Short Research Article

ASSESSMENT OF KAP AMONG THE DENTAL PRACTITIONERS TOWARDS PROSTHETIC PHASE OF IMPLANT IN VIDARBHA REGION OF INDIA : A QUESTIONNAIRE STUDY

Abstract

Aims & Objectives: Implant therapy has become a significant part of day-to-today dental practice. Adequate knowledge of diagnostic as well as therapeutic options is therefore necessary for all general dental practitioners. The present study is designed to evaluate and assess the knowledge, attitude and practice of practitioners about the prosthetic phase of dental implant. As the dental implant therapy is emerging in Vidarbha region of India and lack of studies evaluating the same, we recommend that awareness regarding prosthetic phase will allow practitioners to offer extensive treatment options for patient with missing teeth using dental implants.

Materials and Methods: This is an observational questionnaire survey conducted among 210 General Dental Practitioners in Vidarbha Region of India. A google form validated questionnaires distributed to assess their knowledge, attitude and practice among the study participants. Data were analysed using SPSS 22.0 version software.

Results: A total of 210 dentists, nearly 69% of the participants had good knowledge of prosthetic phase of implant and majority of practitioners in the study had positive attitudes and practices toward the prosthetic phase of implant placement. Results were significant for KAP but co-relation between them was statistically not significant (p=0.12).

Conclusion: In overall, practitioners have a significant level of knowledge about the prosthetic phase of an implant. There is a limitation of practise and exposure of dentists in this field of prosthetics because the majority of practitioners have not placed enough

implants. Implant training and prospective prosthetic rehabilitation are thus adjuvant learning aids that will improve general dental practitioners' knowledge, attitude, and practice.

Keywords: General Dental Practitioners, Prosthetic Phase of Implant, Knowledge, Attitude, Practice.

1. INTRODUCTION

Modern dentistry aims to restore normal shape, form, function, aesthetics, speech, and health regardless of stomatognathic system atrophy, damage or disease[1]. The term "dental implant" refers to the anchoring of alloplastic material into the jaws to provide support and retention for prosthetic tooth replacement. High predictability[2] and success rates have increased the related clinical implications of this treatment modality.

While using dental implants in a partially or completely edentulous patient, it's important to understand the surgical and restorative aspects that influence osseointegration success. Surgical procedures, implant site selection, as well as the many biomechanical parameters impacting the bone-implant interface are all examples.

Basic principles of prosthodontic are essential and should not be neglected, despite the various considerations that are made while managing dental implant patients. A complete occlusal study should be performed during the diagnostic phase. A review of the patient's existing occlusal plane, pattern of occlusal contacts and vertical dimension during excursive movements should all be part of this analysis. Placement of dental implants without a comprehensive diagnostic evaluation, might affect their locations and angulations which may be less than ideal and the resulting prosthesis will not be able to provide adequate aesthetics, function and will be vulnerable to complications[3].

The prosthetic phase represents prosthetic components and techniques that would increase the clinician’s ability to provide better aesthetics, structural integrity and functional occlusion to equally disperse the forces of the implants[4,5]. For a success of an implant, occlusal adjustments and prosthetic rehabilitation should be taken into consideration. In the year 2002, Fumihiko Watanabe et al. reported that failure of implant due to incorrect angulation despite the synchrony between the prosthodontist and the surgeon[6]. A study conducted by Simon RL in 2003 which concluded that the failure rate of dental implants was 4.6 percent owing to

abutment screw loosening (7 percent) and cement bond erosion (22 percent)[7]. There are greater chances of failure if greater is the cantilever distance. So, prosthodontists are more efficient in planning and placing dental implants than general practitioners providing better outcome. The present study is designed to evaluate and assess the knowledge, attitude and practice of practitioners about the prosthetic phase of dental implant.

2. MATERIAL & METHODOLOGY

This is a questionnaire survey conducted among General Dental Practitioners in Vidarbha Region of India after receiving clearance from Institution Ethical Committee of Sharad Pawar Dental College, Wardha. 210 participants were included in the study.

Sample size was calculated using formula:

$$n = \frac{4Pq}{L^2}$$

Where;

P = Proportion of Dental practitioners has good knowledge = 46%

q = 100-P = 100-46 =54

L = Allowable error

= 15% of P = $\frac{15 \times 46}{100} = 6.9$

n = $\frac{4 \times 46 \times 54}{6.9^2}$

n = 208. 69

n= 210 participants were recruited in the study.

An electronic survey was set on the Google Forms platform. Single set of questionnaires was prepared and designed. Letter requesting expert opinion to establish content validity of survey

questionnaire given to the Expert. From their expert opinion and suggestion, a validated questionnaire was formulated for the study.

A validated questionnaire study was conducted that will help to find out knowledge that practitioners are applying in routine practice. Dental practitioners in Central India Region willing to participate were included and undergraduate students were excluded in the study. Present survey included 14 closed-ended questions and three open-ended ones. All questions were answered on a dichotomous scale and on an objective scale.

A three-part questionnaire was sent to the practitioners. First part included general questions such as gender, additional qualification, years of clinical experience, and field of practice. The second part included knowledge based multiple - choice questions. Third part was designed to evaluate attitude and practice of the participants and they were assured that all the information provided would be kept confidential.

- Section A – Sociodemographic information
- Section B – Indicators of the knowledge of practitioners regarding prosthetic phase of implant
- Section C – Indicators of the attitude and practice of practitioners toward prosthetic phase of dental implants

  Data derived from the present study was statistically analysed using SPSS 22.0 version software. For the data presentation of the respondents' findings, descriptive tabulations were used. The Pearson's Chi-square test was used to find the statistical correlation between categorical variables, and the Pearson's correlation coefficient (r) was applied to find the linear association between the participants' knowledge and attitudes. $P < 0.05$ was considered statistically significant.

3. RESULT

VARIABLES	FREQUENCY, n (%)
Gender	
Male	107 (50.9)
Female	105 (50)
Age Groups (Years)	
25-29	45
30-34	44
35-39	68
40 and above	53
Period of Practice (Years):	
0-5	103 (49)
> 5 Years	107 (51)
Qualification	
BDS	101 (48.1)
MDS	116 (55.2)
Location of Practice	
Institutional Facilities	136 (64.8)
Private Facilities	117 (55.7)
Implant Training Received	
Yes	141 (67.1)
No	70 (33.3)
Mode Of Training	
Certificate/DiplomaCourses	88 (41.9)
Institutional	112 (53.3)
AnyOther	38 (18.1)

n = number of study participants

Table 2: Indicators of knowledge of Dental Practitioners regarding Prosthetic phase of Implant (n=210)

VARIABLES	FREQUENCY, n (%)
In which of following phase prosthetic planning is necessary	
Pre-surgical / treatment planning phase	154 (73.3)
Surgical phase	14 (6.7)
Post-surgical phase/ Prosthetic phase	37 (17.6)
Not significant	5 (2.4)
What do you know about various implant loading protocols	Immediate, early, delayed loading protocol
When is the ideal time to take the impression	
At the time of surgery	34 (16.2)
At the time of 2nd stage surgery	36 (17.1)
15 days after 2nd stage surgery	140 (66.7)
What Do you know about the term Implant protected occlusion	Occlusal scheme for implant

n = number of study participants

Table 3: Indicators of Attitude and Practice of Dental Practitioners regarding Prosthetic phase of Implant (n=210)

VARIABLES	FREQUENCY,

	n (%)
What are the number of implants you have placed	
0-5	89 (42.4)
6-10	31 (14.8)
11-15	24 (11.4)
>15	66 (31.4)
Which loading protocol do you prefer	
Immediate loading protocol	69 (32.9)
Early loading protocol	52 (24.8)
Delayed loading protocol	89 (42.4)
Which Impression material do you use for implant impressions	
Irreversible hydrocolloid impression material	23 (11)
Polyether	34 (16.2)
Addition silicone	125 (59.5)
Condensation silicone	18 (8.6)
Digital impression	10 (4.8)
Which impression technique do you follow	
Open tray/ Pick up type impression technique	94 (44.3)
Closed tray impression technique	85 (40.5)
Digital impressions	32 (15.2)
Which impression technique do you practice	
Implant level impressions	115 (54.8)
Abutment level impressions	95 (45.2)
What type of the different occlusal schemes do you follow in implant prosthesis	
Balanced occlusion	35 (16.7)
Group function occlusion	55 (26.2)
Mutually protected occlusion	100 (47.6)
Canine guided occlusion	20 (9.5)
What are the types of retention system do you use for implant prosthesis	
Screw retained	42 (20)
Cement retained	72 (34.3)
Screw and cement retained	96 (45.7)
Which material do you prefer for fabrication of a provisional implant crown	
Acrylic resin	121(57.6)

Composite resin	89 (42.4)
Which material do you prefer for fabrication of a definitive implant crown	
All metal	23 (11)
Metal ceramic	89 (42.6)
All ceramic	97 (46.4)
Which material do you prefer for cementation of implant crown	
Glass ionomer cements	38 (18.1)
Resin modified-Glass ionomer cements	95 (45.2)
Resin cements	68 (32.4)
Zinc oxide eugenol cement	9 (4.3)
Implant supported prosthesis has better esthetic outcome than conventional prosthesis. Yes/no. Justify why ?	Yes
Do you feel implant supported prosthesis has a better chewing efficacy than conventional prosthesis	
Yes	199 (94.8)
No	11 (5.2)
Are you willing to attend awareness conferences on prosthetic phase of implant?	
Yes	189 (90)
No/Not sure	21 (10)

n = number of study participants

The questionnaires were electronically distributed among the participants. Descriptive statistics of the first section of the respondents revealed that the number of male and female respondents were approximately the same within the age range of 35-39 years (n=68, 32.4%) and their duration of practice was either less than five years or more than five years with similar distribution among the two groups. The study had a greater number of postgraduate participants and some of them were working at an institutional facility and some of them

were working at a private facility with the former being more in number. A majority of the participants (n=141) had received formal training for placing implants. The various modes of training include certificate/diploma courses(n=88), training at an institutional facility(n=112) or any other means(n=38).

According to each of the participants clinical experience, Presurgical treatment planning phase was selected by the majority of respondents(n=154) as the phase in which prosthetic planning is to be done, followed by the post-surgical prosthetic phase(n=37), followed by the surgical phase(n=14). A few of the respondents(n=5) believe that the phase of prosthetic planning is not significant. When asked about the ideal time of taking impressions, majority of the respondents(n=140) agreed that the ideal time is 15 days after 2^{nd} stage surgery. Some respondents(n=36) chose the time of 2^{nd} stage surgery as the ideal time for taking impressions and the remaining (n=34) chose the time of surgery as the ideal time for taking impressions.

When asked about the number of implants placed by the respondents in course of their clinical practice, most of them(n=89) had placed less than 5 implants, followed by respondents who had placed more than 15 implants(n=66). 6-10 implants were placed by 31 of the respondents and 24 of them had the number of implants placed between 11-15. A delayed loading protocol was preferred by 89 of the respondents, 69 of the respondents preferred an immediate loading protocol whereas an early loading protocol was preferred by 52 of the respondents. When asked about choice of impression material for taking implant level impressions, majority of the respondents(n=125) prefer using addition silicone, followed by polyethers (n=34), irreversible hydrocolloid (n=23), condensation silicone (n=18) and digital impressions (n=10). Preference of impression technique showed 93 of the respondents using an open tray/pick up type impression technique, 85 of them used closed tray impression technique and 32 of them used digital impressions. Implant level impressions were preferred by 115 of the respondents whereas 95 of them abutment level impressions. When asked about the type of occlusal scheme followed for implant prosthesis, 100 of the respondents follow mutually protected occlusion, 55 of the participants follow group function occlusion, 35 of the respondents follow balanced occlusion and the remaining 20 follow canine guided occlusion.

Retention systems for implant prosthesis showed majority of the respondents (n=96) choosing a screw and cement retained prosthesis, followed by cement retained (n=72) and the remaining chose screw retained prosthesis (n=42). For fabrication of provisional implant

crown, 121 respondents preferred acrylic resin as the material of choice and 89 respondents preferred composite resin as the material of choice, whereas for the fabrication of a definitive implant crown, 97 of the respondents preferred an all-ceramic crown, 89 of the respondents preferred a metal ceramic crown and 23 of the respondents preferred an all-metal crown. For cementation, majority of the respondents (n=95) used resin modified glass ionomer cement, followed by resin-based cements (n=68), glass ionomer cements (n=38) and zinc oxide eugenol cement (n=9).

199 of the respondents believe that implant supported prosthesis provide a better chewing efficiency than conventional prosthesis and 11 of them believed that there is no significant difference.

When asked about willingness to attend awareness conferences on prosthetic phase of implants 189 of the respondents were willing to attend whereas 21 of the respondents showed no significant interest.

There was a statistically significant difference between the knowledge, attitude & practice of the participants regarding the prosthetic phase of implant but there was non-significant corelation between KAP with a p value of 0.12(Table 4). The results of a cross-tabulation revealed that most dental practitioners, regardless of their level of expertise of the prosthetic phase, expressed reservations about its implementation. A graph showing weak, positive linear association between general dental practitioners' knowledge and their attitude and practice toward prosthetic planning was discovered using bivariate correlation analysis ($P > 0.05$).

Table 4: Pearson's Correlation between Knowledge and Attitude and Practice

	Mean	Std. Deviation	N	Correlation ‘r’	p-value
Knowledge	6.91	1.19	210	0.10	0.12, NS
Attitude + Practice	24.62	4.24	210		

Fig 1: Knowledge Score

4. DISCUSSION

The loss of natural teeth not only compromise's function but also causes significant impact on a patient's aesthetics and psychological well-being[8]. Since the dawn of time various attempts have been attempted to replace missing teeth with prosthesis which mimics natural teeth. Dentures and fixed prosthetic bridges are used to attain this result[9]. However, there are some inherent problems with dentures and fixed bridges such as compromise of adjacent healthy teeth, and accumulation of food debris and plaque. Replacement of missing teeth with dental implants provides long-term solutions to the challenges[10].

Implant therapy has become a significant part of day-to-today dental practice, this will also allow practitioners to offer extensive treatment options for patients with missing teeth. Therefore, adequate knowledge of diagnostic as well as therapeutic options is necessary for all general dental practitioners. Dental implant therapy is emerging in Vidarbha region of India, but studies evaluating the knowledge, attitude and practice of general dental practitioners towards prosthetic phase of the same are scarce. Therefore, the present study evaluated the knowledge, attitude and practice of the prosthetic phase of dental implants among the general dental practitioners of Vidarbha region.

Present study revealed that only 69.5% of general practitioners of Vidarbha region had thorough knowledge of the prosthetic phase of dental implant therapy. This might be due to implementation of implantology in postgraduate curriculum, so general dental practitioners are also well versed with it theoretically. In our study, the proportion of dental practitioners with good knowledge was higher than that reported by Pournasrollah et al. in an Iranian study of 272 dental practitioners, who found that 19.9% of respondents had strong understanding of implant therapy in general[11]. According to Kolawole et al., out of 237 dentists, almost 46% had a thorough understanding of the procedure and benefits afforded by immediately loading dental implants with provisional restorations, whereas 81% had misgivings about implant placement utilising the protocol[12].

In the present study, the majority of respondents had a positive attitude toward practicing the prosthetic phase of dental implants. This might be attributed to the various implant education programs, hands on, and training courses. Nagpal et al latest reports on the attitudes of dentistry postgraduates and practitioners in Karnataka, India[13] found that 91.3 percent of 416 dental postgraduates, as well as institution-based and general practitioners, had either a good attitude or no reservations about dental implant therapy in their study because of regular patient inflow and patient's economic consideration being of least concern in an institution.

Dental implantology, on the other hand, was viewed negatively by General Dental Practitioners. This finding was deemed to be in accordance with a 2007 study by Akeredolu et al., who discovered that a lack of training courses and the financial condition of patients linked to poor implant results and a negative attitude toward the procedure among General Dental Practitioners[14]. However, in Nagpal et al. study, it was shown that these two factors posed the least threat, so there needs to be motivation and a change in attitude of the General Dental Practitioners toward this advancement in dentistry. The disparity of practice among the institution-based practitioners and nonpractitioners can be reduced by giving the nonpractitioners more confidence with knowledge and practice by various implant education programs, hands on, and training courses.

However, the practice and competency to place implants among practitioners is not in line with their knowledge. Therefore, to put their knowledge into practice, more training courses should be started and practitioners made to attend those.

This study suggests that characteristics such as the dentist's years of experience, implant training, and postgraduate specialisation have an impact on dental implant knowledge, attitude, and practice. The survey clearly shows that people with more than 5 years of expertise have the best knowledge, the most positive attitude, and the most implant practising. This disparity in years of experience is consistent with Eckert et al 2002 study, which found that younger prosthodontists expressed a stronger desire to surgically insert implants[15]. This clearly demonstrates that people who have worked in the dental field for a long time still favour traditional procedures for replacing missing teeth. Hence, to reduce this variation, the dentists with long years of experience should widen their horizons for the upcoming developments in our profession.

Implant training has been found to be an additional factor that improves understanding, develops a positive attitude, and encourages implant practise. In terms of knowledge, attitude, and results, ones who have received implant training clearly have an advantage over those who have not. This is in line with the findings of a 2013 study by Lang-Hua et al.[16]. A study conducted by Maalhagh-Fard et al. in 2002 found that graduates who completed the elective programme in implant dentistry had a greater positive correlation with offering and restoring implants[17].

It is also evident from this study that postgraduate specialization too has an effect on implant knowledge, attitude, and practice. Prosthodontists have the best knowledge, skill, and practice

for implants because they are primarily involved with prosthetic rehabilitation of partial and complete edentulism, which involves diagnosis and treatment planning. Oral surgeons and periodontists are closely following this because they are the pioneers in putting a prosthodontist's strategy for dental implants into action.

A controversy always existed as to which specialization does the study of implants belongs to. However, it is considered as a multidisciplinary approach. Hence, efforts should be made at the institutional level to extend implants' knowledge, attitude, and practice to other streams as well.

5. CONCLUSION

Overall, we found a significant level of knowledge among the practitioners regarding the prosthetic phase of implant. As majority of practitioners have not placed enough number of implants there is a lack of practice and exposure of dentists in this field of prosthetics. So, implant training and prospective prosthetic rehabilitation is an adjuvant teaching learning aid that will improve the knowledge, attitude and practice of general dental practitioners.

ETHICAL APPROVAL

The ethical approval from IEC Reference no – DMIMS (DU)/IEC/May- 2021/419 at Department of Prosthodontics, Sharad Pawar Dental College, Sawangi (Meghe), DMIMS DU, Wardha.

Consent

As per international standard or university standard, respondents’ written consent has been collected and preserved by the author(s).

COMPETING INTERESTS

Author has declared that no competing interests exist.

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