





## Original article

# Awareness of Mandibular Implant Over Dentures Among Edentulous Patients in Benghazi City: A Cross-sectional Study

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## Abstract

Despite the increasing popularity of dental implantology, the utilization of implant-supported or retained over dentures for completely edentulous patients remains below anticipated levels. Therefore, this study aimed to evaluate the awareness of mandibular implants over dentures among completely edentulous patients in Benghazi city. One hundred and fifty questionnaires were distributed among patients undergoing complete denture fabrication, and a closed-end questionnaire. Patients were interviewed in dental clinics with a questionnaire consisting of 10 questions related to socio-demographic data and their knowledge about mandibular implant-supported overdentures. The collected data were statistically analyzed to assess the level of awareness among the participants. It was found that the demographic data represents that 71.5% of the sample were male, while 28.5 % were female. The patients were categorized into four age groups: 40-50 years, 51-60 years, 61-70 years, and over 70 years. About 19.3% of patients denied implant treatment due to cost (37.5%) and 43.2% due to other reasons. However, the majority of participants acquired their awareness of implant-supported dentures from non-medical sources. This study concluded that the current levels of knowledge and awareness regarding lower dental implant-supported overdentures among the patients examined were generally lacking. Almost all patients had no information about implant-supported dental prostheses. Therefore, dentists must educate patients effectively on the importance of these treatments.

**Keywords.** Completely Edentulous Patients, Implant-Supported Mandibular Overdentures

## Introduction

The conventional treatment for edentulous patients was a complete denture [1]. Either fabricated by conventional way or by using a computer-aided design and computer-aided manufacture (CAD/CAM), but there are many problems, such as a lack of stability and retention of mandibular dentures, together with residual bone resorption, and decreased chewing ability, which have been common complaints [2].

To overcome these problems, dental implant therapy has brought new hope for edentulous patients. Dental implant treatment provides patients with better stability and increased biting force with the prostheses. [3] In other words, the world turned to treatment with endosseous implants. This treatment significantly improves stability, retention, and chewing ability [2-6]. Implant-retained or -supported over dentures can be applied by placing as few as one or up to several implants and then using attachments to provide retention for the denture [6]. Furthermore, a panel of experts researching a consensus at a symposium held at McGill University in 2002,7 reports that “the evidence currently available suggests that the restoration of the edentulous mandible with a conventional denture is no longer the most appropriate first choice prosthodontic treatment. There is now overwhelming evidence that a two-implant overdenture should become the first choice of treatment for the edentulous mandible [7-9]. Nevertheless, it is not true for every patient; the reasons could be of miscellaneous origin, like certain unfavorable oral conditions, economic concerns, or when support for the prosthesis is not sufficient. Dental implants that support and retain complete dentures have gained much popularity in recent times [10].

Numerous studies have demonstrated the high success rate and long-term durability of mandibular implant-supported overdentures. These favorable clinical outcomes are often attributed to a variety of contributing factors, including the patient’s psychological attitude, level of acceptance, and adaptability to the treatment. While the literature highlights the benefits of implants over dentures, especially in terms of functional and psychological satisfaction, there remains a significant lack of data regarding the awareness and knowledge of this treatment modality among completely edentulous patients, particularly in the Indian context [11].

The majority of existing research has focused on comparative studies assessing patient satisfaction between conventional complete dentures and implant-supported overdentures [10]. These studies generally report superior satisfaction outcomes for the latter, reinforcing the value of implants over dentures as a preferred treatment option. However, this growing body of evidence also reveals a research gap concerning patients’ understanding and awareness of such treatment, which is a crucial factor in treatment planning and acceptance [12-13]. Therefore, the present study aims to evaluate the level of knowledge and awareness regarding mandibular implant-supported overdentures among completely edentulous patients in Benghazi City, Libya. To achieve this, a structured, pre-designed questionnaire will be used to explore patient

responses, thereby providing insights into their perceptions and informational needs related to this treatment option.

## Subjects And Methodology

### Study design

A descriptive, cross-sectional research design based on a structured, closed-ended questionnaire was carried out to fulfill the aim of the study. These questions were constructed following an intensive literature review on the subject [10-15]. A pilot study was conducted by distributing twenty questionnaires randomly. Modification were subsequently made based on their feedback to ensure the clarity and validity of the questions.

It consisted of 10 questions regarding socio-demographic data such as age, gender, and level of education. The knowledge questions regarding the mandibular implant over dentures, such as awareness about dental, implant therapy, source of information, willingness for this therapy, and reason for denial of the treatment option.

### Sample selection and approvals

A total of 150 questionnaires were distributed to completely edentulous individuals attending public and private dental clinics. For participants who were unable to read the questions, interviews were conducted to facilitate their responses. Inclusion criteria comprised completely edentulous patients aged 40 years and above. Exclusion criteria included: partially edentulous individuals or those with remaining natural teeth; individuals who declined to participate or failed to return the questionnaire; patients with cognitive or psychological impairments that could compromise their ability to comprehend or respond reliably; and questionnaires that were incomplete or lacked sufficient data for analysis. To foster trust and ensure participant confidentiality, the questionnaire was designed to be anonymous. The act of returning a completed questionnaire was considered as providing implicit consent, thereby eliminating the need for a signed consent form.

### Implementation of the study

The data of this research were collected from October to December 2024. Each participant took about 10-15 minutes to interview and answer the questions.

### Statistical analysis

Each questionnaire received an individual identification number to permit checking for any inconsistent responses. All questionnaires were collected, and the data were entered on a Microsoft Office Excel 2021 database and checked for entry errors. After data entry, it was coded, analyzed, and tabulated. The statistical package for the Social Sciences version 28 (SPSS Inc., Chicago, IL, USA) was used for statistical analysis of the results. Descriptive statistics were displayed as percentages for qualitative and quantitative variables. Chi-square and T-test were used for comparing data as appropriate. The level of significance was set at a P value equal to or less than 0.05.

## Results

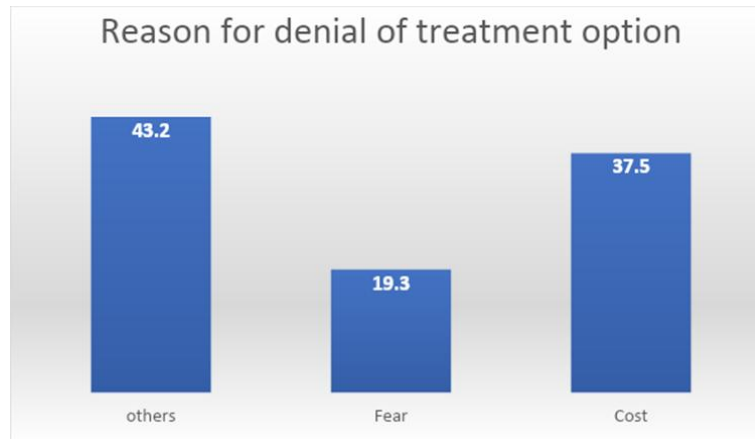
A total of 137 of 150 (91.3% response rate) participants completed the questionnaire. Regarding the demographic data in this study, 71.5% were male, while 28.5% were female. The patients were categorized into four age groups: 40-50 years, 51-60 years, 61-70 years, and over 70 years. The first and fourth age groups had the lowest number of patients, with the highest concentration found in the 61-70 years age bracket. Regarding the educational level, the majority of participants were found to hold a preparatory certificate. While the majority of them were retirees in occupational status. (Table 1)

**Table 1. Demographic data of the patient in the research**

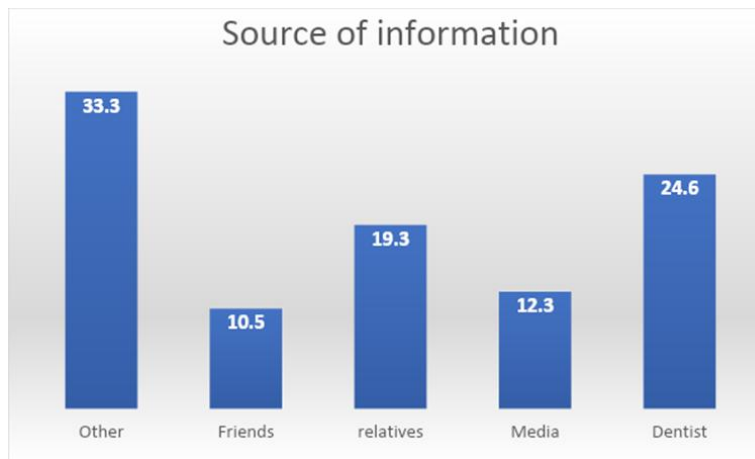
Variables	Frequency	Percent %
<b>Gender</b>	Male	98
	Female	39
<b>Level of education</b>	Illiterate	11
	Primary	2
	Preparatory	60
	Secondary	25
	University	39
<b>Occupatio n status</b>	Freelance work	19
	Housewife	33
	Military	3
	Retired	55
	Engineer	3
	Employee	24

<b>Age group</b>	40 - 50 years	14	10.2
	51 - 60 years	40	29.2
	61 - 70 years	63	46.0
	>70 years	20	14.6

Concerning reasons for denial of implant-supported denture therapy, about 19.3% of the patients denied this treatment due to fear, 37.5% and 43.2% of them due to cost and other causes, respectively (Figure 1). However, the majority of participants acquired their awareness of implant-supported dentures from non-medical sources (Figure 2).



**Figure 1. Reasons for denial of implant-supported denture therapy**



**Figure 2. Source of participants' information about mandibular implant-supported overdenture therapy**

Table 2 shows the awareness levels of participants are segmented based on their age groups. While participants across most age categories demonstrated a good understanding of dental implants, a noteworthy significance was observed with a p-value of 0.002\*\* ( $p < 0.05$ ). Conversely, their awareness regarding implant-supported dental implants was comparatively lower, with a p-value of 0.003\*\*. Participants across various age groups indicated that the majority were uninterested in opting for implant-supported dentures over traditional dentures, primarily due to their perceived high cost (Figure 1), supported by a p-value of 0.001\*\*. Furthermore, they indicated a lack of personal acquaintances who had undergone this treatment, reflected by a p-value of 0.007\*\*. Nevertheless, they expressed their readiness to offer guidance to others considering this type of treatment. A p-value of 0.064 was found to be non-significant ( $p > 0.05$ ).

**Table 2. The awareness levels of participants are segmented based on their age groups**

Age Group	Variables	No N (%)	Yes N (%)	P _ Value
Are you aware of dental implant therapy?	40 - 50 years	8 (57.1)	6 (42.9)	0.002**
	51 - 60 years	11 (27.5)	29 (72.5)	
	61 - 70 years	24 (38.1)	39 (61.9)	
	71 - 80 years	0 (0.0)	20 (100.0)	

Are you aware of mandibular implant over denture therapy?	40 - 50 years	8 (57.1)	6 (42.9)	0.003**
	51 - 60 years	17 (42.5)	23 (57.5)	
	61 - 70 years	47 (74.6)	16 (25.4)	
	71 - 80 years	8 (40.0)	12 (60.0)	
Are you willing to undergo mandibular implant over denture therapy?	40 - 50 years	5 (35.7)	9 (64.3)	0.001**
	51 - 60 years	18 (45.0)	22 (55.0)	
	61 - 70 years	48 (76.2)	15 (23.8)	
	71 - 80 years	17 (85.0)	3 (15.0)	
Have you ever personally met those people who have had a mandibular implant over denture therapy?	40 - 50 years	10 (71.4)	4 (28.6)	0.007**
	51 - 60 years	37 (92.5)	3 (7.5)	
	61 - 70 years	51 (81.0)	12 (19.0)	
	71 - 80 years	11 (55.0)	9 (45.0)	
Would you like to advise your friends, relatives on mandibular implant over denture therapy?	40 - 50 years	3 (21.4)	11 (78.6)	0.064
	51 - 60 years	9 (22.5)	31 (77.4)	
	61 - 70 years	18 (28.6)	45 (71.4)	
	71 - 80 years	0 (0.0)	20 (100.0)	

## Discussion

This study focused on evaluating awareness regarding mandibular implants over dentures among completely edentulous patients. Out of the 137 participants studied, a majority displayed a concerning lack of familiarity with the concept of implants over dentures. Research has consistently demonstrated that implant therapy not only enhances patients' self-confidence (16,17) but also leads to notable improvements in their oral health status.

Despite the proven benefits of implant procedures, the awareness surrounding their implementation and success rates remains notably deficient, particularly in developing countries. These findings are in line with previous research, such as the study conducted by Chowdhury and colleagues [15] in an urban Indian population, which highlighted 23% awareness of dental implants.

Moreover, other studies, including those by Kranjcic et al. and Raghoobar [18-19] et al., have also explored awareness levels and related issues, such as patient complaints regarding denture stability and various functional aspects. The insights drawn from these studies underscore the critical need for proactive measures, such as continuous educational programs between dentists (particularly general practitioners), to increase awareness about this treatment and also how to inform, educate, and motivate their patients.

Another study done in India revealed that (93.4%) of patients reported having heard about dental implants, with the majority falling within the 26–45 age group. In contrast, only 29.6% of the respondents chose removable prostheses, most of whom were aged between 46 and 65 years. This trend may reflect the younger generation's greater exposure to and interest in modern advancements in dental technology. [20] These findings suggest that both age and educational background played a notable role in shaping the participants' awareness and treatment preferences. [15]

Many factors play a major role in patients' knowledge of dental implants. Two of them are if they were informed about it by their dentist. Unfortunately, only 13.8% patients were very well informed, and 41% were relatively well informed, while 39.6% patients were moderately well informed about dental implants. About 60% of them prefer dental implants over fixed appliances. However, the other factor is the cost of a dental implant, which keeps the patients' awareness low. About 80.4% patients refused implant treatment because it's costly, and 60% of them think that only rich people can afford such treatment, which is why many patients don't think about it [16-21].

## Conclusions and Recommendations

This study concluded that the current levels of knowledge and awareness regarding lower jaw dental implant-supported overdenture among the patients examined were generally lacking. Most patients had no information about implant-supported dental prostheses. Moreover, most of the participants showed no interest in undergoing this treatment. These findings indicate a significant gap in understanding treatments related to dental implant mandibular over dentures among the study group.

Therefore, it is crucial for dentists to effectively advise patients on the importance of these treatments. Recommendations include prioritizing patient education at the dental chair side, promoting awareness campaigns, providing training for dentists, fostering research and development, and encouraging collaboration among healthcare professionals to address the identified gaps in knowledge and improve overall patient care in dental implants over dentures. In addition, the healthcare system in Libya should prioritize those patients and their overall health. The outcome of teeth loss and poor replacement could lead

to more serious problems. Supporting those patients with health insurance will play a massive role in their education and awareness level regarding dental implants over dentures.

**Conflict of interest.** Nil

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