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Public pre-conceptions, perceptions and misconceptions about dental implants: A cross-sectional survey

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ABSTRACT

Background: Appraising patient expectations and misinterpretations about dental implants affects the overall treatment experience and aftermath. This study highlights perceptions of paramount importance in implant success. **Purpose:** This cross-sectional study aims to acquire the public's primary perceptions about dental implant therapy. **Materials and Methods:** A 10-item questionnaire was circulated to a random community group of 454 participants who visited dental clinics in Northern Jordan. The questionnaire covered sociodemographic parameters and perceptions items. Data were analyzed and statistical tests were computed. **Results:** The survey revealed several key misconceptions about dental implants, many of which vary based on demographics, such as education, age, gender, and income. Around half of the respondents believed implants could not be placed immediately after tooth extraction, reflecting a lack of awareness about modern dental techniques, such as immediate implant placement. Eight percent of the participants, especially the lower education bracket, thought only individuals who had lost all their teeth could receive implants. This indicates a misunderstanding of the broad applications of dental implants, which can be used to replace individual teeth, not just full arches. About 23% viewed implant treatment as risky, painful, and associated with prolonged recovery times. About 33.3% had a belief that implants impose dietary restrictions. This belief was more likely pronounced among men and the younger public. Six percent agree that implants are less durable than other treatment options. In addition, 23% thought implants do not require special aftercare and 5.3%, especially the younger respondents, underestimated the qualifications necessary for performing the procedure. Around 3%, particularly the seniors and middle-aged adults viewed implants as functionally poor and not cost-effective. **Conclusion:** Though a relatively fair level of awareness about dental implants exists among most of the subjects in this study, some assume various unrealistic perceptions that are devoid of evidence-based and impartial information.

Keywords: Awareness, dental implants, misconceptions, perceptions, treatment

Introduction

Dental implants are a well-known and successful treatment option for partially and fully edentulous patients to restore function and esthetics.[1] Patient perceptions regarding dental implants were studied in several countries, and misconceptions concerning some aspects of dental implants were evident.[2] It is important to appraise patient expectations and misinterpretations that would affect the overall implant treatment experience and satisfaction aftermath.[3] The general public might encounter perplexing information about dental implants. Such confusing information has the potential to shape their views on implants and even sway their willingness to consider them as a viable treatment choice in the future. Any misperceptions should be dispelled by empirically supported evidence. Here are some commonly recognized perspectives discussed below.

Individuals tend to perceive dental implants as primarily intended for older individuals seeking an alternative to dentures.[4] However, dental implants are not restricted to elderly people. It may suit most people, even, in some

cases, growing patients. While placing dental implants during growth spurts is controversial, advanced age could also pose a risk, and the chances of implants failing rise with increasing age.[5,6]

There may be a presumption that one of the main drawbacks of implant therapy is its lengthy procedure.[7] Nonetheless, immediate implant placement has reduced treatment time. It is well-documented in the literature that this procedure may prove more beneficial in carefully selected and systematically planned cases than early or delayed placement.[8]

Dental implants are frequently misconceived as a solution solely for edentulous individuals.[4] This can be attributed to the '70s and '80s era which focused on restoring edentulous jaws with implant-supported prostheses, particularly the mandible, due to factors, such as reduced support area and denture instability.[9,10] Dental implants are acknowledged as prosthetic management of completely, and partially edentulous patients, and single tooth replacement.[11,12]

The public may perceive drawbacks associated with dental implants, such as the potential for pain, complications, and long recovery time. However, implant surgery is typically done under local anesthesia, with some patients experiencing mild discomfort after it wears off. While short-term pain is normal, prolonged severe pain is concerning. Complications are uncommon but can increase failure rates and vary between patients.[13] Healing after dental implant placement should be expected within 1 week.[14]

People may have uncertain views on how long dental implants last, with expectations ranging from a few years to a lifetime. Dental implants have high success rates, with 96.8% survival at 10 years and 94.0% at 15 years.[15] Factors, such as patient characteristics, surgical techniques, and maintenance impact their longevity.[16] Other treatment modalities such as fixed partial dentures have lower survival rates.[17] Unrealistically, people may regard implants to last for a lifespan with no extra care.[18]

Many people do not commonly believe implants require less care than natural teeth.[19] Dental implants are more liable to inflammation and bone loss when plaque accumulates as opposed to natural teeth.[20] Professional implant maintenance and effective home care are vital for implant success. Proper maintenance includes daily brushing and cleaning between teeth, antiseptic rinses, and regular professional cleanings.[21]

The public may perceive that all dentists can perform implants. In truth, it requires specialized providers with the necessary training and expertise, especially if complex procedures associated with implants such as bone augmentation, soft tissue grafts, and sinus lifts are needed.[22]

The "perceived extravagant" cost considerations associated with implant therapy were viewed as major concerns by the public.[23] Regardless of the higher initial cost of implants, some studies have shown that implants are more cost-effective than conventional fixed prostheses as time passes with higher success rates and fewer complications.[24]

Dental implants are valued by patients for enhancing esthetics and function in restoring masticatory ability.[25] As a result, implant dentistry is practiced widely in Jordan. This present research aims to assess primarily the aforementioned perceptions of the general population in Northern Jordan about dental implants. The study results will guide efforts to educate dental patients.

Materials and Methods

The study protocol underwent review by the Ethics Committee for Scientific Research at the Jordanian Ministry of Health. It received ethical approval with reference number (MOH/REC/2024/50). The study was conducted between January and March 2024.

The process of developing the questionnaire was systematic and included a review of existing literature. Based on this review, a self-explanatory questionnaire was created to assess patients' perceptions of dental implants. It closely aligns with questionnaires previously used in literature. The questionnaire was evaluated by three prosthodontists to confirm its content validity. A pilot study involving 20 respondents was conducted to evaluate its effectiveness. The feedback gathered from the pilot survey was utilized to refine and finalize the survey instrument by clarifying any questions that were hard to comprehend. Cronbach's alpha was measured at 0.669, indicating a good level of reliability.

The inclusion criteria were randomly selected adult outpatients aged 18 and above who attended governmental or private dental clinics in Northern Jordan. Participants were chosen from the general public to reduce inclusion bias since individuals seeking implants tend to be more knowledgeable than the average person. Patients in dental offices were asked to

participate in the study, with only interested individuals invited for a survey. All participants invited to complete the survey were provided with the study's purpose and informed consent before distributing electronic questionnaires in the waiting room. The patients were categorized by gender, age, income, and education level. The age groups were categorized as follows: Under 20 years, 21–40 years, 41–60 years, and over 60 years. The education levels of the respondents were categorized as high school diploma and below, bachelor's degree, and post-graduate level. The income brackets were classified as follows: Low income (below 500 JOD), lower-middle-income (501–1000 JOD), higher-middle income (1001–2000), and high income (above 2000 JOD). JOD stands for Jordanian Dinar, the currency used in Jordan. These categories were subsequently assessed regarding their present perceptions of dental implants. The questionnaire was circulated through Google Forms, WhatsApp, QR Code, SMS, and electronic media. The questionnaire was only submitted if all questions were answered.

The questionnaire covered four sociodemographic parameters and ten perceptions items. The sociodemographic parameters comprise gender, age, educational status, and income. The ten perception items were expressed as statements followed by a 3-point Likert scale (Agree, Disagree, Uncertain). A 3-point Likert scale is adequate good for a study to obtain averages across a group of people and meet the criteria of stability, reliability, criterion-oriented validity, and predictive validity.[26]

Data were compiled, coded in Microsoft Excel, and analyzed through GraphPad Prism 9 and the Statistical Package for the Social Sciences version 27. Descriptive statistics were used to present data in frequency histograms and tables. Age, education, gender, and income differences were examined for each perception item. Results were cross-tabulated to examine the comparison and independence between variables using the Chi-square (χ^2) test. A $P < 0.05$ was considered statistically significant.

Results

A total of 454 responses were collected. Table 1 shows the profile of the study population. Most of the participants were females (65%). The largest age group represented was 21–40 years (48.9%). Regarding educational status, the majority belonged to the bachelor level (63.9%). Half of the respondents earned a monthly income of 500 JOD or less.

Ten perception items with their frequencies of agreement/disagreement/uncertainty are presented in Figure 1. Of the questioned, 87% agree with the statement "*Despite their expensive cost, dental implants are feasible in the long term (cost-effective).*" Around 65% of participants perceive that dental implants require follow-ups and special care. About 49.8% of respondents believe that "*Dental implants are not possible immediately after tooth extraction, and many months must pass before they are performed.*"

The six perceptions with the highest disagreement ratio were "*Dental implants are functionally poor and are only for cosmetic purposes*" (89.2%); "*Only people who have completely lost their teeth can get dental implants*" (87.9%); "*Any dentist can perform a dental implant procedure*" (87.7%); "*Dental implants have low success rates and do not last compared to other treatment options*" (76.2%); "*Dental implants are suitable for all patients in terms of age*" (58.4%); and "*Dental implant surgery is considered painful and risky, and has a long recovery time*" (54.2%).

Table 2 shows the distribution of agreed responses and their significance. The perception aspect that "*There are food restrictions with implants*" conferred a higher level of consensus among males than females with a ($P = 0.037$). Participants aged between 21 and 40 years had a higher frequency of agreement than other groups that dental implants suit all age categories ($P = 0.002$). Younger participants (≤20 years) showed a stronger tendency to think that there are *food* restrictions with dental implants ($P = 0.04$), that dental implants necessitate special aftercare ($P = 0.015$), and that *any* dentist can perform the procedure ($P = 0.001$). Seniors

Table 1: Demographic profile of the participants

Demographic parameters	Total number (*n*)	Percentage
Gender		
Female	295	65
Male	159	35
Age groups		
<20	51	11.2
21–40	222	48.9
41–60	158	34.8
>60	23	5.1
Education level		
High School or below	67	14.8
Bachelor	290	63.9
Post-graduate	97	21.4
Income (JOD)		
<500	227	50
501–1000	147	32.4
1001–2000	53	11.7
>2000	27	5.9

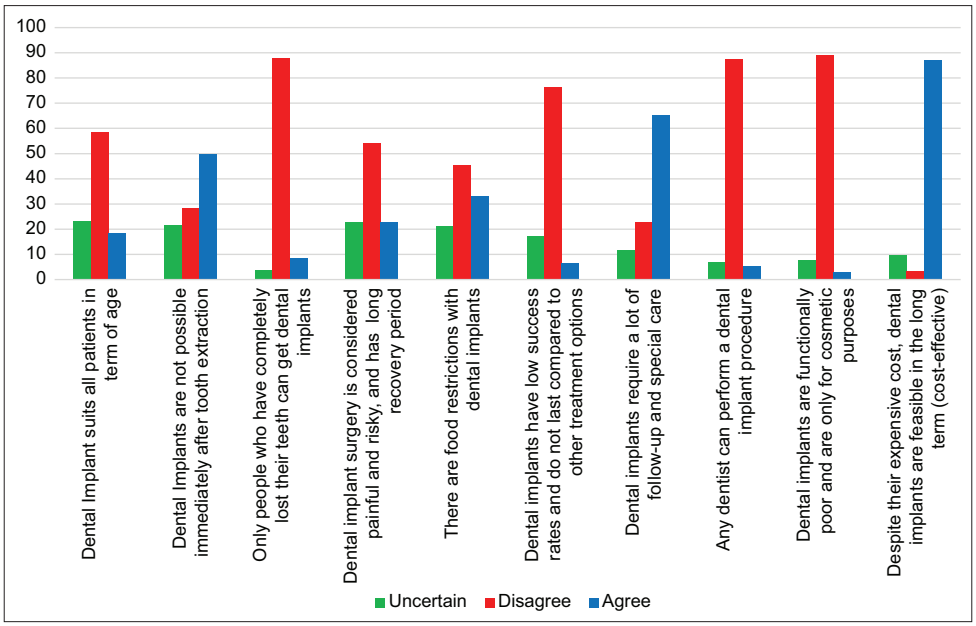

Figure 1: Patients' perceptions on dental implants

and middle-aged adults (21–40 years) had higher levels of agreement that implants are only suitable for esthetics and not function ($P = 0.033$). Considering the parameter of education, participants with a high school diploma or lower believed that only the completely edentulous individuals can receive dental implants ($P = 0.006$), thought that these implants require special aftercare ($P = 0.0017$), and were significantly more likely to think that any dentist could perform the procedure ($P = 0.022$). The low-income bracket perceives that dental implants require special aftercare ($P = 0.026$).

Discussion

The present survey-based study approached potential participants who attended dental clinics in Northern Jordan to assess their perceptions regarding dental implant therapy. A small portion of the Jordanian cohort held the misconception that dental implants suit all age brackets. Similarly, in Hong Kong, 30% shared this misconception.[27] Interestingly, our analysis revealed that adults were more inclined to believe that dental implants suit everyone. Age alone shouldn't limit candidacy; bone quality, oral health, and medical factors matter more.[28]

Many participants believe dental implants cannot be immediately placed after tooth extraction, requiring months for healing. Similarly, Dos Santos Canellas *et al*. found that 55% of their study population suppose it takes 3–6 months until their implants are quite functional.[29]

The duration of dental implant treatment can vary. Originally, dental implants demanded a lengthy healing and loading process in the late conventional approach, but advancements now allow for immediate, early, or delayed placement, significantly reducing treatment time and surgical procedures.[30]

A small portion of the participants maintained the unrealistic expectation that only people who lost all their teeth could get dental implants. Implants now are widely recognized for prosthetic treatment of completely and partially edentulous patients. Lower education brackets were more associated with this misconception. Perhaps this could be justified as studies have associated the lower educational status with the least awareness about advances in treatment options.[31]

A segment of the study cohort had the negative mindset that dental implant treatment is risky, painful, and involves a lengthy recovery. Comparably, Ho *et al*., reported that their study subjects held implant therapy perceptions such as "advanced" (38%), "scary" (25%), "painful" (9%), and "dangerous" (5%).[4] Conversely, the American public essentially held a more optimistic image of dental implants.[4] Dental implant treatment is deemed safe according to the level of evidence, and public endorsement may hinge on information from the dental profession, mass media, and patients' experiences.[32,33]

The younger male cohort felt implants limit diet choices. For a few days following surgery, it's important to eat

Table 2: Distribution of significant agreed responses

Perception items about dental implants	Gender		Age (years)				Education level			Income (JOD)			
	Female	Male	<20	21–40	41–60	>61	High School	Bachelor	Post-graduate	<500	501–1000	1001–2000	>2000
Suit all ages				*P*=0.002									
Indicated only for the completely edentulous								*P*=0.006					
Impose food restrictions	*P*=0.037			*P*=0.04								*P*=0.026	
Need follow-up and special care				*P*=0.015			*P*=0.017						
Any dentist can perform it.				*P*=0.001			*P*=0.022						
Functionally poor and only for cosmetic purposes				*P*=0.033									

A Chi-square level of significance ($P<0.05$) is indicated by a bold value

soft foods until the post-surgical 12th week enabling the woven bone to be replaced by the more mineralized lamellar bone that better tolerates masticatory loads.[34] Long-term dietary choices of coarse and sticky food that may produce excessive cyclic magnitude should be considered meticulously before snacking.[35] Patients who received implant-supported overdentures had a wider range of foods they could enjoy than patients who received conventional dentures.[36]

Some participants agree that dental implants have lower success rates and longevity than other treatment modalities. However, dental implants prevailed over fixed partial dentures as the ideal substitute for missing teeth. They help sustain bone in the edentulous spaces and the adjacent teeth remain intact.[37]

It is mistakenly believed that dental implants do not require follow-ups and special aftercare. The limited number of participants who held this belief is encouraging when compared to an earlier Jordanian study conducted a decade ago, which revealed that a large majority of patients were unaware of the aftercare needed.[38] In two comparable studies, 33.8% of UAE respondents felt that oral care for dental implants is akin to that for natural teeth, while nearly 39% of Swiss participants anticipated greater efforts in maintaining the oral hygiene of dental implants.[39,40] The misconception that dental implants require less care than natural teeth could jeopardize treatment outcomes, potentially leading to implant failure.[41]

Younger individuals and high school diploma holders were more likely to agree with the misconception that any dentist can perform dental implant procedures. However, higher-educated individuals understood that only certified specialists should perform dental implants, highlighting the importance of specialized training in this procedure.[42]

Young adults (ages 21–40) and seniors (over 60) expected lesser value on the functional aftermath of dental implants rather than esthetics. This corroborates what Becker *et al*., observed that the elderly were more satisfied with esthetics but contradicts what Korfage *et al*., found that younger patients have higher functional expectations.[43,44] Most respondents in our study expressed confidence that dental implants effectively serve both functional and esthetic purposes for missing teeth.

High costs of dental implants, which may charge up to $900 in Jordan, are the principal rationale for not

favoring dental implants.[45] Our findings indicate that a large portion of the general public perceives dental implants as cost-effective, while only a small percentage do not share this view. A cost-analysis modeling study demonstrated that single implants are more cost-effective than 3-unit bridges.[17]

A major limitation of this study was that it did not evaluate whether participants already had dental implant experience. In addition, the quantitative data were collected from a randomly selected group of adults in Northern Jordan, which means our findings cannot be directly generalized to the broader Jordanian population.

Conclusion

Since initial pre-treatment views greatly foresee satisfaction with dental treatment outcomes, it is essential to have insights into what patients expect and rectify any unrealistic perceptions that are not supported by evidence-based and objective information.[46] This study has the imperative to address Jordan's community perceptions regarding dental implant therapy. Considering the limitations of the present study, we reached the following conclusions:

1. Most participants demonstrated a reasonable level of awareness regarding dental implants.
2. Some individuals held various unrealistic perceptions.
3. Common misconceptions among participants included: (1) overestimating the suitability of dental implants for all age groups, (2) exaggerating their expected longevity, (3) underestimating the complexity of the procedure by assuming any operator can perform it, (4) expressing negative views, such as considering it a risky procedure, (5) undervaluing the importance of post-operative care, and (6) perceiving the cost as excessively high.

Recommendations

1. There is a need for initiatives that effectively communicate accurate information and dispel any misinformation surrounding this treatment option.
2. Evaluating and reforming public perceptions will provide them with evidence-based information and enhance their experiences with dental implants.

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