

# KNOWLEDGE AND ATTITUDE OF PATIENTS REGARDING THE CHOICE OF SELECTION OF FPDS AND DENTAL IMPLANTS

Shahzeb Ansari<sup>1\*</sup>, Abdulrahman Alhazmi<sup>2</sup>, Ali Alajmi<sup>2</sup>, Wail Asali<sup>2</sup>, Sultan Alkathiri<sup>2</sup>, Ziad Alrasheedi<sup>2</sup>

<sup>1</sup>Department of Preventive Dentistry, College of Dentistry, Riyadh Elm University, Riyadh, KSA. shahzebhasan@riyadh.edu.sa

<sup>2</sup>Department of Internship Training Program, College of Dentistry, Riyadh Elm University, Riyadh, KSA.

<https://doi.org/10.51847/Esn7bjMEN4>

## ABSTRACT

A patient's dental health is highly essential for social and psychological well-being, which is highly dependent on the presence of teeth in the oral cavity. Edentulous, a complete loss of all dentition, can be linked to caries, periodontal disease, or an injury, which affects aesthetics and function and, therefore, has a considerable impact on social and psychological well-being. A cross-section survey was used to collect the data through an online survey using the questionnaire among the Saudi population consisting of items evaluating the knowledge about implants and crowns. Findings reported that the majority of participants were female, comprising 62.6% of the total sample. 85.7% of participants were from the middle class, and the age group of 36-40 was 37.4%, followed by 40 above participants. 78.9% of participants were married, and a majority graduated. Information level about implants and crowns was poor, while the majority chose fixed partial dentures over implants. 67.6% were not sure about any complications related to it, while those who agreed thought broken or loose implants were the most common complication. Findings revealed the poor knowledge of participants about implants and crowns while preferred FPDs over implants. The reason for choosing implants and crowns was longevity and cost, while for not choosing it was cost and long treatment time.

**Key words:** Knowledge, Attitude, Fixed partial denture, Implants.

## Introduction

A patient's dental health is highly essential for social and psychological well-being, which is highly dependent on the presence of teeth in the oral cavity [1-3]. Edentulism, a complete loss of all dentition, can be linked to caries, periodontal disease, or an injury, which affects aesthetics and function and, therefore, has a considerable impact on social and psychological well-being. Therefore, an imminent urge to restore the natural has taken precedence, and hence several alternative treatment methods, such as complete dentures, removable partial dentures (RPD), fixed partial dentures (FPD), and dental implants, have emerged [4, 5].

The substitution and repair of missing dentition with fixed prosthetics reinstate the configuration purpose and appearance, and it provides excellent satisfaction to the patient as well as the dentist. It can change an unhealthy and unsightly dentition into a properly occluded, healthy bite and aesthetically pleasing dentition [4, 6].

FPDs are "dental prostheses that are luted, screwed, or mechanically attached or otherwise securely retained to natural teeth, tooth roots, and/or dental implant abutments." FPDs or bridges have been used for missing dentition restoration for many years. They are more suitable for the replacement of root canal-treated teeth, however, as they are highly economical in comparison to implants, which makes this treatment modality more acceptable to patients. The fixed partial prosthesis is sensitive to various frequent problems, which include periodontal and periapical

infections, traumatic occlusion, loss of tooth vitality, breakage of the prosthesis, etc. Additionally, in the case of bridges, the neighboring structures need to be compromised to restore a single tooth, which is a significant drawback [7].

With the advent and widespread usage of osseointegrated implants, many edentulous cases are now being replaced through implants rather than FPDs. A dental implant is a screw that is surgically embedded into the bone, mimicking the root to restore a single or more teeth or making a complete prosthesis taking support of these. It has more advantages as compared to FPDs in terms of aesthetics and replacement of missing teeth without compromising the natural teeth. However, some patients still prefer FPDs over implants due to a lack of awareness in terms of its added advantages as compared to FPDs, coupled with its high cost and a misconception that during implants, a major surgical procedure is involved [8].

Several studies have been conducted in various countries to examine patients' awareness of dental implants from this standpoint. According to some studies, the level of awareness ranges from 23.24 percent to 79%. In contrast, others report that the high cost was the main reason preventing patients from choosing implants in 86.5% of cases, combined with fear of surgery and longer treatment time in 68.6 % and 71% of cases, respectively [9].

According to a study conducted by Salim *et al.* (2021), 34% of patients preferred implants [10]. In one study regarding awareness of dental prosthesis types, 60% had a piece of

good knowledge about fixed prosthesis, compared to 47.5% about removable partial dentures and 57% about dental implants. Another study reported that due to the time length and the fact that the implant is a surgical treatment, about 48% of patients believe that FPD is less time demanding than the implant [11].

*Benefits of the study*

The findings of this study may help determine the treatment plan for patients with their input and reasons.

*Scope of the study*

This study is going to focus mainly on Saudi patients visiting REU clinics.

*Study hypotheses*

Patients showed a positive attitude towards FPDs as compared to Implants.

*Aims of the study*

- To determine the knowledge and attitude of Saudi dental patients towards their choice of fixed prosthesis.
- To compare the responses based on gender, educational level, and socioeconomic status.

**Materials and Methods**

*Study design*

This is a cross-sectional study conducted among Saudi patients using an online survey.

*Study sample*

398 patients visiting various campuses of REU were utilized in this study.

*Study instrument*

The online questionnaire consisted of questions related to demographic data followed by questions including knowledge and attitude towards the choice of various fixed prostheses and reasons associated with them.

*Instrument validity and reliability*

A pilot study was conducted by sending the survey to 20 participants. The data was inserted in SPSS version 22 to determine the reliability using Chronbach’s coefficient alpha (value: 0.725). The validity of the questionnaire was tested by sending it to experienced researchers in REU, but no changes were made.

*Statistical analysis*

Collected data were analyzed using SPSS version 22, where descriptive and inferential statistics were conducted. Comparisons between groups will be made with the value of significance kept under 0.05 using the Chi-square test.

**Results and Discussion**

In the present study, based on the knowledge and attitude of patients regarding the choice of selection of FPDs and dental implants, the frequency table revealed that the majority of participants were female, comprising 62.6% of the total sample (**Table 1**). 85.7% of participants were from the middle class, and the age group of 36-40 was 37.4%, followed by 40 above participants. 78.9% of participants were married, and the majority were graduates. Information level about implants and crowns was poor, while the majority chose fixed partial dentures over implants. The reason for choosing implants was longevity, and the high cost was not to choose them. The source of information was friends and family. 67.6% were not sure about any complications related to it, while those who agreed thought broken or loose implants were the most common complication. When it comes to crowns/bridges, minute differences exist between choosing it due to cost and would not choose it. The reason for not choosing it was also its high cost for the majority, and the source of information was friends and family, same as implants. The majority thought no complications were associated with crowns, while those who agreed thought bad odor was the most common complication. The majority agreed they needed more information about implants and crowns/bridges. In **Table 2**, we explored the non-significant gender differences, and the findings revealed that the majority of both groups were from the middle class, married, and graduated. Females were from the 36-40 years age group while the males were more from the 40-above group. Both groups have poor information about implants and crowns/bridges and choose FPDs over implants. Longevity was the reason for choosing and the high cost for not choosing implants for both groups. Friends and family were a source of information for males while social media was for females. Both groups were unsure of any complications, while the remaining thought broken implants were the most common ones. In crowns/bridges, the majority did not choose crowns, and the reason was its cost. Information source was friends and family for males while dentists for females. Most of them were not sure about any complications, while those who agreed thought bad odor was the most common. Both groups think they need more information about implants and bridges.

**Table 1.** Frequency Percentages of the variables

Variable	Frequency Percentage
<b>Gender</b>	
Male	149(37.4%)
Female	249(62.6%)

<b><u>Socio-economic status</u></b>	
Low SES	32(8%)
Middle SES	341(85.7%)
High SES	25(6.3%)
<b><u>Age</u></b>	
20-25	42(10.6%)
26-30	30(7.5%)
31-35	77(19.3%)
36-40	149(37.4%)
40 above	100(25.1%)
<b><u>Marital status</u></b>	
Single	58(14.6%)
Married	314(78.9%)
Widow	18(4.5%)
Divorced	08(02%)
<b><u>Education Level</u></b>	
High school or below	96(24.1%)
Graduation	252(63.3%)
Post-Graduation	50(12.6%)
<b><u>Level of information regarding implants?</u></b>	
Excellent	16(04%)
Very good	13(3.3%)
Good	55(13.8%)
Poor	222(55.8%)
Do not know	92(23.1%)
<b><u>Level of information regarding crowns/bridges?</u></b>	
Excellent	15(3.8%)
Very good	18(4.5%)
Good	61(15.3%)
Poor	194(48.7%)
Do not know	110(27.6%)
<b><u>Which prosthesis to choose?</u></b>	
Fixed Partial Dentures	253(63.6%)
Implants	145(36.4%)
<b><u>Reason to choose implants?</u></b>	
Cost	54(13.6%)
Longevity	225(56.5%)
Convenience	33(8.3%)
Would not choose	86(21.6%)
<b><u>Reason not to choose implants</u></b>	
High cost	185(53.3%)
Long treatment time	46(13.3%)
Need surgery	82(23.6%)
Lack of information	34(9.8%)
<b><u>Source of information</u></b>	
Friends and Family	126(31.7%)
Social Media	120(30.2%)
Dentist	102(25.6%)
Other	50(12.6%)
<b><u>Are there any complications associated with implants?</u></b>	
Yes	14(21.5%)
No	129(32.4%)
Not sure	269(67.6%)

<b><u>If yes, which complication is the most common?</u></b>	
Broken or loose implants	75(28.8%)
Gingival bleeding	59(22.7%)
Bad Odor	58(22.3%)
Swelling	68(26.2%)
<b><u>Reason to choose crowns/bridges?</u></b>	
Cost	124(31.2%)
Longevity	62(15.6%)
Convenience	86(21.6%)
Would not choose	126(31.7%)
<b><u>Reason not to choose crowns/bridges?</u></b>	
High cost	135(33.9%)
Long treatment	105(26.4%)
Need surgery	46(11.6%)
Lack of information	112(28.1%)
<b><u>Source of information?</u></b>	
Friends and family	136(34.2%)
Social media	88(22.1%)
Dentist	101(25.4%)
Other	73(18.3%)
<b><u>Is there any complication associated with crowns/bridges?</u></b>	
Yes	143(35.9%)
No	55(13.8%)
Not sure	200(50.3%)
<b><u>If yes, which complication is more common?</u></b>	
Broken crown/bridge	54(19.2%)
Gingival bleeding	48(17.1%)
Bad odor	132(47%)
Swelling	26(9.3%)
Sensitivity	21(7.5%)
<b><u>Do you think you need more information on implants?</u></b>	
Yes	332(83.4%)
No	43(10.8%)
May be	23(5.8%)
<b><u>Do you think you need more information about crowns/bridges?</u></b>	
Yes	318(79.9%)
No	53(13.3%)
May be	27(6.8%)

**Table 2.** Differences across gender

Variable	Male	Female	P-value
<b><u>Level of information regarding implants?</u></b>			
Excellent	2.7%	4.8%	.242
Very good	5.4%	2%	
Good	12.1%	14.9%	
Poor	54.4%	56.6%	
Do not know	25.5%	21.7%	
<b><u>Level of information regarding crowns/bridges?</u></b>			
Excellent	2%	4.8%	.109
Very good	5.4%	4%	
Good	12.8%	16.7%	
Poor	45.6%	50.6%	
Do not know	34.2%	23.7%	
<b><u>Which prosthesis to choose?</u></b>			
Fixed Partial Dentures	59.1%	66.3%	.148
Implants	40.9%	33.7%	

<b><u>Reason to choose implants?</u></b>			
Cost	18.1%	10.8%	.141
Longevity	53.7%	58.2%	
Convenience	6%	9.6%	
Would not choose	22.1%	21.3%	
<b><u>Reason not to choose implants</u></b>			
High cost	48.4%	45.4%	.006
Long treatment time	16.8%	8.4%	
Need surgery	14.2%	24.5%	
Lack of information	11.4%	6.8%	
<b><u>Source of information</u></b>			
Friends and Family	38.1%	27.7%	.058
Social Media	25.5%	32.9%	
Dentist	21.5%	28.1%	
Other	14.8%	11.2%	
<b><u>Are there any complications associated with implants?</u></b>			
Yes	29.5%	34.1%	.545
No	12.1%	9.6%	
Not sure	58.4%	56.2%	
<b><u>If yes, which complication is the most common?</u></b>			
Broken or loose implants	28.1%	19.3%	.626
Gingival bleeding	27.1%	13.3%	
Bad Odor	20.8%	15.3%	
Swelling	23.9%	18.1%	
<b><u>Reason to choose crowns/bridges?</u></b>			
Cost	32.2%	30.5%	.810
Longevity	14.8%	16.1%	
Convenience	19.5%	22.9%	
Would not choose	33.6%	30.5%	
<b><u>Reason not to choose crowns/bridges?</u></b>			
High cost	34.9%	33.3%	.879
Long treatment	27.5%	25.7%	
Need surgery	10.1%	12.4%	
Lack of information	27.5%	28.5%	
<b><u>Source of information?</u></b>			
Friends and family	44.3%	28.1%	.005
Social media	16.8%	25.3%	
Dentist	20.1%	28.5%	
Other	18.8%	18.1%	
<b><u>Is there any complication associated with crowns/bridges?</u></b>			
Yes	27.5%	40.9%	.022
No	16.8%	13%	
Not sure	55.7%	47%	
<b><u>If yes, which complication is more common?</u></b>			
Broken crown/bridge	8.7%	16.5%	.435
Gingival bleeding	12.8%	11.6%	
Bad odor	33.6%	32.9%	
Swelling	6%	6.8%	
Sensitivity	4.7%	5.6%	
<b><u>Do you think you need more information on implants?</u></b>			
Yes	83.9%	83.1%	.962
No	10.7%	10.8%	
May be	5.4%	6%	
<b><u>Do you think you need more information about crowns/bridges?</u></b>			
Yes	82.6%	78.3%	.590
No	11.4%	14.5%	
May be	6%	7.2%	

In **Table 3**, we explored the differences across socioeconomic status and finding reported non-significant differences. The majority of lower SES were from the age group of 31-35, the middle class was 36-40, and the higher were from 36 to 40 above age group. The majority of all

three groups were married and graduated. The level of information was poor for all groups for implants and crowns and chose FPDs over implants. The reason for choosing implants was longevity for the 2nd and 3rd groups while the cost for the 1<sup>st</sup> group. The reason for not choosing it was the

high cost for the first 2 groups while longevity and need surgery for the later group. The source of information was social media for the first, friends for 2<sup>nd</sup> and dentists for 3<sup>rd</sup> group. Higher SES think complications are associated with implants, and the most common one is gingival bleeding, while for other two are bad odor and broken implant, respectively. The reason for choosing bridges was the cost

for lower and middle SES, while the higher class would not choose it. The source of information was friends for the lower and middle class while other sources were for the higher class. The complication associated with bridges is a bad odor, according to all groups. All groups think they need more information about implants and bridges.

**Table 3.** The difference across Socioeconomic status

Variable	Low SES	Middle SES	High SES	P-value
<b><u>Level of information regarding implants?</u></b>				
Excellent	3.1%	3.8%	8%	.336
Very good	3.1%	2.9%	8%	
Good	15.6%	12.9%	24%	
Poor	46.9%	56.9%	52%	
Do not know	31.3%	23.5%	8%	
<b><u>Level of information regarding crowns/bridges?</u></b>				
Excellent	3.1%	3.5%	8%	.329
Very good	12.5%	3.8%	4%	
Good	9.4%	15.2%	24%	
Poor	43.8%	49.6%	44%	
Do not know	31.3%	27.9%	20%	
<b><u>Which prosthesis to choose?</u></b>				
Fixed Partial Dentures	46.9%	64.5%	72%	.093
Implants	53.1%	35.5%	28%	
<b><u>Reason to choose implants?</u></b>				
Cost	40.6%	11.4%	8%	.043
Longevity	31.3%	58.1%	68%	
Convenience	9.4%	8.5%	4%	
Would not choose	18.8%	22%	20%	
<b><u>Reason not to choose implants</u></b>				
High cost	62.5%	46.6%	28.6%	.013
Long treatment time	6.3%	10.9%	33%	
Need surgery	9.4%	21.1%	33%	
Lack of information	15.6%	8.2%	4.8%	
<b><u>Source of information</u></b>				
Friends and Family	25%	32.8%	24%	.093
Social Media	50%	29%	20%	
Dentist	18.8%	25.8%	32%	
Other	6.2%	12.3%	24%	
<b><u>Are there any complications associated with implants?</u></b>				
Yes	25%	31.1%	60%	.004
No	21.9%	9.3%	12%	
Not sure	53.1%	59.5%	28%	
<b><u>If yes, which complication is the most common?</u></b>				
Broken or loose implants	18.8%	18.5%	24%	.089
Gingival bleeding	18.8%	13.2%	32%	
Bad Odor	28.1%	13.9%	8%	
Swelling	6.3%	18.2%	16%	
<b><u>Reason to choose crowns/bridges?</u></b>				
Cost	50%	31.1%	8%	.025
Longevity	6.2%	16.1%	20%	
Convenience	21.9%	21.7%	20%	
Would not choose	21.9%	31.1%	52%	

<b><u>Reason does not choose crown/bridges?</u></b>				
High cost	50%	33.1%	24%	.105
Long treatment	28.1%	24.9%	44%	
Need surgery	9.4%	11.7%	12%	
Lack of information	12.5%	30.2%	20%	
<b><u>Source of information?</u></b>				
Friends and family	43.8%	34%	24%	.142
Social media	28.1%	21.4%	24%	
Dentist	15.6%	27%	16%	
Other	12.5%	17.5%	36%	
<b><u>Is there any complication associated with crowns/bridges?</u></b>				
Yes	28.1%	35.5%	52%	.157
No	25%	13.2%	8%	
Not sure	46.9%	51.3%	40%	
<b><u>If yes, which complication is more common?</u></b>				
Broken crown/bridge	21.9%	12.6%	16%	.471
Gingival bleeding	15.6%	12.3%	4%	
Bad odor	28.1%	32.6%	48%	
Swelling	3.1%	6.7%	8%	
Sensitivity	3.1%	5.9%	00%	
<b><u>Do you think you need more information on implants?</u></b>				
Yes	72%	84.8%	80%	.431
No	19%	10%	12%	
May be	9%	5.2%	8%	
<b><u>Do you think you need more information about crowns/bridges?</u></b>				
Yes	69%	80.4%	88%	.236
No	15.5%	13.5%	8%	
May be	15.5%	6.2%	4%	

In **Table 4**, we explored differences across education levels and found reported non-significant differences. The high school was majority from the 31-35 age group while the graduates were 36-40 and postgraduates were from 36-40 above age category. The majority of all three groups were married and marked their information about implants and bridges as poor. Preferred FPDs over implants. The reason to choose them was longevity for postgraduate and graduate groups while the cost for high school. The reason not to choose was the cost for all groups. The source of information was social media for the first group, while the latter two were

dentists. All three groups were unsure about complications, while those who agreed thought broken implants as the most common complication. Postgraduates did not choose bridges, while others chose them due to their cost. The reason behind not choosing it was its cost and long treatment for groups, respectively. The source of information was friends and family for all. They were not sure about any complications while bad odor was most common, according to them. All groups think they need more information about implants and bridges.

**Table 4.** The difference across education level

Variable	High school or below	Graduation	Post-graduation	P-value
<b><u>Level of information regarding implants?</u></b>				
Excellent	3.1%	3.8%	8%	.336
Very good	3.1%	2.9%	8%	
Good	15.6%	12.9%	24%	
Poor	46.9%	56.9%	52%	
Do not know	31.3%	23.5%	8%	
<b><u>Level of information regarding crowns/bridges?</u></b>				
Excellent	3.1%	4.5%	9%	.329
Very good	13.5%	2.8%	3%	
Good	10.4%	16.2%	23%	
Poor	42.8%	48.6%	45%	
Do not know	30.3%	27.9%	20%	



<b><u>Which prosthesis to choose?</u></b>				
Fixed Partial Dentures	47.9%	65.5%	73%	.093
Implants	52.1%	34.5%	27%	
<b><u>Reason to choose implants?</u></b>				
Cost	41.6%	11.4%	8%	.012
Longevity	30.3%	58.1%	68%	
Convenience	9.4%	8.5%	4%	
Would not choose	18.8%	22%	20%	
<b><u>Reason not to choose implants</u></b>				
High cost	63.5%	47.6%	33.6%	.013
Long treatment time	6.3%	10.9%	28%	
Need surgery	8.4%	20.1%	33%	
Lack of information	15.6%	8.2%	4.8%	
<b><u>Source of information</u></b>				
Friends and Family	20%	28.8%	24%	.093
Social Media	55%	25%	20%	
Dentist	18.8%	32.8%	32%	
Other	6.2%	12.3%	24%	
<b><u>Are there any complications associated with implants?</u></b>				
Yes	25%	31.1%	40%	.004
No	20.9%	10.3%	12%	
Not sure	54.1%	58.5%	48%	
<b><u>If yes, which complication is the most common?</u></b>				
Broken or loose implants	28.8%	19.5%	32	.089
Gingival bleeding	18.8%	13.2%	24%	
Bad Odor	18.1%	12.9%	8%	
Swelling	6.3%	18.2%	16%	
<b><u>Reason to choose crowns/bridges?</u></b>				
Cost	50%	31.1%	8%	.025
Longevity	8.2%	18.1%	21%	
Convenience	20.9%	20.7%	21%	
Would not choose	20.9%	30.1%	50%	
<b><u>Reason not to choose crowns/bridges?</u></b>				
High cost	50%	33.1%	24%	.105
Long treatment	28.1%	24.9%	44%	
Need surgery	9.4%	11.7%	12%	
Lack of information	12.5%	30.2%	20%	
<b><u>Source of information?</u></b>				
Friends and family	44.8%	35%	36%	.142
Social media	28.1%	20.4%	24%	
Dentist	14.6%	26%	16%	
Other	12.5%	18.5%	24%	
<b><u>Is there any complication associated with crowns/bridges?</u></b>				
Yes	28.1%	35.5%	40%	.157
No	25%	13.2%	8%	
Not sure	46.9%	51.3%	52%	
<b><u>If yes, which complication is more common?</u></b>				
Broken crown/bridge	21.9%	12.6%	16%	.471
Gingival bleeding	15.6%	12.3%	4%	
Bad odor	28.1%	32.6%	48%	
Swelling	3.1%	6.7%	8%	
Sensitivity	3.1%	5.9%	00%	
<b><u>Do you think you need more information on implants?</u></b>				
Yes	72%	84.8%	80%	.431
No	19%	10%	12%	
May be	9%	5.2%	8%	
<b><u>Do you think you need more information about crowns/bridges?</u></b>				
Yes	69%	80.4%	88%	.236
No	15.5%	13.5%	8%	
May be	15.5%	6.2%	4%	

In the present study, we explored the knowledge and attitude of patients regarding fixed dentures and implants. The cross-

sectional survey design was used for the collection of data via simple random sampling, and results were computed



using SPSS through chi-square as the primary analysis. At the same time, the literature reported that friends, the media (TV radio, newspaper, internet, etc.), and others were the most common sources of information about implants. The majority of the participants said that the high cost of dental implant procedures is a principal reason for people rejecting this form of therapy. When it comes to crowns/bridges, minute differences exist between choosing it due to cost and would not choose it. The reason for not choosing it was also its high cost for the majority and the source of information was friends and family same as implants. The majority thought no complications were associated with crowns, while those who agreed thought bad odor was the most common complication. The majority agreed they need more information about implants and crowns/bridges and the same was reported by other studies as well [12].

In **Table 2**, we explored the non-significant gender differences, and the findings revealed that the majority of both groups were from the middle class, married, and graduated. Both groups had poor information about implants and crowns/bridges and chose FPDs over implants, while the literature reports that females have lower mean scores than males [12]. Longevity was the reason for choosing, and the high cost of not choosing implants for both groups and literature also reported cost as a barrier to choosing it as a treatment option. Friends and family were a source of information for males while social media was for females. Both groups were not sure of any complications, while the remaining thought has broken implants as the most common one. In crowns/bridges, the majority did not choose crowns, and the reason was its cost. The literature reported that males have better knowledge about treatment procedures than females [12, 13].

In **Table 3**, we explored the differences across socioeconomic status and finding reported non-significant differences. The majority of lower SES were from the age group of 31-35, the middle class was 36-40, and the higher were from 36 to 40 above age group. The reason for choosing implants was longevity for the 2nd and 3rd groups while the cost for the 1<sup>st</sup> group. The reason for not choosing it was the high cost for the first 2 groups. The reason for choosing bridges was the cost for lower and middle SES, while the higher class would not choose it. The source of information was friends for the lower and middle class while other sources were for the higher class. Complications associated with bridges are bad odor, according to all groups. All groups think they need more information about implants and bridges, as reported by another similar study [13].

In **Table 4**, we explored differences across education levels and found reported non-significant differences. The majority preferred FPDs over implants and studies also reported the same results that the permanent prosthesis, according to the majority of patients, provides a better feeling in the mouth and seems more natural. The reason to choose them was longevity for postgraduate and graduate groups while the

cost for high school. The reason not to choose was the cost for all groups Postgraduates did not choose bridges, while others chose them due to their cost. The reason behind not choosing it was its cost and long treatment for groups, respectively. The source of information was friends and family for all. They were not sure about any complications while bad odor was the most common, and similar findings were observed in another study [14].

## Conclusion

The present study findings revealed the poor knowledge of participants about implants and crowns while preferring FPDs over implants. The reason for choosing implants and crowns was longevity and cost, while for not choosing it was cost and prolonged treatment time. Most participants were not sure about complications regarding implants and crowns. All participants agreed on having more information about both treatment options. Non-significant differences were reported across gender, SES, and educational levels.

## Recommendations

- This study was conducted in a restricted area, so it increases the generalizability issues.
- Sample size can be increased for more reliable results.
- Self-reported inventory raises questions of social desirability.

**Acknowledgments:** We would like to acknowledge the support of the REU research center.

**Conflict of interest:** None

**Financial support:** None

**Ethics statement:** This study fulfills the ethical requirement of the REU ethical committee.

## References

1. Asgari I, Soltani S, Sadeghi SM. Effects of Iron Products on Decay, Tooth Microhardness, and Dental Discoloration: A Systematic Review. *Arch Pharm Pract.* 2020;11(1):60-72.
2. Alhamwi N, Al Jarbou F, Ourfhli A, Alfaris F, Algannass T, AlSaffan A, et al. Perception And Experience of Dental Students Regarding E-Learning Education in the Universities of Riyadh. *Pharmacophore.* 2020;11(6):67-73.
3. Yamany IA. The Employment of CBCT in Assessing Bone Loss around Dental Implants in Patients Receiving Mandibular Implant Supported overdentures. *Int J Pharm Res Allied Sci.* 2019;8(3):9-16.
4. Shetty KB, Alshaqha EM, Koosa AB, Jambi SF, Jamal NO. Trends, Awareness, and Attitudes of Patients Towards Replacement of Missing Teeth in the Western Region of Saudi Arabia. *J Clin Diagn Res.* 2021;15(5).

5. Zulfiqar A, Gul S, Hira Riaz NA, Hussain SA, Tanvir SA. Knowledge and Awareness of Dental Implants Among Patients Presenting at Tertiary Care Hospital, Islamabad. 2021.
6. Alhoumaidan A, Mohan MP, Doumani M. The knowledge, attitude and practice of fixed prosthodontics: A survey among Qassim dental practitioners. *J Fam Med Prim Care*. 2019;8(9):2882.
7. Arora Jr K, Kaur II N, Kaur III G, Garg IV U. Knowledge, Awareness, and Attitude in Using Dental Implants as an Option in Replacing Missing Teeth Among Dental Patients: Survey-Based Research in a Dental Teaching Hospital in Derabassi, Punjab. *Cureus*. 2022;14(7).
8. Suganna M, Ahmed ST, Kausher H, Ali AB, Ahmed YT, Almuhaysh L, et al. Awareness of Fixed Partial Dentures and Implant Rehabilitation of Missing Teeth Among a Subset of Saudi Population. *Cureus*. 2023;15(1).
9. Alqahtani MK, Alammari MR, Fageeha YT. Awareness, Knowledge, and Acceptance of Dental Implants among the Geriatric Population of Jeddah, Saudi Arabia. *J Pharm Bioallied Sci*. 2022;14.
10. 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;21(1):1-0.
11. Dilipkumar M, Ganapathy D. Knowledge and attitude of patients regarding choice of selecting of fixed partial dentures and implant. *Drug Invent Today*. 2020;13(4).
12. Suprakash B, Ahammed AY, Thareja A, Kandaswamy R, Kumar N, Bhondwe S. Knowledge and attitude of patients toward dental implants as an option for replacement of missing teeth. *J Contemp Dent Pract*. 2013;14(1):115.
13. Prabhu AG, Mundathaje M. Knowledge, attitude, and awareness of patients regarding dental implants: a cross-sectional study. *J Int Oral Health*. 2018;10(6):278.
14. Al-Johany S, Al Zoman HA, Al Juhaini M, Al Refeai M. Dental patients' awareness and knowledge in using dental implants as an option in replacing missing teeth: A survey in Riyadh, Saudi Arabia. *Saudi Dent J*. 2010;22(4):183-8.