

Knowledge, Attitude, and Practice toward Impression Technique and Materials for Recording Impression in Implant Placement among Dental Practitioners in Patna City, Bihar

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INTRODUCTION

Dental implant is defined as a device designed to be placed surgically within or on the mandibular or maxillary bone to provide resistance to displacement of a dental prosthesis.^[1]

Implants are one of the successful options for prosthodontic rehabilitations. Thus, making the global statement “Any edentulous space is a potential implant site” pertinent. Implants in dentistry require a multidisciplinary team of expertise that leads to an

aesthetically pleasing and biologically acceptable final restoration.^[2] Prosthodontic planning plays a pivotal role to achieve results that satisfy both the patient and the clinician.

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ABSTRACT

Objectives: The present study is conducted to explore the knowledge, attitude, and practice towards impression technique and materials for recording impression in implant placement among general dental practitioners.

Materials and Methods: The present study is a cross-sectional questionnaire study. The study was conducted among general dental practitioners in Patna city in November–December 2017. Patna city was divided into five directions, which are north, south, east, west, and central. From each direction, 20 clinics were selected randomly, and dental practitioners from there clinics were interviewed. A closed-ended questionnaire consists of 19 items was prepared, the questionnaire was divided into four parts.

Results: Majority of study participants (58 [34%]) were above the age of 40 years. 96 (56%) of study participants were male. Most of the study participants (89 [50%]) were having MDS degree. Knowledge, attitude, and behavior scores among study participants. About 43% of study participants have good knowledge scores regarding impression technique and material in implant placement while 50% of study participants had fair attitude score. About 58% of study participants had fair practice score. There was statistically significant correlation ($P \leq 0.05^*$) between knowledge and attitude of study participants.

Conclusion: It was concluded that there was good knowledge, fair attitude, and practice among the dental professionals regarding the impression technique and materials for recording impression in implant placement. There was statistically significant correlation between knowledge and attitude of study participants. There was statistically significant correlation between some demographic variables and knowledge, attitude, and practice of study participants.

KEYWORDS: Attitude, dental implants, general dental practitioners, knowledge

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The success of implants depends on its osseointegration and the passive fit of the prosthesis. Osseointegration is a multifactorial, depending on the precision of surgical and restorative techniques, soft-tissue management, along with the general and oral health of the patient.^[3-5]

Knowledge about implants is also increasing among patients of various age groups.^[6] Major requirement for a precisely fitting implant is proper treatment planning and meticulous clinical procedures. One of the most important factors for the success of the implant prosthesis is the accuracy of the implant impression. It is important that the position of implant analogs in the master cast is similar to the position of the implant in the patient's mouth to allow a passive fit of the implant framework. Therefore, proper selection and manipulation of the implant materials are required successful outcome.^[7,8]

Several materials for impression making have been introduced and investigated for their accuracy in making impressions for implant-supported prosthesis. The selection of a specific material relies on clinical situation, technique and availability, and operator preference. These may vary among various dental practitioners.^[7,8]

Alqahatani and Al-Mansoori investigated the impression materials and techniques used in the fabrication of implants supported fixed partial dentures as a survey among dental practitioners in the Kingdom of Saudi Arabia. He concluded that polyvinyl siloxane and polyether were the most commonly used impression materials, while the open tray technique was more commonly used than the closed tray technique, and about two-thirds of the respondents agreed that the presence of angulated implants and subgingival depths adversely affects implant accuracy.^[9]

Large number of dentists in India does not have the knowledge of correct impression materials used for implant placement and does wrong practices leads to early implant failure as the process of impression recording, and use of correct impression materials is very critical in long-term success of dental implant. In the past, not many studies in India were conducted to explore the knowledge, attitude practice of the dental practitioners; therefore, the present study is conducted to explore the knowledge, attitude, and practice toward impression technique and materials for recording impression in implant placement among general dental practitioners.

MATERIALS AND METHODS

The present study is a cross-sectional questionnaire study, conducted to explore the knowledge, attitude, and practice of dental practitioners toward impression

technique and materials for recording impression in implant placement.

The study was conducted among general dental practitioners in Patna city in November–December 2017. All those dental practitioners who themselves or hire other dentists in their clinic were included in the study.

Written informed consent was availed from each dental practitioner before the survey and those practitioners giving the consent and present on the day of survey were interviewed. Those dentists who are busy with the patients, questionnaire form was dropped on the clinic and later picked up after completion of survey. Ethical clearance was obtained from Institutional Review Committee and the approval number is ECHD/02.

Patna city was divided into five directions, which are north, south, east, west, and central. From each direction 20 clinics were selected randomly, and dental practitioners from there clinics were interviewed.

Before the main survey, a pilot survey was conducted on 20% of study participants to test the validity and reliability of the questionnaire. Reliability of the questionnaire was determined by using Test-Retest and the values of measured $\kappa = 0.81$ $\kappa_w = 0.73$. Internal consistency of questionnaires was measured by applying Cronbach's-Alpha (α) and the value of $\alpha = 0.79$ was measured. Those questions with low reliability and validity were removed. The survey was conducted among 171 dental practitioners.

A closed-ended questionnaire consists of 19 items was prepared, the questionnaire which was divided into four parts. First part consists of demographic details of dental practitioners which includes age, gender, education qualification, area of specialization, presence of implant specialization degree, years of experience in implant placement, number of implants placed per month; second part consists of six questions to test the knowledge of study participants, the questions are, materials that can be used for recording impression in implants, factors determining the accuracy of impression for implant placements, ideal requisites for an impression material for implant placements, If there are four or more implants, impressions recorded more accurate with which tray type, If the patient has an exaggerated gag reflex has restricted mouth opening or if there is limited access impressions appeared more accurate with which tray type, What are the most accurate impression material technique for subgingivally placed implants. Third part consists of questions regarding the attitude of dental professional regarding the impression technique and materials for recording impression in implant placement, it consists of six questions which are taking impression

for implants is a very important procedure, position of implant holds importance in impression technique and materials used, disinfection of impression after recording is very important part of whole procedure, different type of tray is used for recording different implants, impression technique is very important critical step in implant success. It is very important to study the edentulous area very recording diagnostic impression for implant placement. Fourth part consists of seven questions regarding the practice of dental professionals in recording the impression for implant placement, it includes questions which are, before recording diagnostic impression for implants, I do inspection of edentulous area along with radiographs, I use different impression materials and impression techniques for different type of implant cases, I take full care about proper disinfection of recorded impression, I update my knowledge about various advances in impression materials and impression technique for implant, I attend various workshop time to time to learn about impression techniques and impression materials, I consult regarding use of special technique or impression material for complicated cases with other dental professionals, I describe in details whole procedure of impression recording to patients to avoid gag sensation. The questions includes attitude was assessed on a five-point Likert scale: definitely yes, yes, neutral, no, and definitely no.

The range of possible scores for knowledge, attitude, and practice were 0–6, 6–30, and 7–14, respectively. Correct answers for knowledge questions were given a score of “1” and wrong answers were given a score of “0.” Attitude scores ranged from 5 definitely yes) to 1 (definitely no), and practice scores ranged from 2 always to 1 never.

STATISTICAL ANALYSIS

Descriptive analysis was used to assess the demographic details of study participants. Pearson’s correlation analysis was used to assess associations between knowledge, attitude, and practice of study participants. Chi-squared test was used to assess associations of age, gender, year of implant experience, educational qualification, area of specialization, implant specialization degree, years of experience in implant placement, number of implants placed per month with knowledge, attitude, and practice of study participants.

RESULTS

Table 1 shows that majority of study participants (58 [34%]) were above the age of 40 years. 96 (56%) of study participants were male. Most of the study participants (89 [50%]) were having MDS degree. Most of the study participants were not having any

Table 1: Demographic detail of dental practitioners

Demographic details	n (%)
Age group (years)	
20-30	32 (19)
31-40	81 (47)
>40	58 (34)
Total	171 (100)
Gender	
Male	96 (56)
Female	75 (44)
Total	171 (100)
Qualification of private dental practitioner	
BDS	82 (48)
MDS	89 (50)
Total	171 (100)
Area of specialization	
Prosthetic	19 (21)
Pedodontics	8 (9)
Endodontics	11 (12)
Oral and maxillofacial surgery	20 (22)
Oral medicine and radiology	2 (2)
Orthodontics	15 (17)
Oral pathology	8 (9)
Periodontics	1 (1)
Public health dentistry	5 (7)
Total	89 (100)
Implant specialization degree	
Yes	41 (24)
No	131 (76)
Total	171 (100)
Years of experience in implant placement (years)	
<5	152 (89)
>5	19 (11)
Total	171 (100)
Number of implants placed per month	
<10	93 (54)
>10	78 (46)
Total	171 (100)

131 (76%) implant specialization degree. Most of the study participants (152 [89%]) were having <5 years of experience in dental implant placement. About 54% of the study participants place <10 implants per months.

Table 2 shows knowledge, attitude, and behavior scores among study participants. About 43% of study participants have good knowledge scores regarding impression technique and material in implant placement while 50% of study participants had fair attitude score. About 58% of study participants had fair practice score.

Table 3 shows the correlation analysis by using Pearson’s correlation revealed that there was statistically significant correlation ($P \leq 0.05^*$) between knowledge and attitude of study participants.

Table 4 shows that on applying Chi-square test, it was determined that there was statistically significant association between the age group of study participants and practice of dental professionals in recording the impression for implant placement ($P = 0.01^{**}$), educational qualification and knowledge of study participants ($P = 0.03^{*}$), implant specialization degree and attitude of study participants ($P = 0.00^{***}$), years of experience in implant placement and knowledge regarding impression technique and materials for implant placement and number of implants placed per month ($P = 0.02^{*}$), and practice of the study participants ($P = 0.01^{**}$).

DISCUSSION

The use of dental implants is well established^[10] and high survival rates have been reported.^[11-15] Implant dentistry

now forms a significant part of general dental practice, and patient awareness is steadily increasing. Dental practitioners may be involved in the planning, placement, and restoration of dental implants and an accurate impression is vital if the patient is to be provided with a successful prosthesis.^[7]

In the present study, majority of study participants belonged to the age group of 31–40 years. As compared to study by Alqahatani and Al-Mansoori^[9] in which majority of study participants belonged to the age group of 25–30 years. This may be due to reason that in the present study only those dental professionals were included who perform implant surgery therefore can be of increased age.

In the present study, majority of study participants were male, same results were seen in the study by Alqahatani and Al-Mansoori.^[9] In the present study, majority of study participants were having master's degree same results were seen in the study by Alqahatani and Al-Mansoori.^[9] Most of the study participants in the present study do not had any implant specialization degree; same results were shown in study by Alqahatani and Al-Mansoori.^[9]

In the present study, majority of study participants used addition silicone to record impression for implants, same results were shown in study conducted by Murali and Jain^[16] and Chowdhary *et al.*^[17] 2012 who conducted a survey across many countries. In the literature review, Lee *et al.* 2008^[18] found that the majority of studies supported the use of this material as they offer the maximum amount of accuracy. According to Sivaramakrishnan and Neelakantan,^[19] in their review article about nanotechnology in dentistry, nanofillers are integrated into vinyl polysiloxane (VPS), thus producing unique addition silicone impression materials. The same has been shown by Schmidt *et al.*^[20]

In the present study, majority of study participants answered that number of implants, position of implants, and type of impression material all together are the

Table 2: Knowledge, attitude, and behavior scores among study subjects

Variables	Number of subjects	Percentage of subjects, n (%)
Knowledge	0-1 (poor)	26 (15)
	2-4 (fair)	72 (42)
	5-6 (good)	73 (43)
	Total	171 (100)
Attitude	6-12 (poor)	14 (8)
	13-20 (fair)	86 (50)
	21-30 (good)	71 (42)
	Total	171 (100)
Practice	<7 (poor)	49 (29)
	7-10 (fair)	100 (58)
	10-14 (good)	22 (13)
	Total	171 (100)

Table 3: Correlation analysis of knowledge, attitude, and behavior among study subjects by using Pearson's correlation

	Knowledge		Attitude		Practice	
	r	P	r	P	r	P
Knowledge	-	-	-	-	-	-
Attitude	0.034	0.01*	-	-	-	-
Practice	-0.003	0.876	0.10	0.653	-	-

* $P \leq 0.05$

Table 4: Correlation analysis of demographic variables with knowledge, attitude, and behavior about disaster management among study subjects by using Chi-square test

Demographic variables	Knowledge		Attitude		Practice	
	χ^2	P	χ^2	P	χ^2	P
Age group	0.341	0.89	0.421	1.30	6.309	0.01**
Gender	0.490	0.37	1.200	0.60	4.670	1.22
Educational qualification	1.332	0.03*	5.406	1.23	0.309	0.20
Area of specialization	0.672	1.32	2.459	0.59	2.430	0.44
Implant specialization degree	1.222	0.10	1.400	0.00***	1.321	1.23
Years of experience in implant placement	2.343	0.02*	3.899	0.42	0.501	2.33
Number of implants placed per month	0.200	1.49	0.651	1.37	2.455	0.01**

* $P \leq 0.05$, ** $P \leq 0.01$, *** $P \leq 0.00$

factors which determine the accuracy of impression. In a review by Sumathi *et al.*^[21] it was quoted that, impression making of multiple implants are complicated than a single implant. The amount of distortion is limited in parallel abutments. The appropriate selection of impression material and tray bring the accuracy of the cast. Other studies^[22-25] examined the effects of various factors on the accuracy of implant impressions, such as different connection levels (implant level and abutment level), different impression trays, implant depth, and time delay for stone pouring.

In the present study, most of the study participants used open tray technique, same as quoted in study done by Lee, *et al.*,^[18] The studies done by Saini^[26] *et al.* and Izadi *et al.*^[27] also concluded that with open tray impressions were more accurate.

In the present study, Putty and light body combination VPS impression material of choice for implants places subgingivally, same results were seen in study by Murali and Jain.^[16] According to Lee *et al.*,^[28] there is no effect of implant depth on the accuracy of the VPS material technique; however, the impression of an implant placed 4 mm subgingivally showed a greater horizontal distortion compared to an implant placed more coronally. Wenz and Hertrampf investigated different mixing methods of the impression materials, the results of which indicated that the 2-step VPS impression was significantly less accurate than the 1-step putty and light-body VPS combination impression, the medium-body VPS monophasic impression, and the medium-body polyether monophasic impression.^[29] In one another study done by Tabesh *et al.*^[30] it was concluded that polyether was recommended for direct technique while Polyether and Vinyl siloxane ether were recommended for the indirect technique of impression making for implants.

CONCLUSION

From the above results, it was concluded that there was good knowledge, fair attitude, and practice among the dental professionals regarding the impression technique and materials for recording impression in implant placement. There was statistically significant correlation between knowledge and attitude of study participants. There was statistically significant correlation between some demographic variables and knowledge, attitude, practice of study participants.

More studies can be conducted in future to determine the impact of various factors on knowledge, attitude, and practice among the dental professionals regarding the impression technique and materials for recording impression in implant placement.

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Nil.

CONFLICTS OF INTEREST

There are no conflicts of interest.

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