Original Article

Dental implants and maxillofacial prostheses: Study of patients' preference and opinion – A cross-sectional survey

ABSTRACT

Introduction: Teeth/maxillofacial deformity is an integral part of oral and physical development with an incredible spectrum of functionality, and their replacement by advanced prosthodontic rehabilitation (dental implants or maxillofacial prostheses) is vital. Aside from chewing, esthetic and physical survival, oral structures also shape the dynamics of phonation, breathing, keeping a patent airway, and serving as a foundation for the vertical dimensions of the face. They can be fixed/removal prostheses, flexible dentures, fenestrated dentures, and by computer-aided design/computer-aided manufacturing fabricated dentures, depending on the conditions. An attempt was made to increase awareness among people and evaluate their opinion regarding dental implants and maxillofacial prostheses.

Objective: The purpose of this survey was to determine patients' preferences and knowledge of dental implants and maxillofacial prostheses.

Materials and Methods: A descriptive cross-sectional study among dental patients who attended the dental outpatient department for maxillofacial defects or missing teeth in the past 5–6 months were included in this survey. The level of knowledge, source of information and suitability for the use of dental implants were assessed using standardized and unambiguous questionnaires provided to the patient wishing to correct the defect with an maxillofacial prosthesis or a dental implant. Five hundred patients were selected randomly to be included in this survey.

Results: In the present study, among 500 respondents as 260 males and 240 females, 75 participants had knowledge about dental implants and maxillofacial prostheses being costly or not, so 23 answered true these are not costly, 390 answered false that they are costly, whereas 398 said they did not know about the cost.

Conclusion: Proper education and motivation among patients should be done regarding dental implants and maxillofacial prostheses. It is high time patients start replacing their missing teeth and missing body parts, if any. Technology is advancing, and many options are available both in removable and fixed prostheses.

Keywords: Implant, mastication, maxillary defect, maxillofacial prosthetic, prosthetic rehabilitation

INTRODUCTION

Maxillofacial deformities can be congenital, and can also be caused by developmental malformations, or by necrotizing diseases and malignancies such as oncosurgery or trauma. It is embarrassing for patients with maxillofacial deformities and can negatively affect their physical and psychological health,[1] resulting in severe psychiatric, familial, and social problems Replacement of tooth loss or missing body parts[2] is a major concern for patients and clinicians. Health has evolved over the centuries as a concept from an individual concern to a worldwide social goal and encompasses the whole quality of life.[1] Slade[3] identified the shift in the perception of health

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from the mere absence of disease and infirmity to complete physical, mental, and social well-being.[2] Oral health, including dental health, has become a global public health challenge. It is known to affect the overall health of individuals causing further health complaints but also social and psychological concerns. The most common oral diseases are dental caries, and periodontal disease, and the outcome of these diseases, if untreated, leads to tooth loss. The loss of teeth leading to edentulous was once accepted in society as an inevitable part of the aging process. The worldwide prevalence of chronic and progressive dental diseases is remarkable; for example, an estimated 2.3 billion people suffer from caries of permanent teeth. The loss of one or more natural teeth often results in disability, and deterioration of the functional, emotional, and social status of an individual. A smaller group of patients were unable to accept removable prostheses at all due to anatomical, psychological, and Prosthodontic factors.[4,5] A new method of restoration was introduced a few decades ago dental implants have come into focus as a treatment option that provides better retention, stability, functional efficiency, quality of life, and long-term studies.[5] There are various types of prostheses, like dentures, veneers, crowns and bridges, implants, and maxillofacial prostheses. Awareness about all types of prostheses that a prosthodontist can provide is not known widely in the Indian population.[5,6] The same goes for maxillofacial prostheses. Maxillofacial prosthodontists are individuals who have the knowledge and awareness about the rehabilitation of patients with defects or disabilities that were present since birth or developed due to disease or trauma, plenty of the dental and medical practitioners are clueless about the treatment modalities and outcomes of prosthetics rehabilitation.[7]

Objective

The purpose of this clinical study was to assess patients' attitudes and preferences regarding dental implants and maxillofacial prostheses. Also to know the frequency of patients visiting the dentist, their education, and their knowledge about implants and maxillofacial prostheses, and why not taking any modern dental treatment like dental implants and maxillofacial prostheses.

MATERIALS AND METHODS

A self-explanatory questionnaire was designed to assess the preferences and opinions of dental patients regarding using dental implants and maxillofacial prostheses, and the questionnaire comprises 16 questions to evaluate the preferences and opinions of dental patients toward the implant and maxillofacial prostheses, evaluate the source of information regarding dental implant treatment, and evaluate the attitude of the dental patient toward using dental implants as a treatment option compared to other conventional treatment modalities. The questionnaires were distributed in the outdoor department at a hospital in Lucknow. The questionnaires were handed to the patient during their regular dental visits. All the respondents were informed about the aim of the study. A random sampling method was carried out with a convenient sample size ($n = 500$). In the conduct of this survey, the guidelines of ethical consideration were strictly adhered to and participants filled out the questionnaire after signing informed consent.

Study design, area, and population

A descriptive cross-sectional study was conducted among dental patients who attended outpatient department for requirement as prosthetic rehabilitation of missing oral structure. Data were collected. Inclusion criteria were as follows: adults 20 years or more, not inpatient, and with no previous dental implants. Exclusion criteria were as follows: very old uncooperative patients, patients <20 years of age, and mentally or physically disabled patients.

Sampling techniques and size

A total of 500 (females: 240; males: 260) participants who fulfilled the required criteria during the study period were studied. They were selected by the simple random convenience sampling technique. The questionnaires were handed to the patients during their regular dental visits. All the respondents were informed about the aim of the study.

Survey tool

A self-explanatory closed-ended questionnaire was administered with a total of 16 items in three sections designed to assess the patient's knowledge, source of information, and attitude about using dental implants and maxillofacial prostheses. Demographic data, socioeconomic status, and level of education were assessed. The questionnaire was prepared in both (English and Hindi) language to correspond with the reading and comprehension levels of patients with different levels of education. Eligible illiterate patients were interviewed. It took 7–10 min to answer all the questions, and the questionnaire was filled in the waiting hall of the dental clinic. For questions and clarifications, the e-mail address and phone number of the corresponding author were provided.

Statistical analysis

The collected data were cleaned, coded, entered in Excel, and analyzed using the Statistical Package for the Social Sciences SPSS software (Version 22, IBM SPSS Inc., Chicago, IL, USA). The correlation test was used to compare two categorical data in a contingency table. Frequency tables were used to determine the proportion level of variables among surveyed patients, with the level of significance set at $P = 0.05$.

Ethical consideration

The study was approved by the Ethical Committee in the College of Dentistry (code: CPGIDSH/iec1/0012/2012 selected

patients were requested to participate voluntarily after an explanation of the purposes of the study. Informed written consent for their participation was obtained, and the confidentiality of responses was assured. Those patients who had not heard of dental implants as a treatment option were educated in this regard.

RESULTS

The total number of participants included in the study, i.e., 500 of which 260 patients, 52.0% participants were male, while among participants, 48.0% were female. The maximum number of patients (24.2%) belonged to the age group of 60 years and above years, while 33.8% of the participants belonged to the age group of 40–60 years. Among the participants, 42% belonged to the age group of 20–40 years.

Most of the patients in both groups belonged to the age group 60 years and above. Among 121 participants, 60 participants are male and 61 are female 40–60 years. A significant difference ($P < 0.01$) was observed in the age and gender of patients of both groups, with the majority (112) of the male of the 20–24 age group.

From correlations in Table 1, it can be seen that the correlation coefficient (r) equals 0.536, indicating a low relationship, as surmised earlier. $P > 0.05$ and indicates that the coefficient is not significantly different from 0. We can conclude that there is no relation between gender and knowledge ($r = 0.536$, $P > 0.001$).

Table 1: Pearson correlation of gender and knowledge

Variables	Frequency
Coefficient	0.53690156
Count	500
T statistics	10.08941609
Df (degree of freedom)	498
P	1.9854

Table 2: Gender wise distribution of participants

Gender	No. of participants	Percentage
Male	260	52.0
Female	240	48.0

Table 3: Age wise distribution of participants

Age (yrs)	Male	Female	Total
20-24	112	98	200
40-60	88	81	169
>60	60	61	121
Total	200	300	500
Mean	86.67	80.00	
SD	26.03	18.52	
Standard error of mean	15.03	10.69	
Chi^2 test		0.432	
P		0.9	
SEdiff		18.442	

SEdiff- Standard error of difference, SD- Standard deviation

Table 4: No. of age variables participants in percentage (%)

Age	No. of participants	Percentage
20-40	210	42.0
40-60	169	33.8
>60	121	24.2

DISCUSSION

This study aims to focus on missing teeth/oral structures that need to be replaced among the population. Reconstruction and repair of this loss due to irreversible bone resorption[8] are mainly by substituting the lost dentition with long-lasting artificial replacement of teeth, either in the form of dentures that are fixed or removable, restoring the lost appearance and function.[8] From the present study, the demographic profile of respondents is shown in Table 2, in which the gender-wise participants' distribution is out of 500 respondents as, 260 males and 240 females. In Tables 3 and 4, the distribution based on age in years is given as 210 participants (112 males, 98 females) between 20 and 40 years, 169 participants (88 males, 81 females) between 40 and 60 years, and above 60 years were 121 participants (60 males, 61 females).

Abraham CM[9] in the year 2014 in a briefing on implants stated that any of the methods used to enhance the function of replacing missing teeth with dentures are still used with modifications to enhance the environment for the implant. These technological changes have allowed patients to be treated efficiently, with the same need for a good treatment plan and physical evaluation by the Prosthodontist or oral surgeons. Abatement of disease is the main objective of the term therapy and should be considered part of treatment, including the five principle factors of prosthetic treatment normal profile, speech, comfort, function, and esthetics.

Abatement of disease is the main objective of the term therapy and should be considered part of treatment, including the five principle factors of prosthetic treatment normal profile, speech, comfort, function, and esthetics. In cases of damage to maxillofacial structures, medical and dental treatment should go together for proper treatment. It is generally observed that post-surgery patients are not referred to a prosthodontist (also known as a dental prosthetic or prosthetic dentistry) for the reconstruction of the lost part, which may be due to financial constraints and lack of awareness about the field.[10,11] The introduction of craniofacial implants has improved the retention and stability of prostheses with low surgical risks and few postsurgical complications.[12,13] Table 5 shows knowledge of patients who had missing teeth and their desire was mastication, in which 75 participants said true, 23 said false, and 398 did not know of it.

Table 5: Knowledge of dental implants and maxillofacial prostheses

Question	True	False	Don't know
Missing teeth	75	23	398
RPD/FPD	26	278	196
Missing body organs	48	295	157
Maxillofacial cost	95	390	295
Educated/dental visit	91	118	241
Maxillofacial safe	98	107	295

Afrashtehfar *et al*.[14] survey reports esthetics as a major expectation from implant treatment. When asked about their knowledge of removable and fixed prostheses removable partial denture/fixed partial denture, 26 Respondents answered true, 278 respondents answered false and 196 respondents did not know of these. The participants were asked about having any missing body organs such as the eye, ear, nose, or finger, and 48 respondents said true they had, 295 respondents said false they did not have while 157 respondents said they did not know about this. For professionals, it is vital to assess a patient's level of knowledge with regard to dental implants and whether their perception of dental implants does in fact reflect reality, thus alleviating the negative image of implant dentists due to miscommunication and patient discontent.[15] The need to replace lost teeth with a near-natural successor has encouraged rapid research and advancement in the field of dental implants, especially in advanced economies.[16] Nowadays, esthetic dentistry is growing. People are very concerned about their dental appearance due to social interaction, facial beauty, and psychological well-being.[17] Nowadays, people follow advanced technology in the medical field. Studies have shown that coverage of dental treatments by health insurance can impact patients' utilization of dental services.

When the participants were asked about their knowledge about dental implants and maxillofacial prostheses being costly or not so, 95 respondents answered true these are not costly, 390 respondents answered falsely that they are costly, whereas 295 respondents said they did not know about the cost. In a study by Deeb *et al*.[15] it was found that the majority of the people believed the cost of the procedure is a major factor for not opting for this treatment option. A recent study by Kohli *et al*.[16] concluded that over 80% of the study group felt the high cost was a deterrent 21. These results are in agreement with most of the previously mentioned studies conducted by Tepper *et al*.[18] High cost, fears of pain, and complications are often listed as factors that prevent subjects from choosing dental implants.

When participants were asked about their education and their dental visits to a dental clinic/dentist, 91 respondents said true that they were educated and they went for dental visits, 118 said false they were not educated and they did not go for dental check-up, while 241 respondents were uneducated with no dental visit ever. In a study held in 2018, respondents 60.8% were implant practitioners providing the main source of information about dental implants.[19] Other reports indicate media and relatives as a prime information providers. On being asked if they considered dental implants and maxillofacial prostheses safe, 98 respondents answered true for safety, 107 respondents answered false that they were unsafe, and 295 respondents had no knowledge about their safety. Sheth *et al*. saw 50% of interns approximately rated long-term survival of implant.[20] Whereas in 2015, a study conducted by Chaudhary *et al*.[21] asked about the persistence of implants, 17.1% of respondents believed that replacement treatment with implants is a permanent solution. The same is for maxillofacial prostheses, which should be given to relevant patients.

The treatment of maxillofacial defects is always a multidisciplinary approach for maximum comprehensive care. The team consists of an oncologist, prosthodontist, speech therapist, psychologist, social worker, and many more. Moreover, communication with different members of the team is an important requirement before the surgery. Prosthetic rehabilitation has certain advantages over surgical procedures, as it is a less obtrusive technique and more aesthetic. The principal objective should be to treat the person rather than just the defect. Prosthodontist plays an important role before the surgery by providing prosthetic support to the surgeon by fabrication of the surgical stents, which aids postoperative recovery. There is a need to acknowledge useful advancements like computer-aided design-computer-aided manufacturing technology. In society, frequent cases are seen of cleft lip and palate that require maxillofacial prostheses urgently. The awareness about maxillofacial prostheses and cleft lip and palate is less; this may be because the subject does not deem the need for replacement of maxillofacial structures. The maxillofacial prosthodontist capability is barely acknowledged by medical practitioners and even general dental practitioners.

CONCLUSION

Patients often ignore their dental health, unlike their medical status. Teeth loss or body part loss is itself a pain for an individual. If patients visit a dentist at least annually, it will definitely save them from further deterioration of their missing teeth and body parts. Neighboring teeth and body parts are also affected and it may worsen with time. The need of the hour is to spread the word about dental implants and maxillofacial prostheses and motivate people to oral care and hygiene along with rehabilitation/replacement procedures if necessary.

Future research

Prior research on facial prostheses or dental implants highlights the wide variety of treatments used in the replacement of missing teeth and oral structures, highlighting the need for validated, standardized outcome measures that capture multiple perspectives. Long-term longitudinal prospective research with a greater number of participants, as well as objective measures of maxillary-mandibular abnormalities and single and multiple missing teeth, are necessary. The comparison of functional outcomes and health-related quality of life after prosthetic obturation/oral implant creation, ideally implant supported, with surgical restoration, might aid in individual decision-making for maxillectomy patients.

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Conflicts of interest

There are no conflicts of interest.

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