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ASSESSMENT OF PATIENTS' PERCEPTION AND KNOWLEDGE OF DENTAL IMPLANTS: A CROSS-SECTIONAL STUDY AT WATIM MEDICAL AND DENTAL COLLEGE

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ABSTRACT

Dental implants are recognized as an effective and long-term option for tooth replacement; however, patients' understanding, perception, and acceptance vary across regions. In Pakistan, misconceptions, financial limitations, and inadequate professional counseling often limit the acceptance of implant therapy. The rationale of this study was to evaluate the level of awareness, perception, and concerns regarding dental implants among patients visiting a teaching hospital in Pakistan, to identify gaps in knowledge, and to guide future educational strategies. The objective was to assess patients' perception, awareness, and concerns about dental implants and compare these findings with international data, particularly the Japanese study by Ho et al. (2022). A descriptive cross-sectional study was conducted from January to June 2022 among 300 dental outpatients aged 18–70 years at Watim Medical and Dental College, Islamabad. Data were collected using a prevalidated structured questionnaire adapted from Ho et al. (2022), which explored demographic data, implant experience, perceptions, sources of information, advantages, and concerns. Ethical approval was granted by the Institutional Review Board (IRB/RMDC/2022/Implant-01). Data were analyzed using IBM SPSS version 23 with descriptive and inferential statistics (Chi-square test, $p < 0.05$). Of the 300 participants, 121 (40.3%) were males and 179 (59.7%) females, and 74 (24.7%) had prior implant experience. Implants were perceived as advanced (44.3%) and expensive (25.7%), with high cost (45%) and longevity (19.3%) as main concerns. The findings highlight the need for targeted patient education and financial accessibility to enhance implant acceptance in Pakistan.

Keywords: Dental implants · Awareness · Perception · Patient education · Pakistan

INTRODUCTION

Dental implantology represents one of the most transformative innovations in restorative dentistry since Brånemark's introduction of osseointegration in 1969 (1). Implants not only restore oral function but also enhance esthetics, confidence, and quality of life (2,3). Despite their high success rate exceeding 95% (4), the acceptance and awareness of dental implants vary globally due to differences in socioeconomic status, literacy, and healthcare systems (5,6).

In developed countries, implant treatment is perceived as advanced yet costly (7,8). Conversely, in developing nations like Pakistan, limited insurance coverage, fear of surgery, and misinformation hinder acceptance (9,10). Ho et al. (2022) reported that Japanese patients perceived implants as both expensive and sophisticated, though satisfaction was high after treatment (11).

Locally, studies reveal restricted awareness about implant procedures. Khan et al. (2023) found that only 25% of Pakistani adults had adequate implant knowledge, with common misconceptions regarding longevity and pain (12). Nazir et al. (2019) also noted that informal sources such as social media and peers often replaced professional dental advice (13).

Rationale

There is limited Pakistani data on public perception of dental implants. Understanding this perspective is vital to improving awareness and designing patient-centered education strategies to reduce fear, cost concerns, and misinformation.

Objective

To evaluate patients' awareness, perception, and concerns regarding dental implants among individuals visiting Watim Medical and Dental College and to compare the findings with international literature, particularly the Japanese study by Ho et al. (2022).

MATERIALS AND METHODS

This descriptive cross-sectional study was conducted at the Outpatient Department of Watim Medical and Dental College, Islamabad, from January to June 2022. The study aimed to assess patients' awareness, perception, and concerns regarding dental implants.

The sample size of 300 participants was calculated using the World Health Organization (WHO) sample size calculator with a 95% confidence interval, 5% margin of error, and an estimated awareness proportion of 50%. A non-probability convenience sampling technique was used to select participants visiting the dental outpatient department during the study period.

Inclusion criteria comprised adults aged 18–70 years who had at least one missing tooth and were willing to provide informed consent. Exclusion criteria included individuals with craniofacial anomalies, those currently undergoing orthodontic or prosthodontic treatment, and patients unable to provide informed consent due to medical or cognitive limitations.

Data were collected using a structured, pretested, and validated questionnaire adapted from Ho et al. (2022). The questionnaire consisted of six sections: (1) demographic information, (2) implant experience, (3) perceptions regarding dental implants, (4) sources of information, (5) perceived advantages, and (6) concerns related to implant therapy. The instrument's content validity was confirmed by three prosthodontic experts, and a pilot study was performed to ensure clarity and reliability.

The independent variable was implant experience (implant done or not done). The dependent variables included perception (advanced, expensive, painful, scary, satisfying), information source (magazines/books, dentists, social media, etc.), advantages (mastication, denture avoidance, appearance, confidence), and concerns (cost, longevity, swelling, surgical fear, failure). Descriptive variables included age and gender, used for demographic profiling.

Prior to data collection, ethical approval was obtained from the Institutional Review Board of Watim Medical and Dental College (IRB/RMDC/2022/Implant-01), and written informed consent was obtained from all participants. Data were entered and analyzed using IBM SPSS version 23. Descriptive statistics such as frequencies and percentages were calculated for categorical variables, while Chi-square tests were applied to evaluate associations between implant experience and other variables. A p-value < 0.05 was considered statistically significant.

RESULTS

A total of 300 respondents participated, including 121 (40.3%) males and 179 (59.7%) females. The mean age was 38 ± 11 years, with 84 (28%) in the 18–29 age group and 90 (30%) in the 30–39 age group. Seventy-four (24.7%) had received dental implants. Most respondents perceived implants as advanced (44.3%) or expensive (25.7%). Information sources were dominated by magazines/books (43%), dentists (25.7%), and social media (16%). Better mastication (45%) and denture avoidance (22%) were identified as key advantages, whereas cost (45%), longevity (19.3%), and postoperative swelling (14.7%) were common concerns. A statistically significant association existed between information source and implant experience (p = 0.004).

Table 1. Demographic Distribution of the Collected Sample

Age Group (years)	**n**	**%**
18–29	84	28.0
30–39	90	30.0
40–49	72	24.0
50–59	36	12.0
≥60	18	6.0
Total	**300**	**100.0**

Table 2. Subjective Perceptions, Information Sources, Advantages, and Concerns Regarding Dental Implants

Variable	**No Implant n (%)**	**Implant Done n (%)**	**Total n (%)**	**χ^2 / df**	**p-value**
Perception					
Expensive	60 (26.5%)	17 (23.0%)	77 (25.7%)	2.163 / 4	0.706
Advanced	99 (43.8%)	34 (45.9%)	133 (44.3%)		
Painful	12 (5.3%)	5 (6.8%)	17 (5.7%)		
Scary	8 (3.5%)	5 (6.8%)	13 (4.3%)		
Satisfying/Good	47 (20.8%)	13 (17.6%)	60 (20.0%)		
Information Source				17.270 / 5	**0.004***
Magazines/Books	94 (41.6%)	35 (47.3%)	129 (43.0%)		
Friends	10 (4.4%)	3 (4.1%)	13 (4.3%)		
Dentists	60 (26.5%)	17 (23.0%)	77 (25.7%)		
Media/TV	14 (6.2%)	14 (18.9%)	28 (9.3%)		
Social Media	43 (19.0%)	5 (6.8%)	48 (16.0%)		
Websites	5 (2.2%)	0 (0.0%)	5 (1.7%)		
Advantages				7.278 / 6	0.296
Improved Appearance	25 (11.1%)	10 (13.5%)	35 (11.7%)		
Confidence	24 (10.6%)	3 (4.1%)	27 (9.0%)		
Avoid Dentures	46 (20.4%)	20 (27.0%)	66 (22.0%)		

Variable	No Implant n (%)	Implant Done n (%)	Total n (%)	χ^2 / df	p-value
Better Mastication	100 (44.2%)	35 (47.3%)	135 (45.0%)		
Speech Improvement	15 (6.6%)	1 (1.4%)	16 (5.3%)		
Concerns				5.762 / 5	0.330
High Cost	105 (46.5%)	30 (40.5%)	135 (45.0%)		
Longevity	40 (17.7%)	18 (24.3%)	58 (19.3%)		
Postoperative Swelling	29 (12.8%)	15 (20.3%)	44 (14.7%)		
Surgical Fear	27 (11.9%)	6 (8.1%)	33 (11.0%)		
Failure/Complications	13 (5.8%)	2 (2.7%)	15 (5.0%)		

*Significant at $p < 0.05$

Descriptive Summary

Patients at Watim Medical and Dental College exhibited a positive attitude toward dental implants, with strong recognition of their advanced technology. However, economic limitations and surgical apprehension were dominant barriers. Despite direct implant experience, a portion of participants continued to express postoperative concerns, reflecting gaps in professional counseling and patient education.

DISCUSSION

This study of 300 patients at Watim Medical and Dental College provides detailed insight into demographics, implant experience, perceptions, information sources, perceived advantages, and concerns. The sample comprised 121 males (40.3%) and 179 females (59.7%); the female predominance mirrors other outpatient-based surveys where women more frequently attend dental clinics and participate in health surveys [12,15]. The mean age was 38 ± 11 years with most participants in the 30–39 (30.0%) and 18–29 (28.0%) age groups; this concentration in younger-to-middle adulthood is consistent with clinic-attending populations in urban settings and with prior implant-awareness studies that targeted predominantly working-age adults [9,12,15].

Implant experience (74; 24.7%) in our sample indicates that roughly one-quarter had received implants. This proportion is comparable to some reports from developing regions where implant uptake remains limited by cost and access [12,16], but lower than rates reported in more affluent settings where implants are more affordable or insured [9,14]. The 24.7% treated proportion suggests that implant services are available locally but not widespread, aligning with observations on resource and affordability constraints in South Asia [8,11].

All perception categories were captured: Advanced (133; 44.3%), Expensive (77; 25.7%), Painful (17; 5.7%), Scary (13; 4.3%), Dangerous (13; 4.3%), and Satisfying/Good (60; 20.0%). The largest perception—advanced (44.3%)—shows broad recognition of implants as modern restorative therapy, agreeing with global literature that emphasizes implants' technological status [1,2]. The 25.7% who labeled implants expensive reflects a substantial cost concern; Ho et al. found cost similarly reported as a leading deterrent (45% in Japan) [9], while several regional studies also emphasize cost as a primary barrier [6,7,16]. Smaller proportions perceiving implants as painful, scary, or dangerous (5.7%, 4.3%, 4.3%) indicate that fear or perceived risk is present but not dominant—these low percentages suggest that fears exist but are less influential than economic considerations; similar low fear rates have been reported where basic awareness exists but misinformation still lingers [10,13].

Information sources were magazines/books (129; 43.0%), dentists (77; 25.7%), social media (48; 16.0%), media/TV (28; 9.3%), friends (13; 4.3%), and websites (5; 1.7%). The predominance of magazines/books (43.0%) and the notable role of social media (16.0%) indicate reliance on non-clinical channels; this pattern matches findings from developing-country studies showing heavy dependence on informal sources and highlights the limited penetration of clinician-led patient education [10,13]. The fact that dentists were the information source for only 25.7% points to an

opportunity for increasing clinician outreach; in contrast, in higher-income studies the dentist is often the top information source [14,15]. Importantly, the association between implant experience and information source ($\chi^2 = 17.270$, df = 5; p = 0.004) is statistically significant, indicating that those with implant experience access different or more professional information—this aligns with studies showing that experience often drives correction of misconceptions and uptake of reliable information [15,16].

Advantages reported were better mastication (135; 45.0%), avoid dentures (66; 22.0%), improved appearance (35; 11.7%), confidence (27; 9.0%), durability (10; 3.3%), comfort (11; 3.7%), and speech improvement (16; 5.3%). The top-ranked functional benefit—better mastication (45.0%)—agrees with classical literature that patients most value functional restoration from implants [3,4]. The distribution suggests function (mastication, avoiding dentures) leads motivation more than cosmetic reasons in this population, a trend also observed in other South Asian and Middle Eastern cohorts [7,16,17].

Concerns included high cost (135; 45.0%), longevity (58; 19.3%), post-operative swelling (44; 14.7%), surgical fear (33; 11.0%), and failure/complications (15; 5.0%). The dominant financial concern (45.0%) echoes other Pakistani and regional studies where affordability limits access [8,11,12]. Longevity (19.3%) and postoperative swelling (14.7%) underline informational gaps about implant survival rates and postoperative expectations; even when clinical survival is high [2,4], patient concerns persist if not reassured through counseling. The χ^2 for concerns (5.762, df = 5; p = 0.330) indicates no statistically significant difference in concerns between those with and without implant experience, suggesting that having an implant does not necessarily reduce all anxieties—similar patterns have been reported where counseling was inadequate [10,16].

The χ^2 for perceptions (2.163, df = 4; p = 0.706) and for advantages (7.278, df = 6; p = 0.296) show no significant differences between implant-experienced and non-experienced groups, implying that overall perceptions and perceived benefits are broadly shared across groups; previous studies also report that perceptions can be stable across experience levels unless reinforced by structured education [14,15].

In sum, every reported value points to a population that recognizes implant technology (44.3%), values functional outcomes (45.0% mastication), but remains constrained by cost (45.0%) and knowledge gaps (longevity, postoperative expectations). These findings are consistent with regional literature [6–12,16,17] and highlight priorities for clinician-led education and affordability initiatives.

Limitations

Single-center design, convenience sampling, and self-reported data limit generalizability and may introduce response bias. Rural and low-literacy populations were underrepresented. Additionally, potential confounding variables such as education level, socioeconomic status, and access to dental care were not controlled for statistically due to the descriptive design. The use of a non-probability sampling method may also introduce selection bias and limit generalizability.

Implications

Targeted patient education (chairside counseling, leaflets in Urdu/English), clinician training in communication, and exploration of financing or installment options are recommended to address the dominant barriers (cost and knowledge gaps).

CONCLUSION

This study identified moderate awareness and generally positive perceptions of dental implants among patients at Watim Medical and Dental College. While 44.3% regarded implants as advanced and 25.7% as expensive, high cost (45%) and surgical fear remained significant deterrents. Better mastication (45%) and denture avoidance (22%) were viewed as key advantages. These findings

highlight the need for improved patient education and affordable treatment options to promote wider acceptance of implant therapy in Pakistan.

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