

**ORIGINAL ARTICLE****Journal Section**

Knowledge and attitude of patients with edentulism pertaining to various treatment modalities: A cross-sectional survey in Navi Mumbai

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Abstract**Introduction:** Teeth maintain the functionality and esthetics of the oral cavity. These, in turn, have an impact on the individual's psychological and social well-being. This study aims to gauge the awareness and attitude of patients concerning various prosthodontic modalities available for the replacement of missing teeth.**Method:** A questionnaire-based interview of patients with missing teeth was conducted in Navi Mumbai. The questionnaire comprised 18 closed-ended multiple-choice questions about the knowledge and attitude of the respondents about their condition of partial or complete edentulism. Descriptive statistics were obtained and a comparison of frequencies of categories of variables with groups was done using Chi-square test.**Result:** The study sample of n=175 comprised 100 males and 75 females of ages ranging from 23 to 82 years. Statistically significant differences (p<0.05) were noted wherein a greater number of male participants opted for the prosthesis to regain functionality. Feasibility was found to be the most important factor affecting the choice of treatment modality by participants.**Conclusion:** Population in lower socioeconomic classes tend to be more affected by edentulism, primarily due to lack of awareness and low income. Hence, it is important for dental professionals play a core role in creating awareness about the importance of oral rehabilitation.**KEYWORDS**

Prosthodontics; Oral rehabilitation; Partial dentures; Removable/fixed; Complete denture; Dental implant

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1 | INTRODUCTION

Health care facilities have greatly developed over the recent decades thereby improving the longevity of individuals which has resulted in an exponential increase in the population belonging to the age group above 60 years.¹ India boasts itself as a country that houses the second largest geriatric population which is expected to rise to 198 million by the end of this decade.² The geriatric population of a country presents itself with the need for special attention to their general and oral health care needs. Oral health has been defined as “a comfortable and functional dentition which allows individuals to continue in their desired social role”.³ With age, oral health problems which are chronic and severe are inevitable that ultimately conclude in edentulism.

Edentulism interferes with the fundamental functions of mastication and speech and also gives rise to discomfort owing to loss of esthetics. The ability to concentrate on work or even carry out routine daily activities is hindered which consequently has detrimental effects on the general physical and psychological well-being of the individual.⁴ A dynamic blend of psychosocial experiences and sociocultural environment can greatly influence the attitude that an individual holds towards their oral health care, even more so in developing countries such as India.⁵ A generally negative attitude towards oral health care has been reported amongst the population in rural areas, particularly the geriatric age group, which tends to contribute to its worsening, thereby increasing overall morbidity.⁶

A lack of awareness about the management of the edentulous state exists amongst the Indian population which has been attributed to the exuberant population, relative paucity of healthcare facilities, and limited resources.⁷ Functional restoration is the essence of treatment of a chronic condition such as edentulism wherein the patient has to live with the prosthesis. Satisfaction of the patient in this regard would ultimately determine the outcome of treatment.⁸

Obtaining precise data on a nationwide scale for a densely populated country such as India would be practically daunting and therefore, it is important to gauge the level of awareness across various sub-sections of the

country having a huge population, there is a lack of awareness and management of the edentulous state. Consequently, prosthodontic treatment modalities may not be utilized for the rehabilitation of partially or completely edentulous patients to their full potential.⁹

The present study, therefore, aimed at assessing the general awareness about various treatment modalities available for tackling edentulism amongst individuals in Mumbai along with a presentation and comparison of socio-demographic categories. It also has an objective to discern the factors that would ‘drive’ the patients to opt for the respective treatments.

2 | METHOD

The present cross-sectional study was conducted in the institutional department of Prosthodontics across a period of two months from March to May 2021. The team of investigators comprised prosthodontists, an oral surgeon, an oral pathologist, and a public health expert.

Patients reporting to the institution having one or more missing teeth were considered eligible for the study. Responses were elicited from patients through a questionnaire-based interview method. To eliminate bias in attitude-based questions, patients reporting for any chief complaint were included and not only those desiring replacement of teeth. Patients not consenting to participate in the survey or choosing to opt out of the survey were excluded from the study. Patients who already had an ongoing prosthodontic treatment or an already existing prosthesis were also excluded.

The self-constructed questionnaire comprised 18 close-ended multiple-choice questions. The initial section consisted of a consent statement and demographic details. The questionnaire comprised of questions based on the knowledge and attitude of the respondents about their condition of partial or complete edentulism. These included cause for loss of teeth, duration of edentulism, and their concerns related to the missing teeth such as esthetics or difficulty in mastication. The final section comprised of questions about the knowledge of respondents about various prosthodontic treatment modalities available and their motivation to get the teeth replaced.

The questionnaire was tested for validity by Cronbach's alpha analysis. A pilot study consisted of 18 par-

ticipants, the data of which was not included in the final results. A Cronbach's alpha value of 0.845 denoted sufficient internal consistency and validity of the questions. A few grammatical and language modifications were made in the questions as deemed necessary following the pilot. The study was conducted on a final sample of $n=175$ respondents obtained by purposive sampling method (Figure 1).

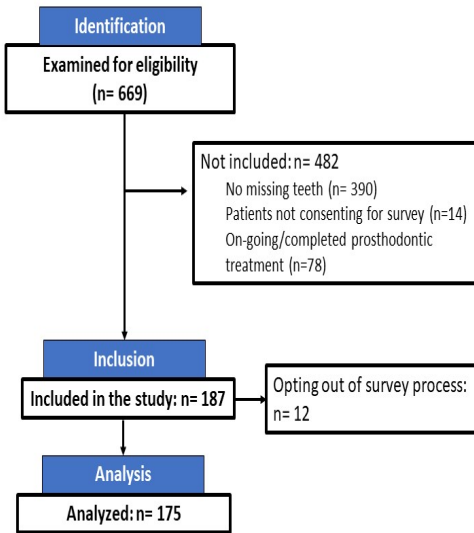


FIGURE 1 STROBE Flow Diagram indicating inclusion/exclusion of participants in the study process

Participants were classified according to National Statistics Socio-Economic Classification (NS-SEC) based on their occupation into Class 1- Higher managerial, administrative, and professional occupations, Class 2- Intermediate occupations, and Class 3- Routine and manual occupations.¹⁰ The data was comprehensively tabulated in an MS Office Excel Sheet (v2019, Microsoft Redmond Campus, Redmond, Washington, United States) and was subjected to statistical analysis using Statistical package for social sciences (SPSS v 26.0, IBM). Descriptive statistics like frequencies and percentages for categorical data, mean & SD for numerical data were obtained. Comparison of frequencies of categories of variables with groups

was done using Chi-square test. For all the statistical tests, $p<0.05$ was considered to be statistically significant, keeping alpha error at 5% and beta error at 20%, thus giving a power to the study as 80%.

3 | RESULTS AND DISCUSSION

3.1 | Population

The study population comprised 100 males and 75 females of age ranging from 23 to 82 years. The mean age was 47.10 years ($SD=\pm 12.42$) for total population, 48.34 years ($SD=\pm 10.68$) for male participants and 45.45 years ($SD=\pm 14.33$) for female participants. Therefore, the study population predominantly comprised of middle-aged to older adults that constitute the major portion of the edentulous population of a country.¹¹

About 36.6% participants ($n=64$) belonged to Class 1, 32% ($n=56$) belonged to Class 2, and 21.7% ($n=38$) belonged to Class 3, according to NS-SEC system of occupation. The particular classification system was selected owing to its simplicity and ease of application in cross-sectional studies.¹⁰

3.2 | Edentulous condition

A statistically significant difference ($p<0.01$) was noted with a greater frequency of participants in the Class 3 occupation group having complete edentulism as compared to the other two groups which predominantly exhibited partial edentulism (Table 1). Dental extraction was found to be the most common cause of missing teeth (65.1%), followed by exfoliation with age (22.3%) and trauma (12.6%) (Figure 2). Loss of teeth due to bone resorption would obviously be noted in older individuals, whereas young adults are more prone to trauma.¹²

About half (46.9%) of the participants had been edentulous for only less than a year. 28% of participants had been edentulous for 1-3 years and 21.1% of participants for 4-5 years. Only 4% of participants had the condition for more than 5 years. A statistically highly significant difference ($p<0.01$) was noted with a greater number of individuals in the Class 3 occupation group having edentulism for the past 4-5 years, while those in Class 1 and 2 occupation groups had been edentulous for only less than a year (Table 1).

3.3 | Factors to seek replacement of missing teeth

All the participants invariably agreed that loss or absence of teeth was an issue of major concern and wanted to get them replaced. However, the driving factors to seek replacement of missing teeth were variable. 46.9% of respondents experienced difficulty in chewing and sought rehabilitation for functional purposes, whereas 30.9% had issues with esthetics.

A statistically significant difference ($p < 0.05$) was noted wherein a greater number of male participants opted for the prosthesis to regain functionality (Table 2). Previous reports have also found females to have greater esthetic concerns.¹³ A statistically significant difference ($p < 0.05$) was also observed with a greater number of participants in Class 1 and Class 2 occupation groups opting for rehabilitation due to functional considerations (Table 1).

About 49.2% of participants were motivated by their family to seek a replacement for the missing teeth, while 37.1% by local dentists and 13.7% by dental awareness campaigns. A statistically highly significant difference ($p < 0.01$) was noted in the frequency of responses wherein a greater number of participants in the Class 1 occupation group had been educated by dental professionals concerning modalities for replacement of missing teeth. Awareness campaigns undertaken by dental professionals can play a pivotal role in improving the oral health of a population. These are especially warranted in developing countries, particularly, rural areas.¹⁴

3.4 | Preference of treatment modality

Amongst various prosthodontic treatment modalities, the majority of the participants (70.28%) were aware of removable partial and complete dentures and an almost equal amount (68%) of participants were aware of crown/bridge. There was a relatively low awareness noted regarding implants with only 27% of the participants knowing about them. When given a choice, the fixed prosthesis was preferred by the highest number of participants (56%). Removable prosthesis was chosen by 34.2% of respondents while only 9.7% preferred implants.

There was a statistically significant difference seen ($p < 0.05$) with a higher frequency of responses for 'Crowns and Bridges' in both the genders (Table 2). The gender-, occupation- and age-based variation in preferences are illustrated in (Figure 3). A highly significant difference was noted on statistical analysis with a greater number of participants in Class 1 and Class 2 occupation groups preferring fixed prosthesis modalities and those in Class 3 occupation groups preferring removable prostheses. The feasibility of the prosthesis could alter a patient's choice of treatment depending upon their socio-economic capability, which would account for the difference in preferences amongst various occupational groups.

Earlier studies have found esthetic considerations to be the most common reason for patients seeking prosthodontic treatment.^{13,15} Unlike previous reports, we found that majority of participants (68%) would opt for a cost-effective option for prosthetic rehabilitation, followed by esthetic (25.14%), comfort (23.43%), and treatment time (8%). It could be expected that patients in developing countries would have different preferences than those residing in developed areas. The shift in preference from esthetic to feasibility could possibly have been further amplified by the impact of the COVID-19 pandemic on the economy of the country.¹⁶

For similar reasons, a dental implant was a relatively non-preferred choice as 56.6% of the participants found them expensive. This was in line with findings from previous cross-sectional studies conducted in India.¹⁷ Other reasons for the non-preference of implants were unawareness about the modality (26.9%) and a more invasive surgical procedure (17.1%). Overall, only 12.6% of the participants agreed to opt for implant treatment. In comparison, 70.1% of patients were found to be aware about dental implants in a Norway-based study.¹⁸ This signifies the role of dental professionals in creating awareness and elucidating the advantages of dental implants to the population.

Since the present study was conducted in a single institution, the results may not be generalizable to the entire population owing to geographical variation in the mindset of the population.¹⁹ The participants consisted

of only the adult age groups. Missing teeth in the pediatric population hold a significant value in space loss for permanent teeth as well as the psychological well-being of the child.²⁰ It would, therefore, be interesting to note the awareness and attitude of pediatric patients and their parents with respect to the replacement of missing teeth.

4 | CONCLUSION

Replacement of missing teeth is imperative to maintain an individual's oral, psychological as well as social well-being. More number of females generally opt for the replacement of missing teeth due to esthetic considerations whereas males seek functional restoration. Population in lower socioeconomic classes tend to be more affected by edentulism primarily due to lack of awareness and low income. Dental professionals play a core role in creating awareness about the importance of oral rehabilitation. Understanding a population's mindset can enable the oral healthcare professionals to communicate better with the patients, consequently instilling a positive attitude towards prosthodontic treatment and delivering improved quality of treatment.

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Nil

Conflict of interest

The authors have no conflicts of interest to declare

References

1. Talwar M, Chawla HS. Geriatric dentistry: Is rethinking still required to begin undergraduate education? *Indian J Dent Res* 2008;19:175-7.
2. Kumar A, Srivastava DK, Verma A, Kumar S, Singh NP, Kaushik A. The problems of fall, risk factors, and their management among geriatric population in India. *Indian Journal of Community Health*. 2013; 25:89-94.
3. Dolan T. Identification of appropriate outcomes for an aging population. *Spec Care Dentist*.1993;13:35-9.
4. Dable RA, Nazirkar GS, Singh SB, Wasnik PB. Assessment of oral health-related quality of life among completely edentulous patients in Western India by using GOHAI. *J Clin Diagn Res*. 2013 Sep;7(9):2063-7.
5. Thomas KC. Attitudes assessment, Rediguide 7: guides in educational research. Nottingham: University of Nottingham, School of Education, 1978.
6. Evans RW. The aging dental patient: myth and reality. *Gerodontology*.1984;3:271-2.
7. Singh BP, Pradhan KN, Tripathi A, Tua R, Tripathi S: Effect of sociodemographic variables on complete denture satisfaction. *J Adv Prosthodont*.2012;4:43-51.
8. Feine JS, Carlsson GE, Awad MA, et al. The McGill consensus statement on overdentures. Mandibular two-implant overdentures as first choice standard of care for edentulous patients. *Gerodontology*.2002;19:3-4.
9. D'Souza KM, Aras M. Association between socio-demographic variables and partial edentulism in the Goan population: An epidemiological study in India. *Ind J Dent Res*. 2014 Jul 1;25(4):434-8.
10. Connelly R, Gayle V, Lambert PS. A Review of occupation-based social classifications for social survey research. *Methodological Innovations*.2016;9:1-14.
11. Sonkesariya S, Jain D, Shakya P, Agrawal R, Prasad SV. Prevalence of Dentulism, Partial Edentulism and Complete Edentulism in Rural and Urban Population of Malwa Region of India: A Population-based Study. *Int J Prosthodont Restor Dent*. 2014;4(4):112-9.
12. Singh OP, Kaur R, Nanda SM, Sethi E. Residual ridge resorption: A major oral disease entity in relation to bone density. *Indian J Oral Sci* 2016;7:3-6.
13. Walton TR. A ten-year longitudinal study of fixed prosthodontics: 1. Protocol and patient profile. *Int J Prosthodont*. 1997 Jul-Aug;10(4):325-31.
14. NATIONAL ORAL HEALTH POLICY - Ministry of Health & Family Welfare. Available from https://main.mohfw.gov.in/sites/default/files/N_56820_1613385504626.pdf [Last accessed on 2nd Aug, 2021]
15. Pratheebha C, Sasanka K, Jayaraj G, Ramanadhan V, Ganapathy D. Trends in Prosthodontics-A Review. *Indian Journal of Forensic Medicine & Toxicology*. 2020 Oct 1;14:5469-76.
16. Chaudhary M, Sodani PR, Das S. Effect of COVID-19 on economy in India: Some reflections for policy and programme. *Journal of Health Management*. 2020 Jun;22(2):169-80.

17. Siddique EA, Bhat PR, Kulkarni SS, Trasad VA, Thakur SL. Public awareness, knowledge, attitude and acceptance of dental implants as a treatment modality among patients visiting SDM College of Dental Sciences and Hospital, Dharwad. *J Indian Soc Periodontol.* 2019 Jan-Feb;23(1):58-63.
18. Submit Berge TI. Public awareness, information sources and evaluation of oral implant treatment in Norway. *Clin Oral Implants Res* 2000;11:401-408.
19. Burt BA, Eklund SA. *Dentistry, dental practice, and the community-E-book.* Elsevier Health Sciences; 2005 Mar 1.
20. Jaai R, Jasmin W. Space Regainers–A Review. *European Journal of Biomedical.* 2018;5(7):212-7.

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Causes of partial/complete edentulism

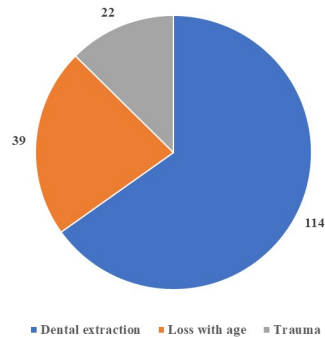


FIGURE 2 Two-dimensional pie chart depicting causes of partial/complete edentulism amongst the study population

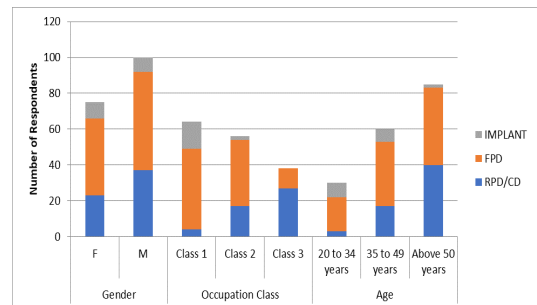


FIGURE 3 Preference of prosthodontic treatment modality by respondents based on socio-demographic factors

TABLE 1 Edentulism related factors amongst different occupation categories

Questions		Occupation				Total
		1	2	3	Nil	
Q1.Are you completely or partially edentulous ?	Completely	1	0	12	9	22
	Partially	63	56	26	8	153
Q2.How long have you been edentulous?	Less than 1 year	43	31	5	3	82
	1-3 years	10	14	21	4	49
	4-5 years	10	10	9	8	37
	6-10 years	1	1	3	2	7
Q3.Why do you mainly want to get your teeth replaced?	Appearance	19	20	12	3	54
	Appearance, Problem in chewing	11	7	12	9	39
	Problem in chewing	34	29	14	5	82
Total		64	56	38	17	175

TABLE 2 Gender-based preference for teeth replacement

Questions	Gender		Total
	Female	Male	
Q1. Why do you mainly want to get your missing teeth replaced?	Appearance	24	30
	Appearance, problem in chewing	24	15
	Problem in chewing	27	55
Q2. Which of the options would you prefer for the replacement of missing teeth?	Complete denture	12	5
	Complete denture, Removable partial dentures	0	3
	Crowns and Bridges	43	55
	Implants	9	8
	Removable partial dentures	11	29
Total	75	100	175