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Dental service satisfaction in dental health centers in Erbil city, Iraq

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ABSTRACT

Aim: This research was designed with the purpose of investigating patient satisfaction with dental services and the factors affecting it. *Methods*: In a cross-sectional study, the satisfaction of 570 patients (58.1% female) referred to three dental health care centers in Erbil/Kurdistan region of Iraq. Satisfaction was assessed in the sub-constructors of dentists' performance, clinical setting, accessibility to dental care, reception area and staffs, and an overall satisfaction. Satisfaction was rated in a Likert scale. *Results:* In all of the sub-constructors, at least half of the individuals were in satisfied and partially satisfied group. 70.4% of patients were satisfied with reception area (sum of satisfied and strongly satisfied). Moreover, the satisfaction rate was 65.5% with clinical settings and 62.7% with reception staff. Multivariant analysis showed that dentists' performance (coefficient = 0.100; p <0.0001), clinical setting (coefficient = 1.337; p <0.0001), accessibility (coefficient = 0.191; p <0.0001) and reception area (coefficient = 0.137; p <0.0001) have a significant correlation with overall score. *Conclusion:* The findings demonstrated that more than fifty percent of patients were satisfied with overall dental services. Dentists' performance, clinical setting, accessibility and reception area are the most important factors that influence the overall satisfaction.

Keywords: Dental services, Patients satisfaction, Likert scale

1. INTRODUCTION

Dental health services are provided with the purpose of improving the health status and life quality in the society (Matsuyama et al., 2019; Sukarawetsiri, 2020; Kutsal et al., 2021). Patient satisfaction is among the most important indicators of care quality in the assessment of healthcare systems (Batbaatar et al., 2015; Karaca and Durna, 2019). Multiple factors have an impact on patient satisfaction with dental care such as the dentist and staff performance, clinical setting and compliance with health protocols and sterilization (Choudhary et al.; Thomason et al., 2007; Al Saffan et al., 2019). Satisfaction with dental care has been evaluated in various studies. The outcomes of these studies are contradictory. Accordingly, a study found that 90 percent of patients were completely satisfied with dental services (Schiro et al., 2018); In contrast, this number was reported to be 65 percent in Hong Kong.

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This rate is reported to range from 45% to 96% in other countries (Samad et al., 2018; Kusumawardani et al., 2020; Nurilawaty et al., 2021; Wang et al., 2021; Yong et al., 2021). As demonstrated, the satisfaction rate is highly heterogenous in different studies. It seems that patient' underlying factors such as age and educational level affect the patient's satisfaction. These disagreements make it challenging to reach conclusion regarding the impact of underlying factors on patient satisfaction. For instance, in a study it was revealed that with increasing the patients' age, satisfaction with the dental care decreases (Ali, 2016) while in another study, it was represented that age has no effect on patients' satisfaction (Gürdal et al., 2000).

In addition, geographical and cultural differences may be a reason for the observed inconsistency. It seems that the satisfaction rate of patient in developed countries is higher than developing countries which can be because of higher quality of services in high-income countries. Nevertheless, current evidence shows that the satisfaction rate with dental services is different even in developing countries. Nurilawaty et al., (2021) had reported the satisfaction rate 96.7% in Indonesia. In another study however, this rate was 45% in men and 67% in women in Indonesia (Samad et al., 2018). Hence, further research is necessary in this area. Accordingly, the present study was designed with the purpose of investigating the satisfaction rate of individuals with dental services and it's affecting factors.

2. METHODS

Study design and subjects

The present cross-sectional study was performed with the purpose of investigating the satisfaction rate of patient in three health centers in Erbil/ Kurdistan, Iraq, from May to July of 2021. These three centers are providing services as governmental daycare dental clinics. Informed written consent was obtained from all participants before admission. The present research was approved by the Ethics Committee of Kurdistan Board for Medical Specialties (KBMC) with ethical code number (771) and during the study the researchers adhered to the principles of the declaration of Helsinki. In a convenience sampling, male and female patients without age restrictions were included in this research. Exclusion criteria were dissatisfaction to participate in this study.

Data collection

Data were collected via a questionnaire designed in Ali study (Ali, 2016). This self-administrated questionnaire included questions regarding satisfaction with dentist's performance, clinical setting, accessibility to dental care, reception area and staff, and overall satisfaction. To answer each question, a range of five Likert options was designed including strongly satisfied, satisfied, neutral, dissatisfied, and strongly dissatisfied. The reliability and validity of this questionnaire was confirmed by Ali study (Ali, 2016). Also, satisfaction level with dental services, age, sex and educational level of patients were also collected. Data collection was performed by three trained dentists.

Statistical analyses

To determine the sample size, considering 5870 patients admitted to three centers for three months and a confidence limit of 5% with 95% confidence interval, 347 patients is sufficient for the present study. Statistical analyzes were performed in STATA 17.0 statistical software. Level of satisfaction was reported as average and standard deviation in each subcontractor. Patients' satisfaction status was divided into four groups, which included: not satisfied (dissatisfied and strongly satisfied in all questions), neutral (neutral in all questions), partially satisfied (satisfied in some question and natural / dissatisfied in other) and satisfied (satisfied or strongly satisfied in all questions). Subsequently the prevalence of patients in each group was reported.

The correlation between demographic and baseline factors of patients with each of the satisfaction subcontractors was investigated by performing t-test or one-way ANOVA. Aiming to find the most significant components determining the patients' satisfaction, relationship between demographic factors and subcontractors with the overall satisfaction was investigated by adopting a generalized linear multivariate model. In all of the analysis, p-value <0.05 was considered as a statistically significant.

3. RESULTS

Patients' characteristics

In this research, 570 patients were included (190 patients in each center). 60 (10.5%) of the individuals were under 20 years old, 301 (52.8%) were between 20 and 40 years old and 209 (36.7%) were over 40 years old. 331 (58.1%) of the individuals were female. 67 (11.8%) of the individuals were illiterate, 110 (19.3%) had institutional education while 195 (34.2%) had academic education.

Patients' satisfaction

Patient satisfaction results with dental services are reported in Table 1. The mean score of satisfaction with dentists' performance was 17.0 ± 4.8. This number was 3.0 ± 1.2 in clinical setting performance. The mean of satisfaction with the constructs of accessibility, reception area and reception staffs were 12.1 ± 3.9, 6.4 ± 1.9, and 9.0 ± 3.1, respectively. The overall satisfaction score was 9.1±3.0.

Table 1 Summary of patients' satisfaction

Construct	N	Mean	SD	Median	Interquartile range
Dentists' performance	570	17.0	4.8	17	14 to 20
Clinical Setting	570	3.0	1.2	3	2 to 4
Accessibility	570	12.1	3.9	12	9 to 15
Reception area	570	6.4	1.9	6	5 to 8
Reception staff	570	9.0	3.1	9	7 to 11
Overall	570	9.1	3.0	9	7 to 11
SD: Standard deviation					

In all subcontractors, at least half of the individuals were partially satisfied or satisfied. 70.4% of the individuals were partially satisfied and satisfied with the reception area. Additionally, 65.5% of them were satisfied with the clinical setting and 62.7% were satisfied with the reception staff (Figure 1).

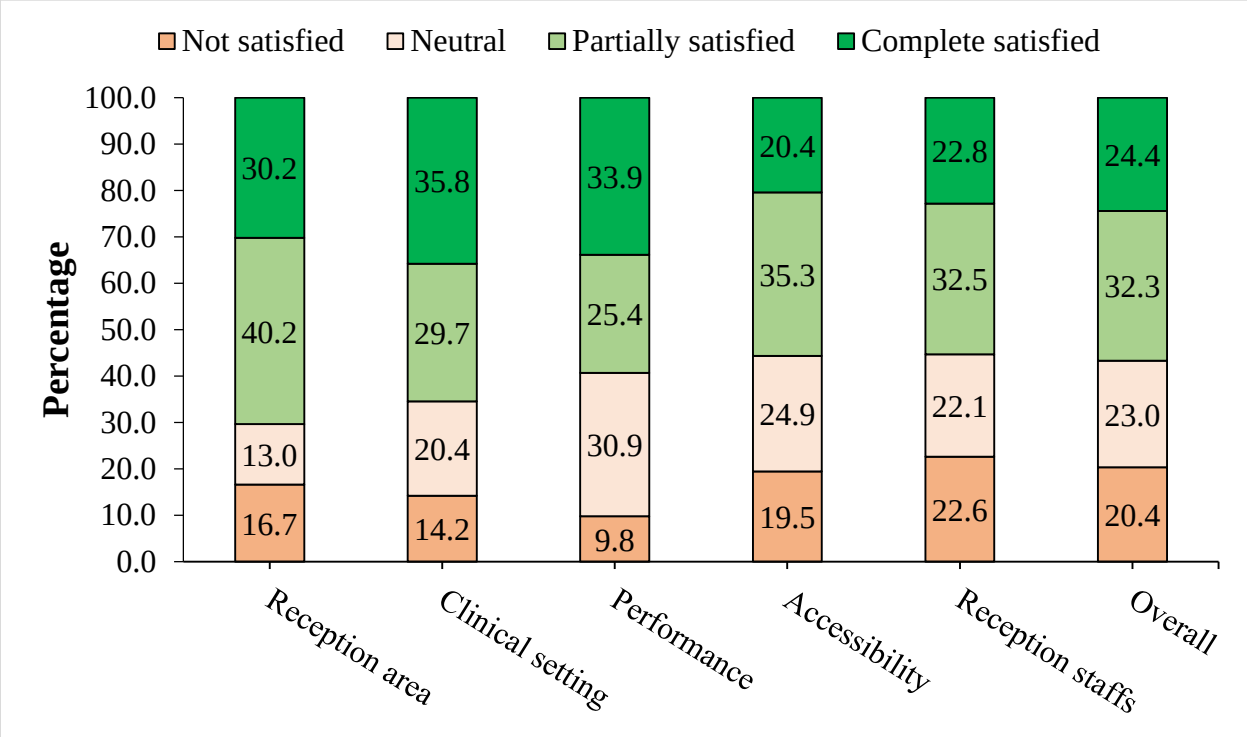

Figure 1 Satisfaction status according to subcontracts.

Association of patients' characteristics and satisfaction subcontractor's scores

Analyzes showed that the total satisfaction with dental care decreases with age similarly, satisfaction with dentists' performance, accessibility, and reception staffs decrease with age. Satisfaction with non-clinical services (accessibility, reception area and reception staffs) was lower in men than women. Moreover, the satisfaction of all constructs in people with academic education was lower than people with institutional or lower education (Table 2).

Table 2 Association of baseline characteristics of included patients with constructs of satisfaction

Variable	Groups	n	Mean	SD	p
Overall					
Age	<20	60	10.6	3.0	0.0003
	20-40	301	9.0	3.2	
	>40	209	8.9	2.6	
Gender	Male	239	9.0	2.8	0.348
	Female	331	9.2	3.1	
Education	Non-academic	375	9.4	3.1	0.005
	Academic	195	8.6	2.7	
Center	Center 1	190	9.0	2.8	0.061
	Center 2	190	9.5	3.1	
	Center 3	190	8.9	3.0	
Dentists' Performance					
Age	<20	60	18.9	4.8	0.003
	20-40	301	16.8	5.0	
	>40	209	16.6	4.2	
Gender	Male	239	16.7	4.9	0.297
	Female	331	17.1	4.7	
Education	Non-academic	375	17.4	4.8	0.005
	Academic	195	16.2	4.6	
Center	Center 1	190	17.1	4.4	0.074
	Center 2	190	17.4	4.8	
	Center 3	190	16.3	5.0	
Clinical setting					
Age	<20	60	3.3	1.3	0.090
	20-40	301	2.9	1.4	
	>40	209	3.0	1.0	
Gender	Male	239	2.9	1.3	0.161
	Female	331	3.1	1.2	
Education	Non-academic	375	3.1	1.3	0.043
	Academic	195	2.9	1.2	
Center	Center 1	190	2.9	1.1	0.283
	Center 2	190	3.1	1.3	
	Center 3	190	3.0	1.3	
Accessibility					
Age	<20	60	13.9	4.2	0.0004
	20-40	301	12.0	4.1	
	>40	209	11.6	3.3	
Gender	Male	239	11.6	3.9	0.021
	Female	331	12.4	3.9	
Education	Non-academic	375	12.6	4.0	<0.0001
	Academic	195	11.1	3.6	
Center	Center 1	190	11.9	3.8	0.062
	Center 2	190	12.6	3.9	
	Center 3	190	11.7	4.0	
Reception area					
Age	<20	60	6.9	1.9	0.161

	20-40	301	6.4	2.0	
	>40	209	6.3	1.8	
Gender	Male	239	6.2	1.9	0.027
	Female	331	6.6	1.9	
Education	Non-academic	375	6.6	1.9	0.008
	Academic	195	6.1	1.9	
Center	Center 1	190	6.4	1.8	0.054
	Center 2	190	6.7	2.0	
	Center 3	190	6.2	1.9	
Reception staff					
Age	<20	60	10.4	3.2	0.0006
	20-40	301	9.0	3.2	
	>40	209	8.7	2.7	
Gender	Male	239	8.5	3.0	0.001
	Female	331	9.4	3.1	
Education	Non-academic	375	9.4	3.1	0.0001
	Academic	195	8.3	2.9	
Center	Center 1	190	8.8	2.9	0.108
	Center 2	190	9.4	3.1	
	Center 3	190	8.8	3.2	
SD: standard deviation					

Influencing factors on overall patient satisfaction

Using General Linear Model (GLM) analysis showed that dentists' performance (Coefficient = 0.100; p <0.0001), clinical setting (Coefficient = 1.337; p <0.0001), accessibility (Coefficient = 0.191; p <0.0001) and reception area (Coefficient = 0.137; p < 0.0001) have a significant association with the overall satisfaction score. It was also found that with increasing age, the level of satisfaction with dental care decreases (Table 3).

Table 3 Influencing factors of overall satisfaction in studies patients

Variable	Coefficient	95% confidence interval	P
Dentists' performance	0.100	0.068, 0.132	<0.0001
Clinical setting	1.337	1.231, 1.442	<0.0001
Accessibility	0.191	0.152, 0.230	<0.0001
Reception area	0.137	0.062, 0.211	<0.0001
Age			
<20	Ref.	Ref.	
20-50	-0.188	-0.392, 0.016	0.070
>40	-0.418	-0.744, -0.093	0.012
Constant	-0.576	-0.915, -0.237	0.001
*, Adjusted for education level and center. Ref.: reference category			

4. DISCUSSION

The outcomes of this research represented that at least half of the patients are satisfied with the dental services. The percentages of satisfied patients were 70.4% in reception area, 65.5% in clinical setting and 62.7% in reception staffs. 57.7% of the individuals were in satisfied group regarding the overall satisfaction. It was also revealed that the most important factors affecting the overall satisfaction are dentists' performance, clinical setting, and accessibility and reception area. Additionally, it was revealed that with age, the satisfaction level with dental services decreases.

Patients' satisfaction with healthcare services is among the most important aspects of healthcare care that could be easily improved by proper recognition and its status and the most significant factors affecting it. In a study, Ali investigated the status of

patients' satisfaction with dental care and showed that the most important factors in satisfaction with dental services are physician performance and clinical setting. The researcher says that satisfaction with dental services decreases over the age of 39 years old. Finally, this study concludes that since patients are least satisfied with accessibility of services, more interventions are required in the accessibility of dental services (Ali, 2016). The findings of Ali's research are consistent with the findings of this research.

The present evidence is inconsistent regarding the association between age and satisfaction with dental care. Some studies show that satisfaction with dental services increases with age, while some studies suggest that satisfaction is higher at younger populations. These contradictions can be attributed to various causes. For instance, Gurdal et al., (2000) conducted a study on a highly-educated population (74.7%) and reported that there is no association between age and satisfaction with dental services. The age interval of patients in this study was between 20 and 40 years, while in this research, a wider range of patients were studied. In contrast, Eslamipour et al., (2017) which investigated a population with an age range similar to the present study, showed that the satisfaction level of with dental services at younger ages is higher than older ages. It was also indicated the lowest satisfaction level of patient is directly associated with the satisfaction level of the dentist's performance, clinical setting, accessibility and reception area. According to the coefficient obtained in the analysis, the two areas of clinical setting and accessibility have the greatest effect on the overall satisfaction. Satisfaction with clinical setting was desirable in 65.5% of patients, while this number was 55.7% regarding accessibility. Therefore, there is necessity to pay special attention to the accessibility of dental services.

In this research, the overall satisfaction rate was 57.7%, which is very less than the reported satisfaction rate in developed countries (Bedi et al., 2005; Armfield et al., 2014). Contrastingly, the outcomes of this investigation were similar to the study presented by Eslamipour et al., (2017) which was conducted in Iran (53.0%). This lower level of satisfaction indicates the gap between the quality of dental services provided in developing and developed countries. Therefore, there is an immediate need to develop and improve the services provided in these communities.

According to a study in Greece, compliance with health protocols and sterilization principles is the most significant factor affecting patients' satisfaction (Karydis et al., 2001). In this research, clinical setting, one of the questions of which was caring about sterilization and hygiene in the center, had the greatest influence on the overall satisfaction (coefficient = 1.337). Hence, it seems that the most significant factor that may improve patient satisfaction is the improvement of hygiene and disinfection protocols, this further emphasizes the need for enhancement this aspect of healthcare services.

5. CONCLUSION

The outcomes of this research demonstrated that 57.7% of individuals were satisfied with overall dental services. Dentists' performance, clinical setting, accessibility and reception area are the most significant factors that affect the overall satisfaction score. It was also found that satisfaction with dental services decreases with age. Special attention needs to be paid to improve the dental services quality in developing countries.

Authors' contributions

Vian Mohammed Hussein did all the works alone.

Ethical approval

The study was approved by the Ethics Committee of Kurdistan Board for Medical Specialties (KBMC) and during the study the researchers adhered to the principles of the declaration of Helsinki (ethical approval code: 771).

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This study has not received any external funding.

Conflicts of interest

The authors declare that there are no conflicts of interests.

Data and materials availability

All data associated with this study are present in the paper.

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