

## **RESEARCH ARTICLE**

#### ASSESSMENT OF LEVEL OF EXPECTATION, AWARENESS AND ACCEPTANCE OF DENTAL IMPLANT AS TREATMENT OF CHOICE IN ADULT PATIENTS SEEKING PROSTHETIC REHABILITATION

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manuscript injo	Abstract
Manuscript History Received: 31 May 2024 Final Accepted: 30 June 2024 Published: July 2024 Key words:- Awareness, Adults, Dental implants, Edentulous, Partially, Knowledge	Introduction: Dental implants (DI) are being widely used for replacing missing teeth and literature reports showed successful results of DI supported prostheses in partial and complete edentulous rehabilitations. However, knowledge and awareness pertaining to these treatmen modulities among patients with and without missing teeth need to be evaluated. Objective: This Cross-sectional observational research aimed to assess and compare the knowledge and awareness on pros thetic rehabilitations with dental implants among dentate and partially / completely edentulous adults. Materials and Methods: This questionnaire based study was conducted on patients seeking treatment for their missing dentate patient regarding the dental implant and its awareness among adult patients. Result: Descriptive statistics were presented in the form of Frequency and Percentages. Chi square statistics were applied to calculate the statistics of the different variables between the different groups. The statistical constant was fixed at p<0.05. The distribution of the study ample was not normally distributed. Graphically the results were represented as bar graphs. Conclusion: Within the limitations of the study, there is a need to disseminate better knowledge, raise awareness on DI and eliminate the sociated misconceptions, thereby facilitating the general population to take maximum advantage of these novel biomaterials to serve the disperimental of a study and and and partial of the study.

Newer biomaterials and technologies have radically altered the way dental treatment has been delivered for the past several decades. In this context, dental implants have taken aleading edge over conventional complete, fixed and removable partial dentures for the replacement of missing teeth. Eventhough these treatment modalities serve the purpose, the advantage rendered by dental implants in terms of enhanced stability, retention, aesthetics, social and psychological comfort, the better quality of life and improved self-confidence accentuate them as an excellent alternative treatment for missing teeth.<sup>1,2,3,4</sup>

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Scientific adoption of novel technology in any area of medicinerequiresevidencetoconvincethepractitionerandsubstantial impartation of awareness and knowledge to thegeneralpublictoclarifythebenefitsandmisconceptionsassociated with that as well. Emerging systematic reviewsand meta-analyses suggested excellent success and survivalrateswithreducedbiologicalandtechnicalcomplicationsassociatedwithdentalimplanttherapy.<sup>5,6</sup>Thecumulativesu rvival rate of dental implants up to 16 years was projected at 82.94% and the prevalence of biological and technicalcomplications was 16.94% and 31.09% respectively according to Simonis P et al.<sup>7</sup> Similarly, Mark-Steven Howe et al.<sup>8</sup> and Van Velzen et al.<sup>9</sup> observed that the 10 years survival rate for dental implants was 96.4% and 99.7% respectively. Globally, the market analysis of dental implants has shownan exponential increase over the last few years and a com-poundannual growthrate is expected to increase over the next few years, due to the higher prevalence of dental decayand periodontitis associated with dental loss, higher than be-fore demand for cosmetic dental treatment and increased lifeexpectancy.

Despitegainingpopularityandhassle-freeamalgamationinto a dental practice, surveys carried globally in different countries have revealed conflicting details of knowledge, awareness, perceptions, expectations, outcomes and misconceptions about dental implants. Studies from countries suchas the USA,<sup>10</sup> Sweden,<sup>11</sup> Austria<sup>12</sup> and Norway<sup>13</sup> have showngreater awareness among their population i.e. 77%, 76.2%,63% and 70.1% respectively. Studies have shown that peoplehave unrealistic expectations and are misinformed about thelife span, maintenance and expertise required for placement of dental implants. These factors in turn may influence their choice of a dental implant. Despite the availability of literature evidence from various parts of India, the existing results are more conflicting rather than convincing. Hence, the presents tudy was carried outfor assessment of level of expectation, awareness and acceptance of dental implant as treatment of choice in adult patients seeking prosthetic rehabilitation inLucknowcity.

## Materials and Methods:-

This cross-sectional analytical observational study was approved by Institutional Ethical Committee, the research was carried out inthe Department of Prosthodontics crown &bridge ,sardarpatel post graduate institute of dental and medical sciences, lucknow. The study period was from oct 2023 to april 2024 which was approximately 7 months.Convenience sampling was followed and the subjects fulfilling the selection criteria were recruited for the study. Thepurpose of the study was explained and written informed consentwasobtained from each subject.

Aself-explanatoryquestionnairewaspreparedbasedonprevious studies in English language. A bilingual expert in English language checkedthe questionnaire and checked for equivalence in terms of content and meaning. The comprehensibility of the questionnaire was evaluated by randomly administering the questionnaire to 15 patients and their suggestions for improvementwere included. Consistency and reliability were evaluated bytwice administering the questionnaire to 15 subjects over oneweek, and Cronbach's alpha of 0.8 was obtained, indicatingacceptableinternalconsistency.

The questionnaire was administered to the patients duringtheir routine visit, those presenting with pain and those notable to read english were not included. The studysampleincludeddentulousandpartiallyorcompletelyedentulousadultswhowerewillingtoparticipateinthestudy. A structured questionnaire was framed, which consisted of the demographic details, responses towards replacement and restoration of missing teeth and their knowledge and awareness on Dental implants (DI). Further, their knowledge and awarenessofotherreplacementswerealsoassessed. Thequestionswereclosed-

endedandtheoptionscoveredtheestheticaswellasthefunctionalaspectsofDI.TheEnglish questionnaires were distributed to the respective subjects who are comfortable in the specific language.Any clarifications or assistance for completing the forms, ifneeded, were available at all times through trained interns.

A total of 100 subjects received questionnaires and any formwith incomplete responses were not included for assessment. In the end, 100 forms with complete responses were considered for the analysis.

#### **Statistical Analysis**

ToanalysethedataSPSS(IBMSPSSStatisticsforWindows,Version 25.0, Armonk, NY: IBM Corp. Released 2017) wasused. Descriptive statistics like, percentage, mean standarddeviation, minimum maximum were calculated. To compare proportions between groups, the Pearson Chi-Square testwas applied. The significance level is fixed as  $5\%(\alpha = 0.05)$ .

## **Results:-**

MS Excel 2016 was used to fabricate the data sheet. IBM SPSS Corp. in Armonk, New York for Windows, Version 25.0, was used for the statistical analysis. Descriptive statistics were presented in the form of Frequency and Percentages. Chi square statistics were applied to calculate the statistics of the different variables between the different groups. The statistical constant was fixed at p<0.05. The distribution of the study sample was not normally distributed. Graphically the results were represented as bar graphs.

# Demographic characteristics of the study population

## Gender distribution

The gender distribution of the study population was noted and there were more number of females (55) and males (44)(table 1). There was no statistically significant difference noted between the groups. The same have been graphically represented in Figure 1.

	Frequency	Percent	Chi square	P Value
Female	55	55.6		
Male	44	44.4	0.678	0.06
Total	99	100.0		





Figure 1:- Graphical representation of the gender distribution.

## **Occupation of the study population(table 2)**

The occupation distribution of the study population was noted and there were number of students (85); followed by 7 employed and 7 unemployed subjects. There was a statistically significant difference noted between the groups. The same have been graphically represented in Figure 2.

	Frequency	Percent	Chi square	P Value
Employed	7	7.1	41.56	<0.0001*
Student	85	85.9		
Unemployed	7	7.1		
Total	99	100.0		

 Table 2:- Occupation of patients.

\*statistically significant



Figure 2:- Graphical representation of the occupation distribution.

#### Monthly income of the study population

The monthly income distribution of the study population was noted and there were more number of students hence nil income for 72 of them; followed by 11 of them incoming <10,000; 12 incoming >20,000 and 4 of them earning 10,000 - 20,000 per month. There was a statistically significant difference noted between the groups. The same have been graphically represented in Figure 3.

	Frequency	Percent	Chi square	P Value
<10,000	11	11.1	121.808	<0.0001*
>20,000	12	12.1		
10,000 - 20,000	4	4.0		
Nil	72	72.7		
Total	99	100.0		





Figure 3:- Graphical representation of the monthly income of the study population.

## Educational qualification of the study population

The educational qualification distribution of the study population was noted and there were more number of postgraduate students (64)followed by 27 graduates and 8 of them with intermediate education. There was a statistically significant difference noted between the groups. The same have been graphically represented in Figure 4.

Ĩ	Frequency	Percent	Chi square	P Value
Graduate	27	27.3	49.152	<0.0001*
Intermediate	8	8.1		
Post graduate	64	64.6		
Total	99	100.0		

\*statistically significant



Figure 4:- Graphical representation of the educational qualification of the study population.

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#### Acceptance related question and responses

		Frequency	Percent	Chi square	P Value
Do you think missing teeth	No, not always	4	4.0	56.78	< 0.0001*
should be replaced	Yes always	87	87.9		
	Yes, if the gap is	8	8.1		
	visible				
	Total	99	100.0		
How well do you know	poorly	9	9.1	45.67	<0.0001*
about dental implants	very well	43	43.4		
	well	47	47.5		
	Total	99	100.0		
aware of dental implants	no	2	2.0	43.78	<0.0001*
as treatment substitute for	not sure	1	1.0		
missing teeth	yes	96	97.0		
	Total	99	100.0		
From where have you	Dentists	87	87.9	46.78	<0.0001*
learned about dental	Friends or relatives	5	5.1		
implants	Internet	7	7.1	]	
	Total	99	100.0		

Knowledge	of	implant	Adjacent teeth	6	6.1	56.78	< 0.0001*
placement			Gum	2	2.0		
			I don't know	5	5.1		
			Jaw bone	86	86.9		
			Total	99	100.0		

\*statistically significant

The acceptance related question and their related responses have been presented both in the tabular format and presented graphically in the form of bar graphs. It was seen that 87.9% of the study participants responded that always a missing tooth shall be replaced. The participants claimed to have well knowledge of the study participants. 97% of the study participants were aware of dental implants as a treatment substitute for missing teeth. Majorly the knowledge of the study participants came from the dentists (97%). The knowledge related to the implant placement showed that there were aware that it was placed in the jaw bone (86.9%). The same have been graphically represented in Figure 5.



Figure 5:- Graphical representation of the knowledge related responses of the study population.

#### Expectation related question and responses

The expectation related question and their related responses have been presented both in the tabular format and presented graphically in the form of bar graphs. It was seen that 81.8% of the study participants responded that they liked to have the teeth replaced. The participants claimed to opt dental implants for functional purposes (45.5%). The same have been graphically represented in Figure 6.

		Frequency	Percent	Chi square	P Value
like to have	Do not want to replace	7	7.1	171 505	<0.0001*
your teeth	With fixed prosthesis	9	9.1	1/1.505	<0.0001*

replaced	placed With implants		81.8		
	With removable appliance		2.0		
	Total	99	100.0		
	Avoid damaging of adjacent teeth	31	31.3		
reason	Esthetics	20	20.2		
willing to	Function	45	45.5	54.21	< 0.0001*
have implant I don't know		3	3.0		
	Total	99	100.0		

\*statistically significant



Figure 6:- Graphical representation of the expectation related responses of the study population.

#### Awareness related question and responses

The awareness related question and their related responses have been presented both in the tabular format and presented graphically in the form of bar graphs. It was seen that 56.6% of the study participants responded ideal hygiene and care of the implant was more than that of the natural teeth. The participants claimed high cost to be the biggest disadvantages for the dental implants (56.6%). The same have been graphically represented in Figure 7.

		Frequency	Percent	Chi square	P Value
Ideal hygiene	Cleaned like natural teeth	36	36.4	82.89	< 0.0001*
and care of	I don't know	7	7.1		
implant	More care than natural teeth	56	56.6		
	Total	99	100.0		
Disadvantages	High cost	56	56.6	71.78	< 0.0001*
dental implant	I don't know	2	2.0		
	Surgery	13	13.1		
	Takes long time until fully	28	28.3		
	function				
	Total	99	100.0		

\*statistically significant



Figure 7:- Graphical representation of the awareness related responses of the study population.

# Correlation comparing the education and monthly income of the study participants with willingness to replace the tooth with implants

It was seen that education was statistically significant correlation between the education of the study population and monthly income of the study participants (p=0.014).

Coeffici	ents					
Model		Unstandar	Unstandardized Coefficients		t	P Value
		В	Std. Error	Beta		
1	(Constant)	.745	.236		3.159	.002
	Monthly income	003	.051	007	067	.947
	Education	.304	.121	.250	2.513	.014*
a. Deper	ndent Variable: like to h	nave your teeth r	eplaced			

\*statistically significant

## **Discussion:-**

The current observational research was conducted to deter-mine and compare whether there is a disparity in the level ofawarenessandknowledgeofdentalimplantsasareplacementoption for missing teeth in a sample of partially /completelyedentulous and edentulous subjects in Lucknow, North India.Many studies on knowledge and awareness of DI among thegeneral population of various countries have previously beendocumented and it has been widely observed that westernpeoplereportedhigherlevelsofawareness.

Literature evidence on the same in Indian studies is unclearwithcontradictingreports, whereinfewauthorsobservehigher levels of awareness and knowledge whilst many indicate a lower or severe deficit in dental implant information. As health care professionals, it is essential for patients to besufficiently educated about the risks and benefits of any interventions or treatment provided, thereby allowing them tobe an active part of the treatment process. Misconceptionsand myths about dental procedures often create a mental barrier that prevents patients from seeking dental care, and DI isno exception. Thus, cross-sectional studies like these allowdental professionals to identify and bridge the knowledgegapsthatcreatenegativeattitudestowardsthereplacement of missing teeth using DI enabled through both individualeducation in a clinical set-up and on a larger scale throughmassmedia.

In this study, it was seen that 81.8% of the study participants responded that they liked to have the teeth replaced. The participants claimed to opt dental implants for functional purposes (45.5%). This supported by their response that missing teethshouldbereplaced(90.4%). The current study population was seen that 87.9% of the study participants responded that always a missing tooth shall be replaced. The participants claimed to have well knowledge of the study participants and this was in favour to the studies reporting higher awareness for instanceZimmer et al in the USA<sup>10</sup> 77%, Berge et al. in Norway<sup>13</sup>70.1%,EsfahaniandMoosaaliinIran<sup>14</sup>76.7%,Tepperetal. in Austria<sup>12</sup> 72%, Al-Musawi and colleagues in Kuwait<sup>15</sup>96.4%.

ThemainsourceofinformationonDIinthepresentgroupof edentulous and dentulous subjects was dentist followed by theinternet, apparently in the groups the role of media in dissipatingknowledge on DI was very insignificant .Onscrutiny,itwasevidentfromthestudiesin Indian cities<sup>18,20,21,22</sup> that media has a very minimal role increating awareness on DI among the public in the Indian scenario, on the other hand in the US<sup>10</sup> and Norway,<sup>13</sup> the primary source of information was through the media. RajeshHosadurgaet al.<sup>21</sup>emphasised the misinformation that couldbe created by the electronic and mass media and therefore commended the dissemination of quality information from the dental practitioner. Hence, dentists should play a moredynamic role in the dissemination of information to the public. In Hong Kong, media created fallacy that DI can restore dentition to absolute normality in terms of function, appearance and quality of life was noted among adults, further, they had unrealistic expectations, underestimated the expertise for placement and daily care needed and overestimated the longevity of DI.<sup>23</sup> These observations highlight the needforc reating better awareness.

On questioning, regarding the knowledge related to the implant placement showed that there were aware that it was placed in the jaw bone (86.9%). Kuwaitirespondents felt that placement of metal within the jaw wasdangerous and the majority of them considered implant surgicalprocedureasdifficultandcomplicated.<sup>15</sup>

The majority of the subjects were willing toundergo DI placement, the group believed that DI looked aesthetically far superior to other replacement prostheses but the higher cost and the associated long treatmenttime were the limitations. Pragathi Kaurani<sup>18</sup> in their study reported that 56% were not willing for DI even aftered ucating the mabout DI. Possibly less knowledge or lack of information, no clarity on the procedure, high cost, fear of surgery/complications and multiple other factors could be the reasons for not choosing DI. In their systematic review, Michael edelmayer<sup>25</sup> observed that 52.6% ±25.4% of subjects did not opt for DI due to high cost. In agreement with our observation, Indian studies have similarly reported that high cost was a barrier for not choosing DI and a wide perception that it can be afforded only by rich people.

Limitations of this study could be the small sample size, conveniences ampling and being a self-reporting survey there is a likelihood that the respondents may not answerhonestly.

## **Conclusion:-**

Good level of awareness on DI were observed in both theedentulous and dentulous subjects in this study. More thanhalf of the subjects knew about DI as a replacementoptionformissingteethcomparedtothedentuloussubjects. Nevertheless, the latter group had better knowledgeand information on DI than the former group. Dentists and internet were the primary source of informationand high cost, surgical procedure and long treatment durationwerethelimitingfeaturesforDIasatreatmentoptioninboththe groups. Finally, the majority of the subjectswere willing for the DI procedure, thestudy, therefore, highlights theneedto disseminate betterknowledge, raise awareness on DI and eliminate the associated misconceptions, thereby facilitating the general population to take maximum advantage of these novel biomaterialstoservethedual purpose of aesthetics and function.

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