edentulism in maxillary and mandibular arch

According to Bharathi *et al*., [17], Javed Ashraf *et al.*, [28] Partial edentulism was more frequent in maxilla than mandible which is opposite to study done by R.A. Devishree *et al*., [18], Geetha Prabhu *et al.*, [19], JY Patel *et al.*, [14], D'Souza and Aras [22], Prabhu *et al.*, [7], Madhan Kumar *et al.*, [29].

Study by R. Rashid indicate more mandibular distal extention RPDs while more maxillary bounded saddles.

Gender Correlation to Partial Edentulism

No gender predilection was found by study of R.A. Devishree [18], R. Rashid [20], Jandial *et al.*, Prabhu *et al.*, [7], G K Choudhury *et al.*, Madhan Kumar *et al.*, [29]

Incidence of partial edentulism was more in females than male in study done by JY Patel *et al*., [14], D'Souza and Aras [22], S V Vadavadagi *et al.*, It was observed from above studies that women perceive greater impact of oral health on the quality of life than men. Prabhu *et al*., [7] also stated in his study that females had a lower level of education and employment status, because of which they had to depend on male members which could be reason for more female being partially edentulous. Surender Kumar *et al*., [23] resulted in female dominance in Class III and males with more prevalence of Class I, II and IV.

In contrast to above studies, a study by Maqsood Soomro *et al.*, Javed Ashraf, *et al*., [28] showed more prevalence of partial edentulism in male patients.

Socio-Economic Parameters

Partial edentulism depends on various socio-economics parameters such as family income, educational status, and occupation. It has been observed inverse proportionality between partial edentulism and socio-economic status. Lower groups are not much aware of oral health in particular and overall health in general. The reported low socio-economic group in study by D'Souza and Aras was less than one forth [22]. Lack of awareness about their oral health as well as oral services available in institutes and financial constraints was the reason for the same. It justifies greater need to educate not only the younger generation but also the elderly and less privileged, regarding importance of oral health and clear their misconception that tooth loss is inevitable during aging.

This conclusion is in accordance to study done by Nirupama *et al.*, D'Souza and Aras [22], Prabhu *et al*., [7].

CONCLUSION

Thus more such studies from various states of India about prosthodontic need in populations should be favored in order to identify the current need, attitude of that particular population towards dental care as well as current scenario about dental treatments and awareness rendered by dental professionals for that particular population.

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