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# Evaluating the Prosthodontic Status of People Visiting a Dental Clinic in New Delhi, India

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**BACKGROUND:** Oral diseases place a huge economic and social burden on the population in terms of pain, suffering and lost productivity, as well as expenditure on treatment and prevention. The elderly people are worst affected by tooth loss as edentulism further leads to deterioration of their existing frail general health.

**MATERIALS AND METHOD:** The present study is an attempt to study the prosthodontic status of people attending a private clinic in Delhi from April to December 2018. Data was collected with the help of WHO Oral Health Assessment Form (2004) and survey was conducted as per guidelines of American Dental Association for Type III examination. Statistical analysis was done using SPSS 20.0.

**RESULTS:** Out of 204 study subjects, 30.4% were completely dentulous, 7.4% were completely edentulous and rest were partially edentulous for the maxillary arch. While 34.8% were completely dentulous, 14.7% were completely edentulous and 50.5% were partially edentulous for the mandibular arch. Prosthodontic status for both the maxillary and mandibular arch was very poor with 79.4% and 85.3% individuals being devoid of any kind of prosthesis in the maxillary and mandibular arch respectively.

**CONCLUSION:** The population of Delhi has a poor prosthodontics status. High cost of prosthetic treatment, lack of availability of skilled healthcare professionals, poor infrastructure and the general attitude of the population towards replacement of missing teeth are the major hindrances in the way of healthcare delivery system in our country. This has led to the poor prosthodontic status in general population.

**KEYWORDS:** Prosthodontic Status, Edentulous, Elderly

## INTRODUCTION

Loss of teeth has a negative impact on the oral health as well as the emotional well being of an individual.<sup>1</sup> Kuo H C et al<sup>2</sup> (2009) in their study concluded that since general health is related to oral health and general health is related to quality of life, tooth loss could have an impact on quality of life. It also detracts heavily from the pleasant and satisfying experience which stems from the inability to chew food properly as noted by Shah et al. (2004).<sup>3</sup> Loss of teeth is associated with a variety of factors like oral hygiene practices, habits, socio economic status, literacy level, cultural beliefs and attitudes.<sup>2</sup> Major reasons for tooth loss can be dental diseases like caries or periodontal pathology, traumatic injuries, congenitally missing teeth or extractions as was reported to Shigli K et al (2008).<sup>1</sup>

The elderly population is the worst affected by tooth loss as edentulism further deteriorates their existing failing general health. They do not have the economic and practical means to avail regular oral health care benefits due to restricted mobility and financial dependency as was echoed by Shah (2004) in his study on the denture needs of the elderly.<sup>3</sup>

Over the past few years, several measures have been taken by the authorities to improve the oral health status in Indian population. These have primarily focussed on the preventive aspects which have

definitely brought down the incidence of dental disease amongst children and adults. At the same time, prosthetic needs of the population by and large have not been addressed to the same extent. High cost of prosthetic treatment, lack of availability of skilled manpower, infrastructure and the general attitude of the population towards prosthetic replacement of missing teeth are the major barriers of healthcare delivery system in our country. This has led to the presence of high incidence of unmet prosthodontic needs in general population. Many countries have problems with unmet needs for dental treatment and the situation in India is no different as reported by various studies which show a high percentage of unmet prosthodontic need which has been the conclusion of studies by Nadgere J et al. (2010)<sup>4</sup> and Shah VR (2012).<sup>5</sup> Prosthetic replacements can vastly improve the oral health and function. Prosthodontic rehabilitation has the ability to reduce and, in many respects, eliminate the deficits attributable to lost teeth, and patients of all ages, properly motivated, can adapt to dental prosthesis that are carefully designed.

A mismatch exists between oral health care professionals and the population they serve. About 80% of the dentists work in major cities in India, whereas 68.84% of the Indian population resides in the rural areas. The dentist to population ratio is 1:10000 in urban



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areas whereas it falls to 1:150000 in rural areas.<sup>6</sup> Providing prosthetic replacement for this large segment of population is a big challenge for the prosthodontist. Oral health care planning involves collection of up-to-date information on the prevalence of oral disease in a given population. Though many studies have been conducted in the southern part of the country, not many studies have been done in Delhi to assess the prosthodontic status of population. This has prevented the oral health planners in this region from putting up effective strategies and programmes to serve the needs of the population in the best possible manner.

The purpose of this study was to evaluate the prosthodontic status of people living in Delhi, India.

### MATERIALS AND METHOD

The present study is an attempt to study the prosthodontic status of people attending a private clinic in Delhi. The Inclusion criteria was subjects 14 years or more in age and only permanent dentition was considered. Subjects were informed of the nature of the investigation and were included in the study after their written consent was obtained.

A survey performa was prepared with the help of WHO Oral Health Assessment Form (2004) and was framed to collect information regarding the demographic profile, educational status, income, occupation and various other factors which influenced the prosthodontic status and needs. A recording assistant was trained to assist in recording the investigation results recorded by the examiner. The survey was systematically scheduled to spread over a period of 9 months from April 2018 to December 2018. The presence of prostheses was recorded for each jaw. The following codes were used to record prosthodontic status: 0 – No prosthesis, 1 – Bridge, 2 – More than one bridge, 3 – Partial denture, 4 – Both bridge(s) and partial denture(s), 5 – Full removable denture, 9 – Not recorded. The subjects were examined with mouth mirror and explorer under natural light/ torch as per guidelines of American Dental Association for Type III examination. Armamentarium used included plane mouth mirrors, explorers, tweezers, kidney trays, sterilized Cotton / gauze pieces, disposable mouth masks, disposable gloves, torch, hand towels, data collecting sheet, pen, pencil.

Subjects were examined seated in a dental chair. The recorder was made to sit close to the examiner so that the instructions and codes could be easily heard.

Immediately after the examination, oral health instructions were given as and when required.

For investigation disposable mouth masks and gloves were used. Instruments were sterilized by autoclaving and chemical sterilization. After each day of the survey, all the instruments were sterilized by autoclaving in the clinic for reuse. The data was transferred from pre-coded survey form to computer. A master file was created for the purpose of data analysis. SPSS version 20.0 was used for the statistical analyses. Descriptive statistics, chi-square tests were applied during the statistical evaluation of the data.

### RESULTS

There were 204 study subjects having age range from 16 to 68 with mean age of  $44.5 \pm 15.2$  years. The maximum number of study subjects (25%) belonged to 21–30 years of age. There were 124 males and 80 females. (Table 1)

Gender	Frequency	Percent
Male	124	60.78
Female	80	39.22
Total	204	100.0

**Table 1.** Distribution of study population according to gender.  $X^2= 76.32$ ,  $p$  value  $< 0.005$

Out of 204 study subjects, 30.4% were completely dentulous, 7.4% were completely edentulous and rest were partially edentulous for maxillary arch. While 34.8% were completely dentulous, 14.7% were completely edentulous and 50.5% were partially edentulous for the mandibular arch. (Table 2&3)

Missing teeth maxilla	Frequency	Percent
Completely dentulous	62	30.4
Kennedy class I	11	5.4
Kennedy class II	21	10.3
Kennedy class III	34	16.6
Kennedy class IV	61	29.9
Completely edentulous	15	7.4
Total	204	100

**Table 2.** Distribution of study population according to missing teeth in maxillary arch.  $X^2= 898.53$ ,  $p$  value  $< 0.005$

Missing teeth mandible	Frequency	Percent
Completely edentulous	71	34.8
Kennedy class I	14	6.9
Kennedy class II	31	15.2
Kennedy class III	41	20.1
Kennedy class IV	17	8.3
Completely edentulous	30	14.7
Total	204	100.0

**Table 3.** Distribution of study population according to missing teeth in mandibular arch.  
 $X^2= 966.87$ ,  $p$  value  $< 0.005$

Most partially edentulous subjects lost their teeth due to caries and the next common factor was periodontal issue. (Table 4)

Reason for loss of teeth	Frequency	Percent
Caries	105	51.5
Periodontal	44	21.6
Trauma	12	5.8
Not applicable	43	21.1
Total	204	100.0

**Table 4.** Distribution of study population according to reason for loss of teeth.  
 $X^2= 934.95$ ,  $p$  value  $< 0.005$

The study comprised of 204 subjects in the age range of 16-68 years. There were 124 males and 80 females. Edentulism increased with age, majority of subjects who were edentulous, belonged to age group of 60 years and above. Prosthodontic status for both the maxillary and mandibular arch was very poor with 79.4% and 85.3% individuals being devoid of any kind of prosthesis in the maxillary and mandibular arch respectively. Table 5 and 6 show the prosthodontic status of the study population in both the maxillary and mandibular arch.

## DISCUSSION

The enjoyment of highest attainable level of health is a fundamental right of every human being without discrimination based on race, religion or

Prosthodontic status maxillary arch	Frequency	Percent
No prosthesis	162	79.4
Bridge	10	4.9
Partial denture	8	3.9
Full removable denture	24	11.8
Total	204	100.0

**Table 5.** Distribution of study population according to prosthodontic status in maxillary arch.  
 $X^2= 3292.7$ ,  $p$  value  $< 0.005$

socioeconomic condition. There are several challenges faced in the delivery of oral health care services to the rural population in India such as deficiency of manpower, poor accessibility, affordability, and availability. The utilization of health care services depends upon attitudes towards oral health, social structure, socio-demographic factors and the need for use of services.<sup>7</sup>

Prosthodontic status mandibular arch	Frequency	Percent
No prosthesis	174	85.3
Partial denture	6	2.9
Full removable denture	24	11.8
Total	204	100.0

**Table 6.** Distribution of study population according to prosthodontic status in mandibular arch.  
 $X^2= 2543.34$ ,  $p$  value  $< 0.005$

In India, being an agrarian society, 68% of its total population resides in rural areas. In contrast, 80% of the trained dental manpower is concentrated in urban areas. Thus, there is gross disparity in oral health care provision between the urban and the rural population. In the present study a total population of 204 including 124 males and 80 females were examined for evaluating the prosthodontic status.

The present study reveals that complete edentulousness increased with increase in age. These results were similar to the results obtained by Shah N (2004).<sup>3</sup> Subjects above the age of 60 years needed complete dentures as compared to the younger age

group who had a higher need for partial dentures. This may be because in the rural elderly, knowledge regarding availability of prosthetic services is very low. Many of them did not know that just a few missing teeth could be replaced. They waited for all their teeth to be lost before they sought treatment. The misconception that tooth loss was an inevitable part of the aging process was widely accepted.

The prosthetic status in males and females in this study population showed significant differences with the higher percentage of females having a full removable prosthesis. The females were more concerned about the negative impact of loss of teeth on their appearance.

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 in accordance with the findings by Geetha Prabhu et al. (2011).<sup>8</sup> Dental caries was the most important reason for tooth loss in our study population. It constituted about 105(51.5%) followed by periodontal disease 44(11.6%) and trauma 12 (5.8%). This finding confirmed that caries remains a problem in adults. This finding agreed with other studies by Prabhu et al (2009).<sup>9</sup>

The fact that dental caries is the leading cause of tooth loss may be attributed to the changes in dietary patterns, a departure from coarse/tough and fibrous diet to more cariogenic refined carbohydrate-rich food, socioeconomic background and lifestyle of the people over the years.

Cost deterred many subjects from demanding treatment. Some of the subjects who would have liked to receive dental treatment had not tried to obtain it because they felt they were "too old". Adaptation to dentures was also a major influencing factor in elderly opting for treatment. Acceptance of dentures depends on adaptation to them by the subjects, a skill which diminishes with age.

The results of the present study highlight a very poor prosthodontic status which are in accordance to the results of the studies carried out by Nadgere J et al (2010)<sup>4</sup> and Shah VR et al. (2012).<sup>5</sup> It still remains a challenge for most developing countries to establish policies and programs to effectively provide oral healthcare to the masses. Various measures suggested below can be employed to meet this goal.

Oral health care delivery should be made a part of the general health care programs. Primary health care workers can help spread awareness about the importance of regular oral health check-up and the importance of prosthodontic rehabilitation.

The dentists in the rural set ups should be educated to not practice extraction as a simpler form of treatment, rather stress and educate people for preventive and restorative procedures which will eventually lower the prosthodontic need.

The current rural infrastructure needs to be improved and provided with prosthodontic experts, technical manpower, materials and laboratory facilities which at the moment are lacking and contribute largely to the poor prosthodontic status that is observed in the rural areas. Denture service is particularly non-existent in various government health centres.

Mobile dental clinics, outreach programs, door to door campaigning, offering subsidized or free prosthodontic rehabilitation, provision of dental insurance schemes by the state government, setting up of separate geriatric clinics can help in improving the current situation.

There were a few limitations of this study. The first limitation was its cross-sectional nature, which limits our ability to relate the time pattern to the present dental status of the subjects interviewed. Second, unrestorable teeth as well as root stumps were considered as teeth being present. Such teeth which were indicated for extraction but still present in the mouth will add to the treatment needs. Also, the existing prosthesis which were faulty were counted as prosthesis being present but were indicated for replacement which would add to the treatment need.

In certain shortened dental arches, the patient may not experience much change in the masticatory function. Thus, in those individuals in which sufficient number of occluding pairs are present prosthodontic replacement may not be required thus lowering the prosthodontic need.

## CONCLUSION

The findings of this study clearly demonstrate a high prosthodontic status among the population surveyed. To improve the oral health and prosthodontic status, it is necessary to spread awareness regarding the importance and benefits of prosthodontic treatment.

Results show that the prosthodontic status is very poor. Edentulism should be declared as a disease and also the consequences of edentulousness should be described to the population. A greater awareness regarding proper dental hygiene and timely replacement of the missing teeth needs to be stressed among the general public. In the rural elderly, knowledge regarding availability of prosthodontic services is very low which translates into a high unmet prosthodontic need. Many of them did not know that just a few missing teeth could be replaced. Prosthodontic services are not available in most of the government run hospitals and that there were wide gaps between level of edentulousness, denture wear and denture needs of the community are the issues that need to be addressed to improve the situation that currently exists.

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