

Cross Sectional Assessment of Knowledge and Awareness Regarding Mandibular Implant Overdentures among Institutionalized Complete Denture Patients: A Questionnaire Based Original Study

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ABSTRACT

Background: As we all are aware that implant therapy is no more an uncommon rehabilitation modality for restoring some or all missing teeth. However, the number of cases those related to complete rehabilitations (Implant overdentures) are much lower than the expected levels. This is predominantly true for rural residents. This study was performed and completed to assess the knowledge and awareness about mandibular implant overdentures among institutionalized completely edentulous patients.

Materials & Methods: We used a questionnaire-based survey that consisted of related questions. The study was completed on total 100 patients. We had selected the patients those visiting the department for conventional complete denture fabrication. A preformed questionnaire having 8 questions about knowledge and awareness about mandibular implant overdentures was provided to patients in their very first visit of complete denture construction. All outcomes and response was logically documented and data was processed statistically to approximate awareness level.

Results: Statistical evaluation using statistical software Statistical Package for the Social Sciences (SPSS). The finalized and resulting information was subjected to proper statistical tests to define real inferences. Patients were divided into 5 age groups of 40-49 years, 50-59 years, 60-69 years, 70-75 years, >75 years respectively. Minimum number of patients was noticed in first age groups. It was 7 only with 4 males and 3 females. Maximum patients were belonging to the age group of 70-75 years. For age group 3 (60-69 Years), p value was found significant ($p < 0.05$ significant). Roughly half of the patients think that implant overdenture is a lengthy treatment procedure compared to other available options.

Conclusion: Among all the studied completely edentulous patients, the relative level of knowledge and awareness about mandibular implant overdentures was almost at poor level. Most of the studied subjects do not even know about dental implantology and related complete denture rehabilitations. However some of them were aware about it through their dentist. Additionally, majority of the patients were in misapprehension that mandibular implant overdenture surgical procedures probably have deleterious effects on ear, nose and eyes.

Keywords: Implant, Complete Denture, Overdentures, Questionnaire.

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INTRODUCTION

As a proven fact, lack of stability and retention of the mandibular complete denture, are the main complaints of complete denture patients. This is also frequently associated with the diminished masticatory efficacy. Such patients typically look for denture therapy which simply provides optimal stability and support for the dentures. In literature, many authors have given an outline of the rationale usage of dental implants in the prosthodontic rehabilitation of variety of conditions.^{1,2} Regrettably, most of the related studies literally failed to substantially differentiate between the locations of the implants, fully or partially edentulous, or the type of superstructure. As on today, a number of prosthetic rehabilitative options are available for managing an edentulous mandible. They have been classified broadly as fixed and removable prostheses. They basically differ in their retention, support and economical characteristics.^{3,4} The final choice of the ultimate treatment options usually directed to meet the sole need of patients. They are mainly those related to mandibular function, esthetic and health and overall quality of life. Literature has also well evidenced that with long term usage of the complete dentures, the residual alveolar ridges become increasingly more atrophied.^{5,6} Such osseous deterioration is considerably worse when the patient start wearing a mandibular complete denture. This could be further correlated on the basis of obstruction of tongue and interferences of lingual frenum. With the ever increasing advancements in dental implantology, completely edentulous patients have literally got a new ray of hope. We have seen in many clinical circumstances that dental implant supported and retained completed dentures generally provide patients with better stability and increased chewing efficiency. Nonetheless, it is not every time applicable for every patient because of some miscellaneous factors like abused oral health, economical reasons etc. Additionally, dental implant supported and retained completed dentures have achieved much fame in the recent past. However, literature searches have not actually shown applicable data about knowledge and awareness of mandibular implant overdentures in completely edentulous patients in Indian scenarios. The conclusion of most studies was in favor of implant overdentures in terms of patients satisfaction. This

actually led to the real need of the study. Hence, authors have decided to conduct this study to assess the knowledge and awareness about mandibular implant overdentures among completely edentulous patients. Here authors have genuinely attempted to investigate the existing outcomes by processing patient's responses those produced through pre-framed questionnaire.

MATERIALS & METHODS

This study was conducted in the department of Prosthodontics of the institute. It included total 100 completely edentulous patients those willing for complete dentures. All patients were screened from regular patients' footfall of the department. Patients having any physical or psychological diseases were excluded from the study. Every selected patients were asked to participate in the study. The study model and intended way of study's execution were elucidated in detail to the patients. All patients were also intimated regarding the importance and clinical relevance of the study. We had obtained written consents (regarding their willing participation) from all 100 selected patients. A self prepared, close ended questionnaire was given to patients. The questionnaire had of 8 questions about the knowledge and awareness regarding mandibular implant overdentures. We have determined to perform the study using questionnaire for the reason that questionnaire based studies are very useful to obtain wide-ranging data about personal and group perceptions and opinions. Additionally, they can be conducted concurrently on a larger populace to outline their common outlook. The secrecy and other rights of the participants were completely ensured. Typically, we ensure to record the responses of the questionnaire in the very first appointment of the patient's complete denture fabrication. It was done in an attempt to further make certain unbiased responses of the patients. Results thus obtained was tabulated and subjected to statistical analysis using chi-square test. The recorded data was subjected to basic statistical tests to attain p values and other inferences. P values less than 0.05 was considered significant ($P < 0.05$).

RESULTS

All parameters and records were gathered and sent for statistical analysis using statistical software Statistical Package for the Social Sciences version 21

(IBM Inc., Armonk, New York, USA). The finalized data was subjected to suitable statistical tests to obtain p values and other inferences like Pearson Chi Square values. Table 1 and Graph 1 shows that patients were divided into 5 age groups of 40-49 years, 50-59 years, 60-69 years, 70-75 years, >75 years respectively. Minimum number of patients was noticed in first age groups. It was 7 only with 4 males and 3 females. Maximum patients were belonging to the age group of 70-75 years. Total 17 male and 17 female patients were there in this group [34 % of total subjects]. p value was significant ($p < 0.05$ significant). For age group 3 also (60-69 Years), p value was found significant ($p < 0.05$ significant). Table 2 showed the educational status of studied patients. More than half [$n=63$] patients possesses education up to XIIth standard. Table 3 illustrates that only 25 patients were heard about dental implants and mandibular implant overdentures. Roughly half of the patients think that

it is a lengthy treatment procedure compared to other available options. Majority of patients [$n=88$] believe that cost is the main reason for rejection of mandibular implant overdenture therapy. Moreover, most of the patients were in misconception that mandibular implant overdenture surgeries possibly have harmful effects on eyes and ear [$n=75$]. Total 32 patients expressed their anxiousness about surgery involved in mandibular implant overdenture therapy. Approximately half of the studies population was all set to recommend mandibular implant overdenture to their friends and relatives. P values were 0.01, 0.01 and 0.02 for question no. 3, 5 and 8 respectively. Therefore a high degree of significance ($p < 0.05$ significant) was reported in responses of these questions. Values of Pearson Chi Square Tests (Pearson χ^2) for each response were also mentioned in Table 3.

Table 1: Age & gender wise distribution of patients.

Age Group	Year Range	Male	Female	Total	P value
1	40-49	4	3	7 [7 %]	0.020
2	50-59	9	8	17 [17 %]	0.100
3	60-69	11	9	20 [20 %]	0.001*
4	70-75	17	17	34 [34 %]	0.020*
5	>75	13	9	22 [22 %]	0.800
Total	-	54	46	100	*Significant

* $p < 0.05$ Significant

Table 2: Educational assessment of patients.

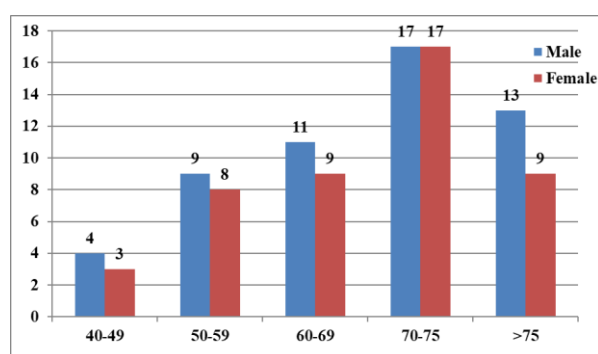
Educational Degree	Number	Mean	Standard Deviation
Uneducated	23	12.26	13.89
Upto XII th	63	31.17	17.41
Under Graduate	10	4.21	4.26
Post Graduate	4	1.98	2.16
Total	100	-	-

Table 3: Assessment of questionnaire responses with statistical outcomes.

Questionnaire	Variables	No. of Respondents	Chi Square Test (Pearson χ^2)	P value
1	Have you ever heard about dental implants and mandibular implant overdentures?	Yes = 25 No = 75	0.03	0.52
2	Do you think that it is a lengthy treatment procedure compared to other options?	Yes = 51 No = 49	0.02	0.08
3	Have you personally met and discussed it with those who are using mandibular implant overdentures ?	Yes = 18 No = 82	0.14	0.01*
4	After explaining it to you, are you ready for mandibular implant overdenture therapy?	Yes = 48 No = 52	0.65	0.82
5	Do you believe that due to high cost it is not merely accepted by most of the patients?	Yes = 88 No = 12	0.04	0.01*
6	Would you like to suggest your friends, relatives for mandibular implant overdenture therapy ?	Yes = 51 No = 49	0.42	0.40
7	Are you scared of surgical procedure involved in mandibular implant overdenture therapy ?	Yes = 32 No = 68	0.02	0.22
8	Do you believe that mandibular implant overdenture surgery could have deleterious side effects on eyes, ear etc ?	Yes = 75 No = 25	0.01	0.02*

* $p < 0.05$ Significant

Graph 1: Graphical representation of patients according to age & gender (age group 1-5).



DISCUSSION

Implant overdenture therapies have become very common and routine clinical procedures now days. They also offer optimal and acceptable survival rates upto 100 %. Naert and Allen et al done implant survival studies and showed that the

survival rates of implants supported or assisted dentures and was ranging between 94.5% -100%.⁷⁻⁸ However they measured bone loss levels radiographically. Our study was conducted to assess the existing knowledge and awareness about mandibular implant overdentures among institutionalized completely edentulous patients. We studied total 100 patients and mostly of them were from nearby areas. The results were very imperative as the general level of awareness was poor and 75 patients have not heard about implant and related therapies. Literature has well evidenced that successful prosthetic rehabilitation of edentulous arches can be achieved by removable or fixed prostheses.⁹⁻¹² Removable prostheses are solely intended to provide optimal retention, stability while fixed prostheses are directed towards patient comfort and ease.¹³ However, the ultimate goal of any rehabilitative measure is to restore missing teeth with restoration of function,

esthetic and social acceptance. It not only boosts up patients confidence levels but also improve his/her overall quality of life.¹⁴⁻¹⁶ In Indian scenario especially in rural areas, the dental implantology is still an uncommon entity. Most of the patients are aware of only conventional complete dentures. However, it is not applicable to urban and metropolitan regions where dental implantology has been practiced routinely. This actually necessitates and attracts the evaluation of awareness in such outreach population. Edentulous patients frequently experience problems with their mandibular complete dentures. Diminished stability and retention of their mandibular denture, together with a decreased masticatory ability are the major complaints of such patients.^{6,7,17} A commonly used treatment possibility to solve lower denture problems is to place endosseous implants in the mandible to support an overdenture. In the present study we also assessed the patients opinion about cost of implant overdenture therapy. Majority of patients said that it's cost is too much to be afforded by common people. They also mentioned that their cost must be lowered down as to make it affordable. Most of the patients were in misconception that mandibular implant overdenture surgeries possibly have harmful effects on eyes and ear. Total 32 patients expressed their anxiousness about surgery involved in mandibular implant overdenture therapy. When assessing the patients satisfaction about installed prosthesis, we had noticed that most of the patients were thinking it only in terms of retention. It is therefore when we had explained them about implant retained overdentures, they were quite impressed and satisfies with it. Roughly half of the patients had got ready for advising implant overdenture to their friends and relatives. Over-dentures are typically advocated in the cases where there is insufficient alveolar bone that could offer optimal retention in complete denture. Nevertheless, overdentures cannot gratify those patients who want fixed prostheses or psychologically cannot accept removable prostheses and they may get better results from implant supported fixed prosthesis.^{18,19}

CONCLUSION

Our study results unquestionably showed the present status of knowledge and awareness about mandibular implant overdenture in studied

patients. Among all the studied completely edentulous patients, it was almost at poor level. Most of the studied subjects do not even know about dental implantology and related complete denture rehabilitations. However some of them were aware about it through their dentist. Additionally, majority of the patients were in misinterpretation that mandibular implant overdenture surgical procedures probably have deleterious effects on ear, nose and eyes. Therefore, it is very clear that the studies patients are severely lacking the general knowledge of dental implant and associated therapies like implant overdenture. Hence, it is advisable that dentists should be regularly counseling the patients about the significance of dental implant and implant overdenture.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

REFERENCES

1. Meijer HJA, Steen WHA, Bosman F. A comparison to asses marginal bone height around endosseus implants. *J Clin Periodontol* 1993;20(4):250-3.
2. Guckes AD, Smith DE, Sweepe CC. Counseling and related factors influencing satisfaction with dentures. *J Prosthet Dent* 1978;39(3): 259-67.
3. Burns DR, Unger JW, Elswick RK, Giglio. Prospective clinical evaluation of mandibular implant overdenture: part II - patient satisfaction and preference. *J Prosthet Dent* 1994;73(4): 364-9.
4. Chowdhary R, Mankani N, Chandraker NK. Awareness of dental implants as a treatment choice in Urban Indian populations. *Int J Oral Maxillofac Implants* 2010;25:305-8.
5. Zimmer CM, Zimmer WM, Williams J, Liesener J. Public awareness and acceptance of dental implants. *Int J Oral Maxillofac Implants* 1992;7:228-32.
6. Berge TI. Public awareness, information sources and evaluation of oral implant

- treatment in Norway. *Clin Oral Implants Res* 2000;11:401-8.
7. Naert I, Gizani S and van Steenberghe D. Rigidly splinted implants in the resorbed maxilla to retain a hinging overdenture: a series of clinical reports for up to 4 years. *J Prosthet Dent* 1998;79(2): 156-64.
 8. Allen PF, McMillan AS. A longitudinal study of quality of life outcomes in older adults requesting implant prostheses and complete removable dentures. *Clin Oral Implants Res* 2003;14(2): 173-9.
 9. Meijer HJA, Steen WHA, Bosman F. Standard radiographs of alveolar crest around implants in mandible. *J Prosthet Dent* 1992;68(2): 318-21.
 10. Tepper G, Haas R, Mailath G, Teller C, Bernhart T, Monov G. Representative marketing oriented study on implants in the Austrian population. II. Implant acceptance, patient perceived cost and patient satisfaction. *Clin Oral Implants Res* 2003;14:634-42.
 11. Kranjcic J, Mikus A, Mehulic K, Vojvodic D. Knowledge and awareness of dental implants among elderly people in Croatia. *J Prosthodont* 2015;24:37-42.
 12. Raghoobar GM, Meijer HJ, Stegenga B, van't Hof MA, van Oort RP, Vissink A. Effectiveness of three treatment modalities for the edentulous mandible. A five-year randomized clinical trial. *Clin Oral Implants Res* 2000;11:195-201.
 13. Thomason JM, Feine J, Exley C. Mandibular two implant-supported overdentures as the first choice standard of care for edentulous patients – the York Consensus Statement. *Br Dent J* 2009; 207:185–186.
 14. Stellingsma C, Vissink A, Meijer HJA, Kuiper C, Raghoobar GM. Implantology and the severely resorbed edentulous mandible. *Crit Rev Oral Biol Med* 2004;15:240–8.
 15. Kotsovilis S, Fourmoussis I, Karoussis IK, Bamia C. A systematic review and meta-analysis on the effect of implant length on the survival of rough-surface dental implants. *J Periodontol* 2009; 80:1700–18.
 16. Stellingsma K, Raghoobar GM, Meijer HJA, Stegenga B. The extremely resorbed mandible: a comparative prospective study of 2-year results with 3 treatment strategies. *Int J Oral Maxillofac Implants* 2004;19:563–77.
 17. DasNeves FD, Fones D, Bernardes SR, Do Prado CJ, Neto AJ. Short implants – an analysis of longitudinal studies. *Int J Oral Maxillofac Implants* 2006;21:86–93.
 18. Satpathy A, Porwal A, Bhattacharya A, Sahu PK. Patient awareness, acceptance and perceived cost of dental implants as a treatment modality for replacement of missing teeth: A survey in Bhubaneswar and Cuttack. *Int J Public Health Dent* 2011;2:1-7.
 19. Pragati K, Mayank K. Awareness of dental implants as a treatment modality amongst people residing in Jaipur (Rajasthan). *J Clin Diag Res* 2010;4:3622-6.