

# Patient Satisfaction with Dental Services and Associated Factors in a Saudi Dental Institution

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## ABSTRACT

**Introduction:** Patient satisfaction is associated with improved compliance and better health outcomes. However, the factors related to patient satisfaction are not fully understood.

**Aim:** To evaluate patient satisfaction and the associated factors with facilities, services, and treatment received at a dental institution in Saudi Arabia.

**Materials and Methods:** This cross-sectional study involved a convenience sample of male and female patients who visited a dental college in Dammam, Saudi Arabia. A questionnaire was designed using a five-point Likert scale to assess patient satisfaction. The instrument was piloted before its administration to study participants. Mann-Whitney U test was performed for statistical analysis.

**Results:** The response rate was 81.9% as 262 out of 320 patients returned the questionnaire. The mean age of the patients was

34.7 years (SD±12.5). More males (65.3%) than females (34.7%) participated in the study. The highest mean score of patient satisfaction was reported for dental treatment (4.38), followed by facilities (4.34) and then appointments (4.27). Less educated patients (school education) than those with bachelor/master's degree were more satisfied with appointments ( $p=0.024$ ), facilities ( $p=0.024$ ), and treatment ( $p=0.016$ ). Similarly, subjects aged 41-74 years demonstrated more satisfaction with facilities ( $p=0.001$ ), and treatment ( $p=0.02$ ) than those aged 17-40 years. However, gender, ethnicity, and monthly income were not significantly associated with patient satisfaction. Good quality of treatment was the main reason for visiting the institution.

**Conclusion:** Most of the patients were satisfied with the dental services. Education and age of the patients were significantly associated with their satisfaction.

**Keywords:** Dental appointments, Facilities, Quality of services

## INTRODUCTION

The College of Dentistry is an essential entity of Imam Abdulrahman Bin Faisal University in Dammam, Saudi Arabia. The College established an educational and training program in 2002 and has provided a variety of free dental services to the community. As with dental educational institutions, dual benefits for both students and patients are achieved by providing training opportunities for students and fulfilling the treatment needs of the patients. Monitoring patient satisfaction with the provided dental service is very important to meet patient demands, achieve better patient compliance, and maintain the reputation of such institutions [1,2]. This could help the students to finish their clinical requirements on time as satisfied patients have better compliance and fewer missed appointments [3]. Patients visit dental office for various reasons mainly seeking dental treatment to eliminate pain and getting comprehensive treatment, and the main reason for not visiting dentists was related to the absence of severe pain [4].

It was found that the most relevant factor for patient satisfaction is the convenience with getting appointments [5]. Patients select dentists who can offer convenient appointments with systematic sequences. Similar results were reported by Bamise C et al., who observed that the accessibility of appointment is the most influencing factor in patient satisfaction [6]. It was found that patient satisfaction might not correlate with the treatment quality [7,8]. However, patients demonstrate more compliance to those dentists who show concern and take time to address patients' needs [3]. Thus, the relation between the dentist and the patient plays an important role in patient satisfaction. Measurement of patient satisfaction through a designed survey could also indirectly measure the job satisfaction of the dental staff [9]. Caring attitude and personality of dentists are related with high level of patient satisfaction as satisfied patients repeatedly visit the same dentist

[10,11]. Good dentist-patient relationship could be achieved by giving patients more information about their condition with simple terms, being professional, and providing written than oral instructions [12]. On the other hand, improper communication contributed to patient dissatisfaction even if the treatment outcomes are acceptable [13,14].

Good quality treatment, free or low-cost services, and difficulty in accessing care in other dental centres are the most important reasons for seeking dental treatment in dental schools [3,15,16]. However, what other factors are associated with patient satisfaction in a dental institution are not fully understood. Therefore, the aim of this study was to evaluate patient satisfaction and the associated factors in a public dental college in Dammam, Saudi Arabia.

## MATERIALS AND METHODS

This cross-sectional study was based on data obtained through questionnaire from patients visiting the College of Dentistry, Imam Abdulrahman Bin Faisal University, Dammam, Saudi Arabia. The Ethical Committee of the College approved the study (#EA 2014004). The study focused on those patients who required several appointments to complete their dental treatment plans. The study was conducted over six months, from October 2016 to March 2017. Adult male and female patients were included in the study. Patients under the age of 18 years were excluded. A written informed consent was obtained from all the study participants. To determine the sample size, a power analysis was performed based on the number of sample items in the principal component analysis. The power of the study was set at 0.80 and  $\beta$  at 0.20. It was found that the number of individuals in the sample could be 10:1 or 2:1-30:1. Based on these ratios, a sample of 320 patients was estimated to provide adequate study results considering a 20% non-response [17].

A questionnaire was printed in two languages, Arabic and English, and distributed among Arab and non-Arab patients, respectively. The development of the questionnaire was based on the review of similar previous studies [6,18] and it was divided into four sections. A five-point Likert scale was used by giving choices such as strongly disagree, disagree, neutral, agree and strongly agree. Experienced faculty members familiar with study population were consulted to review the questionnaire to determine its practicality and relevance to the study participants. They also evaluated the appropriateness of the content of the questionnaire. These preliminary steps helped evaluate validity of the instrument. The reliability of the questionnaire was assessed, and Cronbach alpha was 0.96. In addition, the questionnaire was piloted on 20 patients to ensure proper understanding and ease with the wording of the questions by the study participants.

The first section of the questionnaire was about personal data and why and how patients accessed dental clinics. The second section was related to patients' satisfaction about the convenience and coordination of appointments. The third section was about the facilities provided inside the college. The last section was about the communication and interaction with the dentist and provision of treatment. No patient was given the questionnaire inside the dental clinic in order to avoid any bias. One yes/no question were added at the end of the questionnaire asking if patients could recommend dental clinic to his/her family or friends.

## STATISTICAL ANALYSIS

Data were entered in Microsoft Excel and then analysed by Statistical Package for Social Science (SPSS Statistics for Windows, Version 22.0. Armonk, NY: IBM Corp). Mean score and frequency distribution of each item in the questionnaire were calculated. The association between patient satisfaction and gender, age, ethnicity, and educational and income levels were evaluated by using Mann Whitney U test as data were non-parametric. A p-value <0.05 was considered statistically significant.

## RESULTS

The response rate was 81.9% as 262 out of 320 questionnaires were returned. The age of the patients ranged from 18 to 74 years (mean age= 34.27 years±SD 12.5). All the subjects were from the Eastern region of Saudi Arabia, and most of the patients were male

Characteristics	n (%)
<b>Gender</b>	
Male	171 (65.3)
Female	91 (34.7)
<b>Nationality</b>	
Saudi	174 (66.4)
Non-Saudi	88 (33.6)
<b>Monthly income level</b>	
Less than 1000 SAR	57 (21.7)
1000-6000 SAR	144 (55)
7000-12000 SAR	45 (17.2)
More than 12000 SAR	16 (6.1)
<b>Educational level</b>	
Primary school education	22 (8.4)
Secondary school education	29 (11.1)
High school education	107 (40.8)
Bachelor's degree	99 (37.8)
Master or PhD degree	5 (1.9)

[Table/Fig-1]: Demographic data of the participants.

(65.30%) and Saudi (66.40%). The education level of the patients was mainly high school (41.60%) followed by bachelor's degree (37.8%). More than half of the sample (55%) had monthly income between 6000 to 10000 Saudi Riyals, which is equal to 1600 to 2600 U.S. Dollars [Table/Fig-1].

[Table/Fig-2] shows the distribution of patients' responses about

Factors related to satisfaction	Mean±SD	Strongly disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly agree (%)
<b>Appointments</b>						
It was easy to make my first appointment	4.40±0.99	5 (1.9)	15 (5.7)	22 (8.4)	47 (17.9)	173 (66.0)
It was easy to make my convenient appointment	4.24±0.98	7 (2.7)	10 (3.8)	31 (11.8)	78 (29.8)	136 (51.9)
I'm satisfied about appointment coordination	4.26±1.06	9 (3.4)	15 (5.7)	23 (8.8)	66 (25.2)	149 (56.9)
Appointment options suited my schedule	4.20±1.04	8 (3.1)	12 (4.6)	36 (13.7)	69 (26.3)	137 (52.3)
Overall satisfaction with appointments	4.27±0.87					
<b>Facilities</b>						
College location was easy to access	4.08±1.18	14 (5.3)	19 (7.3)	33 (12.6)	62 (23.7)	134 (51.1)
The waiting room was clean and neat	4.41±0.98	6 (2.3)	16 (6.1)	10 (3.8)	62 (23.7)	168 (64.1)
Enough and clean toilets are available	4.56±0.93	8 (3.1)	8 (3.1)	10 (3.8)	40 (15.3)	196 (74.8)
Materials and equipment were clean	4.38±0.97	6 (2.3)	9 (3.4)	30 (11.4)	51 (19.4)	166 (63.5)
The temperature was comfortable	4.29±1.08	8 (3.1)	19 (7.3)	21 (8.0)	55 (21.0)	159 (60.7)
Overall satisfaction with appointments	4.34±0.85					
<b>Treatment</b>						
The waiting time was suitable and acceptable	4.29±1.02	8 (3.1)	12 (4.6)	26 (9.9)	66 (25.2)	150 (57.3)
The Dentist was professional	4.47±1.01	9 (3.4)	9 (3.4)	19 (7.3)	38 (14.5)	187 (71.4)
The dentist showed his concern	4.51±0.96	7 (2.7)	10 (3.8)	15 (5.8)	41 (15.6)	189 (72.1)
The dentist clearly explained my treatment plan	4.46±1.01	10 (3.8)	7 (2.7)	19 (7.3)	42 (16.0)	184 (70.2)
The dentist explained an alternative treatment plan	4.34±1.05	10 (3.8)	11 (4.2)	23 (8.8)	54 (20.6)	164 (62.6)
My questions had been answered	4.42±1.01	8 (3.1)	14 (5.3)	11 (4.2)	57 (21.8)	172 (65.6)
The treatment time was suitable and acceptable	4.25±1.07	9 (3.4)	12 (4.6)	36 (13.8)	54 (20.6)	151 (57.7)
I am satisfied with my dental treatment results	4.35±0.99	7(2.7)	11(4.2)	25 (9.5)	59 (22.5)	160 (61.1)
Overall satisfaction with appointments	4.38±0.88					

[Table/Fig-2]: Distribution of patients' responses about their satisfaction with appointments, facilities and treatment.

their satisfaction with appointments, facilities, and treatment. About 84% of the patients agreed/strongly agreed with the ease of making an appointment and reported highest mean score of 4.40 (SD±0.99). Regarding facilities, about 90% (n=236) were satisfied with the cleanliness and availability of toilets and the mean score was 4.56 (±0.93). The concern shown by the dentist received the highest level of satisfaction (mean score=4.51) in the treatment category. Overall, most patients were satisfied with treatment (mean score=4.38), followed by facilities (mean score=4.34) and then appointments (mean score=4.2).

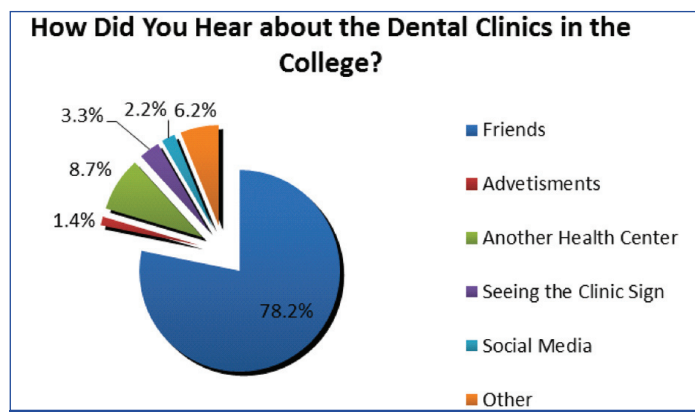
[Table/Fig-3] shows that female expressed greater satisfaction than their male counterparts. However, these differences were not statistically significant. However, no significant associations were found between patient satisfaction and ethnicity and monthly income. On the other hand, less educated patients (high school) were more satisfied with appointment (p=0.024), facilities (p=0.024), and treatment (p=0.016), than more educated patients

Satisfaction	Male patients		Female patients		p-value
	Mean±SD	Mean Ranks	Mean±SD	Mean Ranks	
Appointment	4.21±0.93	127.36	4.40±0.72	137.80	0.271
Facilities	4.28±0.93	126.63	4.47±0.68	139.17	0.189
Treatment	4.33±0.94	127.89	4.49±0.74	136.81	0.346
	<b>More educated patients (Bachelor/master's degree)</b>		<b>Less educated patients (School education)</b>		
Appointment	4.12±0.95	119.31	4.39±0.78	140.05	0.024*
Facilities	4.23±0.90	119.20	4.42±0.81	140.13	0.024*
Treatment	4.22±1.0	118.52	4.49±0.77	140.60	0.016*
	<b>Patients with high monthly income (6000 SAR and above)</b>		<b>Patients with low monthly income (Less than 6000 SAR)</b>		
Appointment	4.21±0.89	126.00	4.29±0.86	132.77	0.560
Facilities	4.23±0.98	121.48	4.37±0.82	133.81	0.292
Treatment	4.31±1.01	133.07	4.40±0.85	131.14	0.868
	<b>Saudi patients</b>		<b>Non-Saudi patients</b>		
Appointment	4.26±0.88	127.18	4.31±0.83	131.02	0.685
Facilities	4.31±0.84	123.15	4.41±0.87	138.72	0.101
Treatment	4.37±0.88	127.10	4.41±0.88	131.18	0.665
	<b>Patients' ages (17-40 years)</b>		<b>Patients' ages (41-74 years)</b>		
Appointment	4.21±0.91	126.38	4.45±0.71	145.27	0.064
Facilities	4.26±0.90	122.53	4.57±0.67	155.62	0.001*
Treatment	4.32±0.91	125.07	4.57±0.74	148.80	0.020*

[Table/Fig-3]: Association of patient satisfaction with gender, age, level of education and income, and ethnicity.

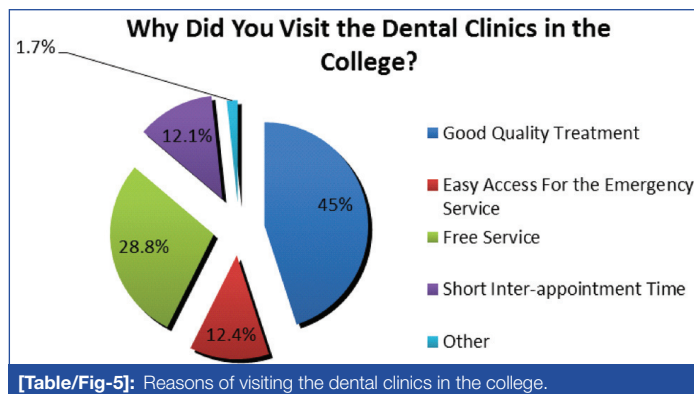
\*Statistically significant at p≤0.05

Mann-Whitney U test was used to evaluate statistical significance



[Table/Fig-4]: Ways of knowing about the dental clinics in the College.

(bachelor/master's degree holders). The patients aged 41-74 years old demonstrated more satisfaction with facilities (p=0.001), and treatment (p=0.02) compared with patients aged between 18-40 years. Most of the patients (78.2%) heard about the College



[Table/Fig-5]: Reasons of visiting the dental clinics in the college.

from their friends and relatives [Table/Fig-4]. The quality of the dental services (45%) and the free services (28.8%) were the most common reasons for visiting the College [Table/Fig-5].

## DISCUSSION

Patient satisfaction is not based only on the treatment quality, but on other factors such as facilities, staff behaviour, and basic environmental needs [19]. The present study found that a vast majority of patients were satisfied with facilities, appointments and quality of dental treatment. Educational level and age of the patients were associated significantly with the patient satisfaction. Two previous studies demonstrated that education had no significant influence on patient satisfaction, which is in contrast to the findings of this study [6,20]. The reason might be related to the fact that highly educated individuals have higher expectations in treatment results [20]. There was no significant influence of ethnicity on patient satisfaction in the present study although more non-Saudi patients reported satisfaction than Saudi subjects. This is contrary to the findings of Mahrous MS et al., who identified that Saudi patients were significantly satisfied with dental services more than non-Saudi patients [15].

Patients who had difficulty in obtaining appointments conveniently reported low degree of satisfaction [21]. The results of this study demonstrate that patients were least satisfied with ease and coordination of appointments. Many reasons could be attributed to low satisfaction with appointments such as a long wait time, dental procedures requiring multiple appointments, and provision of treatments by inexperienced dental students in the College.

It has been found that good facilities, up-to-date equipment, and clean instruments contribute to patient satisfaction [1,22]. It has become evident that most of the patients are not qualified enough to judge the quality of the treatment. Therefore, the surrounding environment or the quality of the facilities and equipment influence the judgement of many patients. Sometimes, the existence of some entertainment tools such as television or coffee machine has a huge impact on patients' judgement [7,8,23]. In the present study, 87.4% of the patients found waiting rooms clean and neat. This result is close to a study performed by Al-Refeidi A et al., where 91% of the sample reported that the waiting room was clean [24]. Present study showed that 83.1% of the patients found equipment and materials clean. Similarly, Awliya WY identified 90% of patients satisfied with the cleanliness of equipment [3]. Dental institutions should strive to achieve the highest level of satisfaction with neatness and cleanliness of facilities including equipment, instruments, and materials to ensure proper infection control in the clinics. More details need to be obtained from the patients to figure out the reasons of dissatisfaction with the cleanliness of waiting room, equipment, and toilets. In addition, continuous evaluation and assessment for the facilities should be maintained by the college administration.

Previous studies illustrated that dentist's personality and concern regarding the patient needs was associated with a high level of



satisfaction [10,24]. This agrees with the results of the present study where 85.9% of the patients reported that their dentists were professional, 86.6% said that dentists showed their concerns and cared about their needs, and 86.2% received a clear explanation for their treatment plans. This study identified 6-8% of the subjects dissatisfied with communication with the dentist. Miscommunication might lead to an unsatisfactory response from the patient even if the treatment quality was optimum. Further improvement in the dentist's communication can be achieved by developing collaborative communication by spending more time with the patient to discuss their treatment plan and the alternative options that could be suitable for the patient. In addition, establishing well-designed communication skills training can help to develop the communication skills among healthcare providers [25].

In this study, 7.7% of the subjects were unsatisfied regarding the waiting time before their admission and 8% about the duration of the treatment. Similarly, a previous study observed 7.4% of patients dissatisfied with the wait time [15]. The possible reason of dissatisfaction with the wait time for treatment and duration of treatment could include the complexity of the dental procedure and lack of time management skills and inexperience of students and interns in effectively dealing with the patients. High level of satisfaction among patients reflects that 95.8% of the subjects were willing to recommend their relatives and friends to visit the college.

## LIMITATION

Although the satisfactory response rate was achieved in the study, however, a collection of data using convenience sampling can compromise the generalisability of the study results. Similarly, the five-point Likert scale can provide wide ranges of responses. Nevertheless, open-ended questions can help patients provide more details about their satisfaction. It is therefore suggested that future studies should consider using open-ended questions when evaluating patient satisfaction. In addition, multi-centre study will add robustness to the findings.

The measures were taken to ensure the validity and reliability of the questionnaire. However, the instrument can be validated using validation process so that it can be used to evaluate patient satisfaction in similar settings in other studies.

## CONCLUSION

This study demonstrates that a large majority of the subjects were satisfied with the dental services. Lack of satisfaction was mainly related to the accessibility to the appointments. Patient interaction with the dentist during treatment received the highest satisfaction. Educational level and age of the patients were associated with patient satisfaction.

Dental academia should highlight the importance of dentist-patient interaction to undergraduate students. The age and educational attainment of the patients should be considered while ensuring patient satisfaction. Continuous monitoring of efficient appointment system, state of the art facilities, and high quality of the dental treatment should be performed to maintain high standards of patient satisfaction.

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