

An Analysis of Patients' Knowledge and Experience Associated with Metallic Dental Implant Material

Faryal Manzoor¹, Umer Khayyam², Haifa Saquib Baqai³, Aman Ullah Siddiqui⁴, Farhat Jehan⁵, Safiullah Daheri⁶

- ¹ Associate Professor, Department of Community & Preventive Dentistry, Bhittai Dental & Medical College, Mirpur Khas, Pakistan
Data collection, Manuscript writing
- ² Associate Professor & Head of the Orthodontic Department, Hamdard University, Dental Hospital, Karachi Pakistan
Data interpretation
- ³ Assistant Professor, Oral Biology Department, Hamdard University, Dental Hospital, Karachi Pakistan
Data collection
- ⁴ Assistant Professor, Department of Oral Biology, Bhittai Dental & Medical College, Mirpur Khas Pakistan
Data analysis
- ⁵ Lecturer, Orthodontic Department, Bhittai Dental & Medical College, Mirpur Khas Pakistan
Results & Tabulation
- ⁶ Lecturer, Department of Community Dentistry, Bhittai Dental & Medical College, Mirpur Khas Pakistan
References layout

CORRESPONDING AUTHOR

Dr. Faryal Manzoor
Associate Professor, Department of Community & Preventive Dentistry, Bhittai Dental & Medical College, Mirpur Khas, Pakistan
Email: faryalrajput62@gmail.com

Submitted for Publication: 19-02-2023
Accepted for Publication 15-07-2023

How to Cite: Manzoor F, Khayyam U, Baqai HS, Siddiqui A, Jehan F, Daheri S. An Analysis of Patients' Knowledge and Experience Associated with Metallic Dental Implant Material. APMC 2023;17(4):483-487. DOI: 10.29054/APMC/2023.1291

ABSTRACT

Background: Metallic dental implant materials play a pivotal role in modern dentistry, serving as a key component in the restoration of missing teeth. Patients' knowledge and experiences related to these metallic materials are essential aspects in understanding the overall success and acceptability of dental implant procedures. **Objective:** To determine the patients' knowledge and experience (satisfaction and problems) associated with Metallic Dental Implant Material. **Study Design:** Cross-sectional survey-based study. **Settings:** Bhittai Dental Hospital Mirpur Khas and Hamdard University, Dental Hospital, Karachi Pakistan. **Duration:** Six months from march 2021 to August 2021. **Methods:** All the patients above 18 years of age, both gender, individuals who have previously undergone dental implant procedures involving metallic materials, those who are considering dental implant procedures with metallic materials were included. Data was collected using a structured questionnaire consisting of closed-ended questions regarding patients' knowledge and experience associated with metallic dental implant material. Data analysis was done by using SPSS version 26. **Results:** A total of 89 individuals were interviewed; out of them 55.15 were females and 44.9% were males. Most of the cases had heard about dental implant by medicos, random people and relatives. 37.1% patients had financial issues regarding dental implants, 25.8% had pain/discomfort after having an implant, 31.5% cases were facing to infection, 67.4% cases had limitation regarding meals after having a dental implant. Out of all 57.3% individuals were satisfied regarding their dental implants. **Conclusion:** Patients' knowledge and experience associated with metallic dental implant material observed to be average. Financial, fear of surgery, discomfort and infection issues were a major concern for a significant proportion of patients, indicating that cost may be a barrier to receiving dental implants for some patients. Despite these challenges, the majority of patients expressed satisfaction with their dental implants, indicating that the benefits of the procedure may outweigh the challenges.

Keywords: Metallic dental implants, Knowledge, Problems, Satisfaction.

INTRODUCTION

Dental implants have become a highly reliable solution for addressing tooth loss, demonstrating consistent success rates. Nevertheless, in less economically developed regions, the adoption of dental implants remains relatively low.¹ Various factors play a role in influencing the preference for dental implants as a treatment option in these countries.^{1,2} Dental implants

have a history spanning over two thousand years, but their contemporary application in dental restoration took shape during World War II.³ A pivotal milestone in the field of dentistry occurred in 1957 with the introduction of the Brånemark System.³ Advancements in modern science have enabled dentists to provide a diverse range of implant options, including dentures, screws, crowns, braces and the dental bridges. The loss of teeth represents a significant life event that can lead to the hindrance of

crucial oral functions, particularly eating and speaking.⁴ Additionally, it frequently results in a range of psychological and physical consequences that impact various facets of oral health-related quality of life (OHRQoL). These effects, coupled with an unfavorable appearance, can substantially restrict individuals affected by tooth loss in their daily routines.^{4,5} Despite the revolutionary advancements in dental practice driven by new techniques and innovations, the issue of missing teeth remains a significant challenge affecting populations worldwide.⁶ Both the chemical and physical attributes of implant materials, encompassing factors like the implant's surface composition, microstructure, and unique characteristics, are acknowledged as influential factors that impact the long-term clinical performance and results of dental implants.⁷ The adoption of dental implants can be also influenced by factors such as insufficient awareness, patient perception, treatment expenses, and fear of undergoing surgery.⁸ Moreover, the elevated success rate of dental implant therapy and the growing willingness of patients to undergo such treatment necessitate that general dentists possess knowledge about dental implant maintenance and the fundamentals of dental implant techniques.⁹ Assessing the patient's perspective on teeth replacement is crucial for tailoring their education and enhancing their willingness to accept prosthetic solutions.¹⁰ However, it is imperative to enhance patient education and knowledge concerning the array of treatment alternatives accessible to them. This includes providing a comprehensive understanding of the respective advantages and disadvantages associated with each available option. By doing so, patients can make well-informed decisions that align with their individual needs and preferences. This study has been done to explore the patients' understanding and attitude with metallic dental implant materials, as well as their practical encounters with these materials in dental procedures.

METHODS

This cross-sectional survey-based study of dental implants was done at Bhattai dental hospital MirpurKhas and Hamdard University, Dental Hospital, Karachi during a period of six months from march 2021 to August 2021. All the patients above 18 years of age, both gender, individuals who have previously undergone dental implant procedures involving metallic materials, those who are considering dental implant procedures with metallic materials were included. Individuals who were considered unfit for dental implant procedures by dental experts due to medical or dental issues and individuals with cognitive impairments that may hinder their capacity to provide informed consent or meaningfully engage in questionnaire responses or interviews will be excluded. After taking verbal informed consent, each

study subject was interviewed by structured questionnaire meticulously which was designed for this study. This questionnaire primarily consisted of closed-ended questions. The questionnaire was designed to extract specific information from participants, covering topics such as their awareness of metallic dental implant materials, sources of information about these materials, any prior experiences they may have had with them, and their overall satisfaction or concerns regarding the use of metallic materials in dental implants. All the data was entered and analyzed by using SPSS version 20.

RESULTS

A total of 89 individuals were interviewed as per the study objective. Mean age of the study participants was 41.22±7.12 years. Out of all males were 44.9% and females were 55.1%. **Table.1**

Table 1: Mean age and gender distribution of the patients

Variables		Frequency	Percent
Gender	Males	40	44.9%
	Females	49	55.1%
Mean age		41.22 ± 7.12 years	

In of information regarding dental implants, it has been that the majority of the cases (37.1%) heard about dental implants from healthcare professionals (Medicos), while 41.6% cases heard about them from random people or relatives. The internet and newspapers were also mentioned as sources, with 15.7% and 5.6%, respectively. 56.2% of respondents had used these dental prosthetics prior to getting dental implants, while 43.8% had not. Here, 64.0% of respondents reported being aware of the cost, while 36.0% stated that they were not aware. **Table.2**

Table 2: Patients knowledge regarding dental implants (n=80)

Variables		Frequency	Percent
From where have you heard about dental implants?	Internet	14	15.7%
	Medicos	33	37.1%
	Newspaper	5	5.6%
	Random people/ Relatives	37	41.6%
Have you used dentures, a flipper, or bridge prior to implants?	Yes	50	56.2%
	No	39	43.8%
Are you aware of the cost of the whole procedure of a dental implant?	Yes	57	64.0%
	No	32	36.0%

According to the comprehensive overview of patients' experiences and concerns regarding dental implants. Fear of surgery was the most common reason reported by

31.5% of respondents, followed closely by fear of rejection of the implant and pain or discomfort, each at 21.3%. Notably, 21.3% of participants indicated experiencing all of the above fear. A significant portion, 37.1% of respondents, reported facing financial issues, while 38.2% did not, and 24.7% had some means of financial support. It indicates that 55.1% of participants reported experiencing some form of infection. The subsequent variable explores the types of infections encountered by those who experienced post-implant infections. Gingival infections were the most prevalent at 27.0%, followed by periapical at 16.9% and periodontal at 11.2%. The majority, 67.4%, reported experiencing limitations in their meals. Only 23.6% of respondents believed this, while a substantial 76.4% believed that implants required different care. 59.6% cases encountered issues related to their physical appearance in society after receiving dental implants. Out of all only 16.9% of respondents reported having dental insurance, while the majority, 83.1%, did not. Table 3

Table 3: Patients' experience regarding dental implants (n=80)

Variables		Frequency	Percent
Which type of fear did you feel about Dental Implants?	All of the above	19	21.3%
	Fear of rejection of Implant	19	21.3%
	Fear of surgery	28	31.5%
	Pain discomfort	23	25.8%
Did you face financial issues regarding dental implants?	Yes	33	37.1%
	No	34	38.2%
	By some means	22	24.7%
Are you facing any type of infection after a dental implant?	Yes	49	55.1%
	No	40	44.9%
If you have faced a dental infection so which is that?	Gingival	24	27.0%
	Periapical	15	16.9%
	Periodontal	10	11.2%
Do you face any type of limitation regarding meals after having a dental implant?	Yes	60	67.4%
	No	29	32.6
Do implants require the same brushing as natural teeth?	Yes	21	23.6
	No	68	76.4
Did you know about all the ranges of dental implants?	Yes	48	53.9
	No	41	46.1
Do you face any problem related to physical appearance in society after having a dental implant?	Yes	53	59.6
	No	36	40.4
Do you have dental insurance?	Yes	15	16.9
	No	74	83.1

According to the patients' satisfaction after undergoing dental implant procedures. It reveals that the majority, 57.3% of respondents, reported being satisfied with their dental implants, while 42.7% expressed dissatisfaction. 37.1% of participants faced financial challenges. 61.8%, believed that insurance coverage for dental implant procedures was necessary, while 38.2% did not share this view. Table 4

Table 4: Patients' satisfaction and requirements regarding dental implants (n=80)

Variables	Frequency	Percent	
Are you satisfied after having a dental implant?	Yes	51	57.3
	No	38	42.7
Did you face financial issues regarding dental implants?	Yes	33	37.1
	No	34	38.2
	By some means	22	24.7
If you are interested in financing your treatment, which of the following options would suit you?	Cash, Personal Savings	28	31.5
	Credit Card	22	24.7
	Free camp	19	21.3
	Partial Finance and Self-Pay	20	22.5
	Do you think insurance coverage is needed in our country for dental implant treatment?	Yes	55
	No	74	83.1

DISCUSSION

Dental implant procedures have seen significant advancements over the years, with metallic materials being commonly used due to their durability and biocompatibility. However, patients' knowledge about these materials and their experiences with dental implants can vary widely. Understanding these aspects is crucial for healthcare professionals to provide informed guidance, ensure patient satisfaction, and address potential concerns. Current study has been done to explore the patients' knowledge and experience (satisfaction and problems) associated with Metallic Dental Implant Material. In this study males were 44.9% and females were 55.1%, with overall mean age of 41.22±7.12 years. In the comparison of this study Hosadurga R *et al*¹¹ reported a lower mean age 30.77 years in implanted group, while they found almost similar findings regarding gender as 49% were males and 51% were females. In another study by Gbadebo OS *et al*¹¹ reported that males were 46.9% and females were 53.1% with overall mean age of 37.6 ±16.5 years.

In this study majority of the cases (37.1%) heard about dental implants from healthcare professionals (Medicos),

while 41.6% cases heard about them from random people or relatives. The internet and newspapers were also mentioned as sources, with 15.7% and 5.6%, respectively. 56.2% of respondents had used these dental prosthetics prior to getting dental implants, while 43.8% had not. Here, 64.0% of respondents reported being aware of the cost, while 36.0% stated that they were not aware. In the line of this series Gbadebo OS *et al*¹¹ reported that most of the participants, specifically 184 of them (equivalent to 92.5%), were knowledgeable about the option of replacing lost teeth. Out of the total participants, 102 individuals, accounting for 51.3%, were aware of various approaches for replacing missing teeth, whereas 94 participants, making up 47.2%, had no awareness of these methods.¹¹ In another study by Alanazi SA *et al*¹² demonstrated that a significant majority of the participants, specifically 90.6%, were aware with dental implants, while only a small minority, just 9.4%, had not encountered information about them. Like our findings they reported that the primary source of information for the majority of participants was their dentists, with 54.1% of them learning about it through this channel. In contrast, a smaller percentage, 30.1%, received information from their friends. A minority, 6.9%, acquired knowledge about dental implants from newspapers, and 8.9% obtained information from sources other than the ones mentioned.¹² Other studies also found some relevant findings.¹⁴⁻¹⁶

In this study according to the comprehensive overview of patients' experiences and concerns regarding dental implants. Fear of surgery was the most common reason among 31.5% cases, followed by fear of rejection of the implant and pain or discomfort, each at 21.3%. Prior research has shown that individuals who experience significant dental anxiety tend to make fewer visits to the dentist and exhibit a higher prevalence of dental decay and tooth loss.^{17,18} However Muller E *et al*¹⁹ reported that concerning past dental experience, 24% of the patients indicated a negative prior dental experience, while 76% reported having had a positive one. In this study it indicates that participants reported experiencing some form of infection, like gingival infections 27.0%, followed by periapical infection 16.9% and periodontal at 11.2%. Only 23.6% of respondents believed this, while a substantial 76.4% believed that implants required different care. 59.6% cases encountered issues related to their physical appearance in society after receiving dental implants. Postsurgical infections commonly arise due to inadequate oral hygiene, leading to an elevated presence of bacterial biofilm and subsequent infections around the implant site. This can result in bone loss, ultimately leading to implant failure in the short or long term.²⁰ However Castellanos-Cosano *et al*²¹ reported that the group exhibiting the lowest oral hygiene standards and the highest postoperative infection rates consisted of

patients aged between 51 and 60 years old. In this study according to the patients' satisfaction after undergoing dental implant procedures, 57.3% of respondents, reported being satisfied with their dental implants, while 42.7% expressed dissatisfaction. Inconsistently it has been reported that the patient survey indicates an exceptionally high level of contentment with implant-supported restorations, encompassing both functional and aesthetic aspects.²² Understanding patients' knowledge and experiences related to metallic dental implant materials is crucial for improving dental care. However, our study has some limitations that should be acknowledged. Sample size was relatively small and may not represent the diversity of patient experiences and knowledge in larger populations. Future research should aim to include larger and more diverse samples to obtain a more comprehensive picture of patient perspectives. Enhancing communication between patients and dental professionals through open dialogue and the provision of detailed information can help alleviate concerns and ensure a more positive patient experience with dental implant materials.

CONCLUSION

Patients' knowledge and experience associated with metallic dental implant material observed to be average. As per the patients experience financial issues, fear of surgery, discomfort and infection issues were a major concern for a significant proportion of patients, indicating that cost may be a barrier to receiving dental implants for some patients. Despite these challenges, the majority of patients expressed satisfaction with their dental implants, indicating that the benefits of the procedure may outweigh the challenges.

LIMITATIONS

This study included a relatively small sample size, which may limit the generalizability of findings to larger populations.

SUGGESTIONS / RECOMMENDATIONS

Considering the various limitations that this study has, it is advisable to conduct additional, larger-scale research initiatives to obtain a more comprehensive and detailed understanding of patient viewpoints.

CONFLICT OF INTEREST / DISCLOSURE

None.

ACKNOWLEDGEMENTS

We would like to extend our heartfelt gratitude to all the fellows and patients who participated in this study. Their invaluable contributions and cooperation were essential in the completion of this manuscript. Their willingness to

engage and share your experiences played a crucial role in advancing our understanding of the subject matter.

REFERENCES

- Hosadurga R, Shanti T, Hegde S, Kashyap RS, Arunkumar SM. Awareness, knowledge, and attitude of patients toward dental implants-A questionnaire-based prospective study. *Journal of Indian Society of Periodontology*. 2017 Jul;21(4):315.
- 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
- Saha S, Roy S. Metallic Dental Implants Wear Mechanisms, Materials, and Manufacturing Processes: A Literature Review. *Materials*. 2022 Dec 24;16(1):161.
- Al-Haj Husain A, De Cicco O, Stadlinger B, Bosshard FA, Schmidt V, Özcan M, Valdec S. A Survey on Attitude, Awareness, and Knowledge of Patients Regarding the Use of Dental Implants at a Swiss University Clinic. *Dentistry Journal*. 2023 Jul 5;11(7):165.
- Gonçalves GS, de Magalhães KM, Rocha EP, Dos Santos PH, Assunção WG. Oral health-related quality of life and satisfaction in edentulous patients rehabilitated with implant-supported full dentures all-on-four concept: a systematic review. *Clinical oral investigations*. 2022;1:1-2.
- Öztürk H, Özgedik H, Avsever H, Kurt M, Şenel B, Pişkin B, Orhan K. Awareness, attitude, and knowledge of dental patients regarding dental implant treatment in an urban population: a cross-sectional study in Turkey. *Journal of Stomatology*. 2019 May 1;72(3):112-7.
- Al-Zubaidi SM, Madfa AA, Mufadhil AA, Aldawla MA, Hameed OS, Yue XG. Improvements in clinical durability from functional biomimetic metallic dental implants. *Frontiers in Materials*. 2020 May 22;7:106.
- Sharma R, Sharma E, Singh P, Kaur S, Kaur K. Knowledge, attitude, and acceptance of dental implants as a treatment modality among patients visiting dental college in Himachal Pradesh, India. *International Journal of Oral Care and Research*. 2022 Jan 1;10(1):13-.
- Al-Abdaly MM, Alamri SY, Al-Abdaly GM, Abdullah AA. Actual Practical Attitude and Knowledge of Dental Implants among Senior Dental Students and General Dentists Graduated from Some Saudi and Non-Saudi Dental Schools. *International Journal of Clinical Medicine*. 2023 Jan 12;14(1):1-9.
- Nagarale R, Todkar M, Jaweed UM, Rajkotwala I, Rao J, Patil S. Assessment of knowledge, attitude and practice regarding replacement of missing teeth among general population in Pune city. *Age (years)*. 2022;18(30):42.
- Gbadebo OS, Lawal FB, Sulaiman AO, Ajayi DM. Dental implant as an option for tooth replacement: The awareness of patients at a tertiary hospital in a developing country. *Contemporary clinical dentistry*. 2014 Jul;5(3):302.
- Alanazi SA, Alduaiji KT, Al-Enazi AS, Assiri MY, Almaghnam KS, Alnwaihel AK. Knowledge, attitude, and awareness regarding dental implants among young patients visiting Al-Farabi Hospital. *Oral health and dental management*. 2017;16(6):1-6.
- Alajlan A, Alhoumaidan A, Ettesh A, Doumani M. Assessing knowledge and attitude of dental patients regarding the use of dental implants: A survey-based research. *International journal of dentistry*. 2019 Jul 28;2019.
- Salim NA, Meyad FH, Al-Abdallah MM, Abu-Awwad M, Satterthwaite JD. Knowledge and awareness of dental implants among Syrian refugees: a cross sectional study in Zaatari camp. *BMC Oral Health*. 2021 Dec;21(1):1-0.
- Müller F, Salem K, Barbezat C, Herrmann FR, Schimmel M. Knowledge and attitude of elderly persons towards dental implants. *Gerodontology*. 2012 Jun;29(2):e914-23.
- Kinani HM, Hakami ZH, Al-Amri IA, Maree SA, Nahari HH, Ghaythi IH, Daghri AA. Awareness and knowledge of the general public at southern region of Saudi Arabia regarding dental implants. *Journal of International Medicine & Dentistry*. 2018 May 1;5(2).
- Barman B. Association of Multimedia Information about Dental Implant Surgery and Anxiety in Patients- A Double-Blinded Randomized Controlled Trial. *J Adv Med Dent Sci Res* 2021;9(4):83-87
- Newton JT. Anxiety and pain measures in dentistry: a guide to their quality and application. *J Am Dent Assoc*. 2000;131:1449-57
- Muller E, Calvo MD. Pain and Dental Implantology: Sensory Quantification and Affective Aspects.: Part I: At the Private Dental Office. *Implant dentistry*. 2001 Mar 1;10(1):14-22.
- Liaw K, Delfini RH, Abrahams JJ. Dental Implant Complications. *Semin Ultrasound CT MR*. 2015;36:427-33
- Castellanos-Cosano L, Rodriguez-Perez A, Spinato S, Wainwright M, Machuca-Portillo G, Serrera-Figallo MA, Torres-Lagares D. Descriptive retrospective study analyzing relevant factors related to dental implant failure. *Medicina oral, patologia oral y cirugia bucal*. 2019 Nov;24(6):e726.
- Wang Y, Bäumer D, Ozga AK, Körner G, Bäumer A. Patient satisfaction and oral health-related quality of life 10 years after implant placement. *BMC Oral Health*. 2021 Dec;21(1):1-4.