

“A Study on the knowledge of dental implant practice in present scenario among dental practitioners in Madhya Pradesh”

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Abstract

Aim: The aim of this survey is to determine the percentage of Practicing Dental Professionals (PDP's) offering dental implants, source of learning, the most accepted techniques and materials used by the professionals in the selected central part of Madhya Pradesh

Methodology: the present study was conducted in Department of Prosthodontics of Maharana Pratap College, Gwalior. The study population was dental practitioners working in Madhya Pradesh. A non-probability sampling technique was used in the study. The self-developed structured questionnaire containing thirty-three items (questions) was used in the study after doing reliability and validity testing. The questionnaire (tool) in the form of a hard copy/Google-generated e-form was administered to dentists.

Result: The total number of dental practitioners who had completed the survey was 401. The overall knowledge of 76.1% was very good and 21.7% was good. There was no difference in knowledge between genders and different age groups but MDS had significantly more knowledge than BDS.

Conclusion: The knowledge about dental implants among practicing dentists was good. Postgraduate dentists had significantly more knowledge regarding dental implants in comparison to graduates.

Keywords: Dentists, Dental implant, knowledge

Introduction

Since the beginning of mankind, humans have used dental implants in one form or another to replace missing teeth. The first evidence of dental implants is attributed to the Mayan population roughly around 600 AD where they excelled in utilizing pieces of shells as implants as a replacement for mandibular teeth. Radiographs taken in the 1970's of Mayan mandibles show compact bone formation around the implants-bone that amazingly looks very much like that seen around blade implants. Dr. EJ Greenfield, in 1913, placed a "24-gauge hollow latticed cylinder of iridium-platinum soldered with 24-karat gold" as an artificial root to "fit exactly the circular incision made for it in the jaw-bone of the patient" [1].

Use of dental implants to provide the support for the dental prosthesis has been a treatment option since the late 1930s. In the 1930's, two brothers, Drs. Alvin and Moses Strock, experimented with orthopedic screw fixtures made of Vitallium (chromium-cobalt alloy). They carefully observed how physicians successfully placed implants in the hip bone, so they implanted them in both humans and dogs to restore individual teeth. The Vitallium screw provided anchorage and support for replacement of

the missing tooth. These brothers were acknowledged for their work in selecting a biocompatible metal to be used in the human dentition [2].

A post-type endosseous implant was developed by Formigini ("Father of Modern Implantology") and Zepponi in the 1940's. The spiral stainless steel design of the implant allowed bone to grow into the metal [3].

Dental implantology is fast becoming a specialty in the field of dentistry. Within the last few decades, dentistry appears to have recorded its most significant advancement in the field of dental implantology. The purpose of dentistry is to respond to the patient's needs and desires i.e. to restore the patient's oral health to normal contour, function, comfort, esthetics & speech. With dental implants it becomes much easier to achieve this goal as compared to traditional dentistry [4].

Implant dentistry has evolved into the mainstream of restorative practices all over the world. It has mainly two phases; a surgical phase and a prosthodontic phase. Endosseous dental implants are alternative tooth roots and implant-supported prostheses are considered the best substitute for missing teeth.

The Toronto implant experience introduced osseointegration to the North American dental community in the early 1980's by describing the clinical studies that replicated the earlier experiences in Sweden [5-8].

As a result of high success rates and the predictability of the dental implants, their prevalence in the rehabilitation of partially dentate and edentulous patients is increasing year on year (8). With about 1 million implants inserted annually worldwide,[9] this subspecialty of rehabilitative dentistry has become an integral part in the treatment modality amongst the increasing number of dentists across the world [10].

Increasing awareness about dental implants among patients has seen a parallel increase in the private dental practitioners (PDP's) interest of learning Implant dentistry. Dental practitioners play an important role in patient education [11] and therefore it is essential for the dental practitioners to have adequate knowledge regarding implant dentistry.

Implant manufacturers have provided implant courses for 20 years in India. However since the early 1990's, it has changed from industry sponsored courses to experienced dental practitioners conducted courses [12].

In the absence of common opinion and randomized control trials, an opinion remains divided over which materials and techniques are the most effective in an oral implantology. However, a variety of materials and techniques used in this context based on the availability, clinical situations and economical constrain across the globe varying in opinions [10].

The aim of this survey is to determine the percentage of PDP's offering dental implants, source of learning, the most accepted techniques and materials used by the professionals in the selected central part of Madhya Pradesh [10, 13].

Methodology

The present study cross sectional study was conducted in the Department of Prosthodontics of RKDF College of Dental Sciences and Research Centre, Bhopal, Madhya Pradesh. The study population was dental practitioners working in Madhya Pradesh. Subjects were chosen from selected tehsils/districts/divisions of Madhya Pradesh according to inclusion-exclusion criterion. The duration of study was nine months; August 2021 to April 2022

A non-probability sampling techniques is used for present research survey study. Dental practitioners of selected tehsils/districts/divisions of Madhya Pradesh of both the sexes had aged between 23 to 64 years and that further met the inclusion

criteria during specified schedule were screened for the present study.

Four hundred fifty dental practitioners were selected purposively/conveniently for the present survey research, were available to participate as a sample in order to assess the knowledge and prevalent trends of dental implant practice in present scenario among dental practitioners of western part of Madhya Pradesh. Four hundred one dental practitioners were responded for present study that fulfilled the inclusion criteria that duly filled and returned the questionnaire was included in the study.

Detailed information about prevalent trends of dental implant practice and its knowledge in present scenario among dental practitioners by using closed ended questions was enquired. All the responses were documented. Self-structured questionnaire was developed by minimising the number of items using chronbach's alpha after obtained the optimum value of alpha. Face validity of questionnaire was also checked before starting the survey. The main approach used by investigator is to target the relevant population to observe the knowledge and prevalent trend of dental implant practice. Henceforth, the sampling error found to be reduced.

The questionnaire comprised of three type of pattern of questions such as dichotomous, three-points and five-points Likert format type scales. Developed self-structured questionnaire contained thirty three items (questions) found to be reliable used to assess the knowledge and prevalent trends among dental practitioners about dental implant practice in present scenario.

Inclination to implant surgery (D1), case selection and treatment planning (D2), implant surgery and impression making protocol, (D3) prosthetic rehabilitation (D4), and oral hygiene instructions, follow up and success rate (D5) were the five domains used to measure the level of knowledge with respect to these domains among dental practitioners belonged to western part of Madhya Pradesh regarding prevalent dental implant practice in present scenario.

The total scoring of these five domains (D1 to D5) was utilized to measure broadly the knowledge of dental practitioners regarding prevalent dental implant practices in present scenario.

After explaining the aim of the present study, the questionnaire (tool) in the form of a hard copy/Google generated e-form had administered to 450 dental practitioners and out of them 401 dental practitioners was responded. However, to enhance the response rate, the dental practitioners were requested to complete the questionnaire and hand it back immediately and those who were busy at that

moment, were requested to return back the duly filled questionnaires.

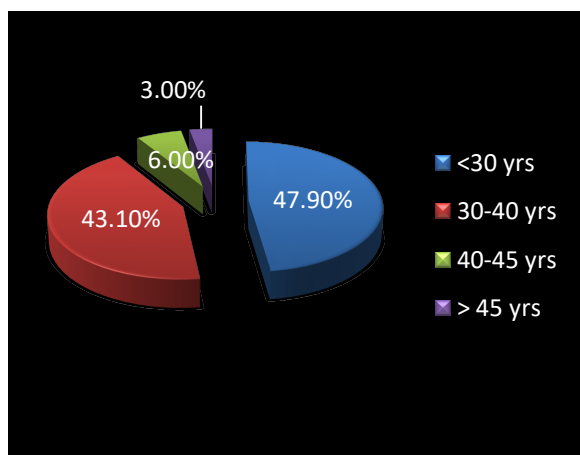
Statistical Analysis

The data was transformed from preceded survey form to computer. The job of data entry, validity checks, and formation of desired results (as per analysis plan) were done using the SPSS version 22.0 (IBM Corporation, Statistical Package for the Social Sciences. N.Y., USA). The total scoring of five domains (D1 to D5) was utilized to measure broadly the knowledge of among dental practitioners regarding prevalent dental implant practice in present scenario. The probability value, $p < 0.05$ was considered as statistically significant.

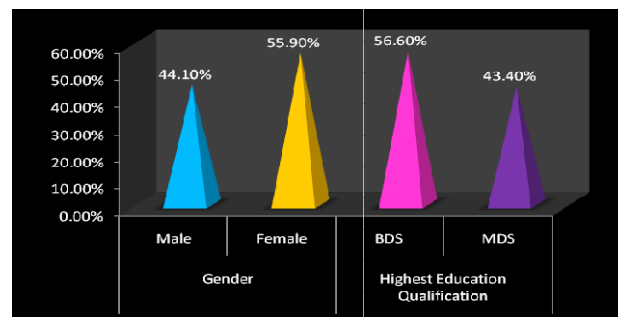
Result

The total number of dental practitioner who had completed the survey was 401. Distribution of participants according to age, Gender and highest qualification has been shown in the Graphs below (Graph 1–2).

The overall knowledge of 76.1% was very good and 21.7% was good. (Table 1). Majority of participants had average inclination towards to Implant Surgery; however the case selection of majority of participants falls in good (42.6%) and very good level (45.4%). The majority of participants fall in good to very good category with respect to Implant Surgery and Impression Making Protocol (D3), Prosthetic Rehabilitation (D4) and Oral Hygiene Instructions & Follow up & Success Rate (D5). (Table 2) There was no difference in knowledge between Genders and different age groups but MDS and had significantly more knowledge than BDS. (Table 3)



Graph 1: distribution of age of dental practitioners selected in study



Graph 2: distribution of gender and the highest educational qualification of selected dental practitioners.

Table 1: Comparison of levels of inclination to implant surgery and case selection with treatment planning of dental practitioners

Domain	Knowledge of Dental Implant Practice		Frequency (N)	Percent (%)
	Score	Grading		
D1: Inclination to Implant Surgery	0-5	Poor	52	13.0
	6-10	Average	270	67.3
	11-15	Good	73	18.2
	16-20	Very good	6	1.5
D2: Case Selection and Treatment Planning	0-2	Poor	0	0.0
	3-5	Average	48	12.0
	6-8	Good	171	42.6
	9-10	Very good	182	45.4
D3: Implant Surgery and Impression Making Protocol	0-8	Poor	0	0.0
	9-16	Average	14	3.5
	17-24	Good	96	23.9
	25-34	Very good	291	72.6
D4: Prosthetic Rehabilitation	0-6	Poor	0	0.0
	7-12	Average	16	4.0
	13-18	Good	204	50.9
	19-23	Very good	181	45.1
D5: Oral Hygiene Instructions & Follow Up & Success Rate	0-7	Poor	1	0.2
	8-14	Average	5	1.2
	15-21	Good	88	21.9
	22-28	Very good	307	76.6

TABLE 2:- comparison of knowledge of dental practitioners about implant surgery and prevalent trends of dental implant practices

Knowledge of Dental Implant Practice		Frequency (N)	Percent (%)
Score	Grading		
0-29	<i>Poor</i>	0	0.0
30-58	<i>Average</i>	9	2.2
59-77	<i>Good</i>	87	21.7
78-115	<i>Very good</i>	305	76.1

Table 3:- Association of gender of dental practitioners with knowledge of dental implant practice

Demographic variables	Categories	Level of Knowledge of Dental Implant Practice			Total
		Average (30-58)	Good (59-77)	Very good (78-115)	
Gender	Male	5 2.8%	33 18.6%	139 78.5%	$\chi^2=2.19; p>0.05$ (Insignificant)
	Female	4 1.8%	54 24.1%	166 74.1%	
Highest level of education	BDS	5 2.2%	64 28.2%	158 69.6%	$\chi^2=13.35; p<0.001$ (Highly Significant)
	MDS	4 2.3%	23 13.2%	147 84.5%	
Age	21-29 years	5 2.5%	44 21.6%	155 76.0%	$\chi^2=2.01; p>0.05$ (Insignificant)
	29-37 years	1 0.7%	33 23.2%	108 76.1%	
	37-45 years	1 2.6%	10 25.6%	28 71.8%	
	≥45 years	0 0.0%	2 12.5%	14 87.5%	

Discussion

Replacement of missing teeth with dental implants is considered as an optimal treatment modality due to its high success rate even with challenging restorative cases.[6] Dental implant restoration has a high success rate edentulous ridge even in complex cases like maxillary sinus lift and lateral ridge augmentation [14].

The study found that above 75% of the PDPs are practicing implant dentistry [15]. This was in contrast to a study carried out in UK wherein only 49.5% of consultants provided implant retained restorations in UK in the year 2001 [16]. Most of the graduate PDPs were not practicing implant dentistry due to lack of skills. This indicates a need to revise undergraduate dental curriculum at various dental schools to improve the knowledge and thus practice of implant dentistry [17].

The PDPs in Madhya Pradesh preferred implants as treatment choice in 76% of patients with missing

teeth, followed by 22% for fixed partial dentures and 4% removable partial denture. This was in accordance with a study carried out by R Chowdhary et al., [18] and Rathod V et al., [19] in which 77.66% and 75% of dentists preferred dental implants as a better treatment option.

Most of the PDPs practicing implant dentistry, took the services of specialists like periodontists oral surgeon and prosthodontists for managing most of the cases. This is in line to the study done by shah et al., in Gujarat, wherein most of the PDPs were referring most of their cases to specialists for implant therapy [13]. Also in a survey in 2007, 80.4% referrals for implants where to a Periodontist & 89.8% to Oral Surgeons. [20] Whereas, in the study by Rathod V et al.,[19] most of the PDPs practicing implant dentistry, managed the basic dental implant cases themselves and referrals periodontist, prosthodontist and only oral surgeons only for managing complex cases.

The most common hindrance faced by PDPs to convince patients for dental implant treatment were the high implant cost and patient's fear for surgery which was in accordance to the results of various studies done in India and abroad. [18, 21, 22]

The study also suggested availability of many implant systems in India, as a hindrance for PDPs not practicing implant dentistry and 95% of these suggested some need of standardization of implant systems because they believed that it will reduce the cost of the treatment & make the procedure simpler. Whereas, 86% of the PDPs in Navi Mumbai practicing implantology did not support that there should be standardization of dental implant dimensions & the surgical kits;(19) which was in accordance with the 82.11% European & 75.6% Australian dentists. [10]

Hence, it is paramount that the practitioners update their knowledge about implant dentistry. The study reflected that, most of the PDPs were keen in updating their knowledge through hands-on courses or Continuing Dental Education (CDE) programs.

Conclusion

The Knowledge about dental implants among practicing dentist was good. Postgraduate Dentist had significantly more knowledge regarding dental implant in comparison to Graduates. Most of dentists suggest dental implant as treatment option to the patients and wants to focus on dental implant practice, but they need more training & experience of dental implant therapy.

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