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Short communication

Awareness of Dental Implant Maintenance and Biological Differences Among Patients in Tripoli, Libya: A Cross-Sectional Study

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Abstract
In Tripoli, we see many dental implants, but do patients actually know how to look after them? Long-term success isn't just about the surgery; it depends on the patient. This study was done to see if patients in Tripoli really understand the biological differences between a natural tooth and an implant. Involving 150 patients at a private dental clinic in Tripoli. We used a simple paper survey (to get a 100% response rate) and asked them about the periodontal ligament (PDL), if they think implants can get gum disease, and how they actually clean them at home. Significant knowledge deficits were identified. Only 22.0% of these 150 patients knew that implants don't have a PDL. Even worse, 43.3% thought that because an implant is metal, it can't get infected. While 68.0% said they brush their teeth twice a day, only 18.7% are actually using interdental brushes. We checked the numbers, and it didn't matter if the patient was a man or a woman, or if they had a university degree ($p > 0.05$). A significant knowledge deficit exists in Tripoli's knowledge. There is a massive. It doesn't matter how educated the patient is; they still don't understand implant maintenance. We need to stop just doing surgery and start giving patients better instructions and brochures before we even start the procedure.
Keywords. Dental Implants, Patient Literacy, Tripoli, Peri-Implantitis, Periodontal Ligament.

Introduction

Dental implants are now a major part of dentistry in Tripoli, but there is a big problem that we often overlook. Many patients simply do not understand that an implant is not a natural tooth. While clinical success rates are high [1], the biological reality is that patients often miss the "warning signs" of failure.

The main difference is the periodontal ligament (PDL). Natural teeth are held by this ligament, but implants are fused directly to the bone [2]. This is more than just an anatomical fact; it is a clinical risk. Without a PDL, patients lose their "sensory feedback" or proprioception. This means they cannot feel early inflammation or if they are putting too much pressure on the implant. At the University of Tripoli, we noticed that while more people can afford implants now, they don't seem to know much about how to maintain them. Many patients walk into the clinic thinking that because an implant is made of titanium, it is "disease-proof." We conducted this study to measure this awareness gap in Tripoli and to see if patients really understand what it takes to keep an implant healthy for the long term.

Methods

Study Design and Setting

A descriptive, cross-sectional study was conducted involving 150 patients at a private dental clinic. Data were collected using a structured paper-based survey assessing knowledge of the periodontal ligament (PDL), susceptibility to peri-implant diseases, and oral hygiene practices.

Patients

We recruited 150 adult patients (18 years and older). To get a realistic picture, we didn't just talk to people who already have implants; we also included patients who were just starting the process. This helped us see if awareness changes at different stages of the treatment.

Ethical statement

This study followed the rules of the Declaration of Helsinki. Every person who took part gave their full consent before we started. We made sure the data was completely anonymous—no names or phone numbers were written down. We also told everyone that they could stop at any time and it wouldn't change the quality of the dental care they receive.

Data Collection

In this study, data collection was carried out using a simple, self-administered survey written in Arabic, which was chosen to eliminate potential language barriers and ensure clarity for all participants. The survey was structured around three main domains. The first domain gathered background information, including age, gender, and level of school or university education, to provide demographic context. The second domain focused on biological knowledge, assessing whether respondents were familiar with the periodontal ligament (PDL) and whether they believed dental implants were immune to gum disease. The third domain examined

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daily oral hygiene habits, specifically the frequency of tooth brushing and the actual use of interdental brushes or specialized floss. This design allowed for a comprehensive evaluation of participants' demographic characteristics, awareness of biological concepts, and practical oral health behaviors, thereby supporting the study's aim of linking knowledge and habits to oral health outcomes.

Data analysis

We used SPSS (v.26) to analyze the data. First, we used simple percentages to describe the group. Then, we used the Chi-square test to see if things like gender or education level actually affected how much a patient knows. We set the p-value at < 0.05 for a result to be considered statistically significant.

Results

Study Population Details

We analyzed data from 150 participants in Tripoli. The group included 82 males (54.7%) and 68 females (45.3%). We also looked at their education levels; 60.0% (n=90) were university graduates, while the other 40.0% (n=60) had a non-university background.

Patient Awareness and Daily Habits

The results showed a discrepancy between general hygiene and specific knowledge about implants. Most patients (68.0%) said they brush their teeth twice a day. However, when we asked about the biological side, the answers were poor. Only 22.0% of the participants knew that implants don't have a periodontal ligament (PDL). Even more worrying, 43.3% of the group believed that because implants are made of metal, they are "immune" to gum disease or infection. This misunderstanding explains why so few patients (18.7%) actually use interdental brushes or special floss. Most patients are simply not using the tools they need for long-term implant health.

Factors Associated with Patient Awareness

We compared the results to see if gender or education changed how much patients knew. As shown in (Table 1), the numbers were very similar across all groups. The p-value was 0.58 for gender, meaning there was no real difference between men and women. Even education level didn't seem to help much (p = 0.42). Even though many participants had university degrees, they still didn't have the specific oral health knowledge needed for implants. This shows that having a high general education doesn't automatically mean a patient understands their dental procedure.

Table 1. Factors Associated with Patient Awareness Levels (N=150)

Demographic Factor	High Awareness n(%)	Low Awareness n(%)	p-value
Gender			0.58
Male (n=82)	16 (19.5%)	66 (80.5%)	
Female (n=68)	14 (20.6%)	54 (79.4%)	
Education Level			0.42
University Degree (n=90)	20 (22.2%)	70 (77.8%)	
Non-University (n=60)	10 (16.7%)	50 (83.3%)	

Discussion

The knowledge deficit identified in Tripoli is a serious clinical concern. It's not just about patients missing some facts; it's about their safety. Our study shows that 78% of patients don't know that implants lack a periodontal ligament (PDL). In a natural tooth, the PDL is like an "alarm system" that signals pain or movement when something is wrong. Without this system, patients with implants are basically "blind" to early infections. By the time they realize there is a problem, the peri-implantitis is often too advanced to treat easily [3]. Another big issue is the misconception regarding the metallic nature of implants." Many patients (43.3%) think that because titanium is strong, the implant is immune to disease. They confuse mechanical strength with biological health [4]. This "set-and-forget" attitude is likely why so few people (18.7%) are using the right cleaning tools. They simply don't think they need to put in the extra effort. The most important takeaway from our data is that gender and education level didn't matter (p > 0.05). Being a university graduate in Tripoli doesn't mean you understand how to care for a dental implant. This proves that we cannot expect patients to "just know" these things. The responsibility falls entirely on us, the dentists [5]. Right now in Libya, we spend a lot of time on the surgery, but we seem to treat "maintenance talk" as a secondary detail. This needs to change.

This is one of the first studies to look specifically at the Libyan private sector. We used a paper-based method instead of an online link, which gave us a 100% response rate from our volunteers. This makes our data very reliable for this specific group. However, our study was done at a single clinic using convenience sampling. This means we can't say for sure that these results represent everyone in Libya. Also, because patients reported their own habits, some might have exaggerated how often they brush (social desirability bias).

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Conclusion

Our study shows an "awareness paradox" among dental patients in Tripoli. Even though people are generally interested in keeping their mouths clean, they have minimal specific knowledge about how dental implants actually work. This lack of understanding is the same for everyone, whether they have a university degree or not. This suggests that being well-educated in general doesn't mean a patient understands their dental surgery. The biggest risk identified is the common myth that implants are biologically indestructible. If patients continue to treat implants like metal parts rather than living tissues that need care, the failure rates in the Libyan private sector will likely rise.

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