



The evaluation of dentistry services according to the SERVQUAL approach in the Dentistry School of Kerman Medical Sciences University

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Abstract

Background: Due to the complexity of health services, evaluating the aspects of quality in the healthcare sector is very important. Measuring the quality of dentistry school services of Kerman Medical Sciences University (KMU) in 2019–2020 is the main purpose of the present study.

Methods: This cross-sectional and descriptive-analytical study was carried out on 200 patients at KMU Dentistry School during the 2019–2020 academic year. The data collection was done by using the SERVQUAL standardized questionnaire, which evaluates the service quality in six dimensions. The data were analyzed by implementing three non-parametric tests, including the Wilcoxon signed-rank test, the Kruskal–Wallis test, and the Mann–Whitney test using SPSS 26.

Results: the participants' perceptions and expectations concerning the six-fold dimensions of service quality in the KMU Dentistry School indicated significant differences ($P < 0.001$). In other words, the entire dimensions showed a positive gap, meaning the perceptions exceeded expectations.

Conclusion: The consequences showed a meaningful relationship between the perceived service quality and the satisfaction of participants which can be enhanced by paying more attention to the service quality so that participants are satisfied and the motivation to continue using the services of such medical centers increases.

Keywords: Service quality, Perceptions, Expectations, SERVQUAL model, Dentistry

Citation: Sajadi FS, Farokhgisvar E, Khosravi S, Khosravi S, Asadipour E. The evaluation of dentistry services according to the SERVQUAL approach in the Dentistry School of Kerman Medical Sciences University. *J Oral Health Oral Epidemiol.* 2023;12(4):176–182. doi: 10.34172/johoe.2023.30

Received: July 16, 2023, **Accepted:** September 13, 2023, **ePublished:** December 29, 2023

Introduction

As the healthcare system is responsible for and committed to maintaining the health of society and protecting its vitality, service quality has great significance. The healthcare system has unique complexities, so managing its quality is also complicated.¹ Due to the value of people's health status, improving medical service quality and guaranteeing such treatments have attracted great attention. Indeed, the health service quality has not achieved the desirable levels, further emphasizing the value of the health system quality.²

Previously, the concept of quality in health referred to the rate of implementation of standards to deliver perfect health services.² However, assessing patients' perspectives and desires is more acceptable for evaluating the quality of healthcare nowadays.³ As one of the ultimate aims of

health systems is patient satisfaction and meeting patient's expectations, improving the provided health services facilitates the achievement of this aim.²

Thus, gathering adequate data about the patient's perceptions of service quality can be helpful, and it can influence the competitive advantage of organizations and prevent the wastage of their resources.⁴

Dental health constitutes one of the main sectors of personal health.⁵ Oral diseases and dental care requirements have increased, but, fewer than 50% of patients visit dentists for proper treatment.⁶ In developing countries, the utilization of dental care is usually related to the existence of pain.⁷ For instance, in Iran, the average rate of patients referred to receive dental care is 2.95% in type 1 universities, 6% in type 2 universities, and 6.41% in type 3 universities.⁶



Improving the quality of services is the contributing factor that has a considerable effect on patient satisfaction, and it may encourage patients to receive dental care in the future.³ If the health system can respond to the patient's expectations, it can contribute to the growth of dental service utilization.⁸ Moreover, dental expenditures, expertise, personal characteristics, updated dental science, competency,⁹ responsiveness,¹⁰ modern equipment, proper communication, and accessibility are among the critical criteria that may affect patient satisfaction and dental care quality.¹¹

SERVQUAL is a popular model for appraising health service quality. It is beneficial to determine the gap between the existing and ideal conditions.¹² Though the model has been mostly used in economic research, using it to evaluate the quality of services in educational medical centers is increasing due to the adoption of a client-oriented approach in the healthcare industry.¹³

Several studies have evaluated the health service quality. The findings of Asgarnezhad Nouri et al showed a gap between managers' and patient's expectations.¹⁴ Hassanzadeh demonstrated that tangibility has the highest gap and reliability has the lowest gap in this model.¹⁵ Kazemnezhad et al showed a negative relation between the patients' perceptions and expectations regarding service quality and its five-fold dimensions.¹⁶

Research performed on dental care quality has ignored or paid less attention to the role of patient expectations in dental service evaluation. Thus, the main purpose of the present study is to measure the perceptions of patients on the dental service quality in the Dentistry School of Kerman Medical Sciences University (KMU) according to the SERVQUAL approach in 2019–2020.

Methods

This is a cross-sectional and descriptive-analytical that classifies as a practical study. The present study was conducted during the 2019–2020. The population included all the patients who visited the clinical wards of the Dentistry School of KMU, and the sample size was 180 people, calculated using Cochran's formula. However, 200 patients (in equal numbers from each ward) were selected using the simple random sampling technique to deal with the issue of attrition.

The data required to evaluate the service quality of the dentistry school was collected using the standardized SERVQUAL questionnaire. The instrument had two sections. The items of the first section included the participants' demographic information like their gender, marital status, the type of ward, and insurance status, while the second section had 28 items concerning perceptions and expectations of patients in six dimensions that evaluated the expectations and perceptions on the service quality (investigating the existing situation) (investigating the desirable situation). The main dimensions of the service quality are displayed in Table 1. Finally, scoring was performed based on a Likert scale (very low=1 to very high=5), and the gap of perceptions and expectations of patients was determined by subtracting the average scores of the patients' expectations (the existing situation) from the average scores of their perceptions (the desired situation). Positive results meant that the service quality exceeded the patients' expectations, while negative results showed the opposite. Moreover, if the result was 0, it meant that the patient's expectations of the services have no gap with their perceptions.¹

The SERVQUAL questionnaire is a reliable and valid instrument that has been frequently used to evaluate healthcare services around the world. Its reliability was confirmed (89.3%) in the study by Tabibi et al.¹⁷ Moreover, Mohammadi and Shoghli determined its reliability at 85%.¹⁸

Abolghasem Gorji et al investigated the internal reliability and validity of the questionnaire and they reported the Cronbach's Alpha as 0.945.¹⁹

The patients returned the questionnaires twice; the first occasion was before starting the process of treatment/diagnosis, and the second one was after that process so that the patients could distinguish their pre-treatment expectations from their post-treatment perceptions. Moreover, parents filled out the questionnaires distributed in the pediatric ward.

Data analysis was conducted using SPSS 26. This stage generally implemented descriptive methods and statistical tests according to the distribution of data. Thus, as the data were not distributed normally, non-parametric tests including the Wilcoxon test, Kruskal-Wallis test, and Mann-Whitney test were implemented

Table 1. The main dimensions of medical service quality

Dimensions	Definition
Tangibility	The facility appearances, physical tools, and instruments, the personnel appearance, the availability of tools to communicate with the organization
Assurance	The personnel's knowledge and politeness and their ability to create assurance and guarantee services
Responsiveness	The tendency of the service-providing organization to assist its clients and provide timely and quick services
Reliability	The ability of the service-providing organization to fulfill its promises meticulously and permanently
Empathy	Establishing close ties with the clients, empathizing with them, and understanding and attending to them in a special way
Access	Easy access to services and facilities

Furthermore, the current study was proposed with the serial number 98000801 in the Student Research Committee of KMU and the university Research Ethics Committee and received the code of ethics IR.KMU.REC.1399.284.

Results

The rate and relationship of the demographic variables with the participants' perceived quality of the services are presented in Table 2. As can be observed, the majority of the participants (40%) were 30–40 years old, and the least frequent age range belonged to the participants who were above 50 (12.5%). Moreover, 63% of the participants were female and 37% were male, 84.5% were married, and 6.5% had no insurance coverage. The majority of the participants visited the endodontics ward (22.5%), while the least-visited section was the radiology ward (3.5%).

In addition, Table 2 compares the participants' expectations and the total quality of the services the KMU Dentistry School provided based on demographic variables (gender, age, marital status, the ward, and insurance status). As can be observed in Table 2, a positive quality gap was found in each variable of the study, which meant the participants' perceptions exceeded their expectations. Moreover, the results of the statistical tests indicated that no variable had a significant relationship with the perceived quality gap.

Table 3 illustrates the mean scores and Std. deviation

values of the questionnaire responses related to patients' expectations and perceptions in the multiple dimensions of the service quality of KMU Dentistry School as well as the gap between them. From the results obtained from Wilcoxon's test (a non-parametric test), it was observed that the differences (gap) between the patient's expectations and perceptions regarding the quality of services were significant in all aspects ($P < 0.05$). The patient's perceptions regarding the quality of services were above their expectations in all dimensions and the gaps were positive. Moreover, the highest quality gap was related to assurance, and the lowest gap was observed in the aspect of access.

Discussion

The present study was conducted using the SERVQUAL standard questionnaire, which is one of the most widely used tools for assessing service quality. The main purpose of the current study was to evaluate the quality of services from the perspective of patients referred to KMU Dentistry School in 2018–2019.

The study findings show the mean scores of patients' expectations of service quality at KMU Dentistry School were not significantly different from the mean scores of their perceptions of the quality of services. In other words, the offered services were able to meet the patient's needs, and a positive gap was observed in every aspect

As fulfilling a patient's expectations is an indicator of

Table 2. The rate and relationship of the demographic variables with the participants' perceived quality of services

Variable		Number	Percentage	Expectations	Perception	Gap	<i>P</i> value
Gender	Female	126	63	3.13	3.87	0.74	0.719
	Male	74	37	3.07	3.87	0.8	
Age	Less than 30	30	15	3.01	3.55	0.54	0.404
	30 to 40	80	40	3.07	3.87	0.8	
	40 to 50	65	32.5	3.11	3.95	0.84	
	More than 50	25	12.5	3.33	4.4	0.71	
Marital status	Single	31	15.5	3.00	3.66	0.66	0.696
	Married	169	84.5	3.13	3.91	0.78	
Clinical department	Endodontics	45	22.5	3.25	3.89	0.64	0.112
	Prosthetics	35	17.5	3.29	3.88	0.59	
	Periodontology	21	10.5	2.93	3.65	0.72	
	Restorative and cosmetic teeth	27	13.5	2.99	3.85	0.86	
	Oral, maxillofacial surgery	28	14	3.01	3.84	0.83	
Type of department	Radiology	7	3.5	2.75	3.63	0.88	0.125
	Orthodontic	8	4	3.33	4.59	1.26	
	Diagnosis and oral medicine	10	5	2.92	4.05	1.13	
	Pediatric dentistry	19	9.5	3.06	3.77	0.71	
	General departments	122	61	3.10	3.78	0.68	
Insurance status	Specialty departments	78	39	3.12	4.00	0.88	0.850
	With insurance	187	93.5	3.10	3.85	0.75	
	Without insurance	13	6.5	3.24	4.19	0.95	

Table 3. Determining the gaps between the expectation and perception of the dimensions of quality service

Dimensions	Questions	Expectations	Perceptions	Gap	Results Wilcoxon's test P value
		Mean	Mean	Mean	
Tangibility	1. The physical environment of the college is attractive and suitable.	3.11 ± 0.721	3.67 ± 0.963	0.51 ± 1.09	<0.001
	2. Dentists, students, and employees have a clean and orderly appearance.	3.68 ± 0.616	4.45 ± 0.640	0.77 ± 0.86	
	3. The facilities and medical equipment seem suitable and up-to-date.	3.23 ± 0.859	3.94 ± 0.988	0.71 ± 1.25	
	4. Signs are visible, attractive, and have a good appearance	2.95 ± 0.834	2.58 ± 1.122	-0.36 ± 1.21	
	5. There is a comfortable and clean waiting room.	3.07 ± 0.821	2.84 ± 1.155	-0.23 ± 1.23	
	Total	3.20 ± 0.62	3.49 ± 0.72	0.28 ± 0.86	
Assurance	6. The service is provided on time and at the appointed time.	2.99 ± 0.921	4.06 ± 1.172	1.07 ± 1.44	< 0.001
	7. Dentists and faculty staff seem professional and competent.	3.35 ± 0.831	4.48 ± 0.783	1.12 ± 1.09	
	8. Documents related to the provided services are prepared on time and without mistakes.	3.04 ± 0.592	3.60 ± 0.902	0.56 ± 1.00	
	9. The balance between the fees and the provided services seems appropriate	3.43 ± 0.872	4.62 ± 0.698	1.19 ± 1.03	
	10. Detailed information about the process and time of providing services is given to patients.	3.13 ± 0.862	4.30 ± 0.997	1.17 ± 1.27	
	Total	3.22 ± 0.65	4.38 ± 0.67	1.16 ± 0.88	
Responsiveness	11. The speed of providing services to patients is acceptable.	2.98 ± 1.002	4.12 ± 1.178	1.13 ± 1.46	< 0.001
	12. The staff and dentists have a friendly relationship with the patients.	3.18 ± 0.932	4.24 ± 0.947	1.06 ± 1.25	
	13. There is a constant desire among staff to help patients.	3.02 ± 0.921	3.90 ± 1.042	0.88 ± 1.30	
	14. The questions raised by the patients are properly answered.	3.00 ± 0.888	4.03 ± 1.020	1.02 ± 1.28	
	15. The admission provides the necessary guidance to patients.	2.92 ± 0.950	3.70 ± 1.148	0.78 ± 1.38	
	Total	3.01 ± 0.82	3.99 ± 0.87	0.97 ± 1.13	
Reliability	16. The dentists' knowledge and expertise in treating patients seem to be sufficient.	3.44 ± 0.662	4.52 ± 0.694	1.08 ± 0.92	< 0.001
	17. The patients' human rights are observed, and they are treated with respect.	3.33 ± 0.770	4.57 ± 0.691	1.24 ± 1.05	
	18. The disease and its medical conditions are explained to the patients.	3.15 ± 0.821	4.34 ± 0.859	1.18 ± 1.21	
	19. Patient privacy is respected by the dentists and staff.	3.13 ± 0.835	4.35 ± 0.895	1.22 ± 1.08	
	20. Receiving services is accompanied by a sense of security in all working shifts.	3.06 ± 0.754	4.15 ± 0.941	1.09 ± 1.14	
	Total	3.18 ± 0.64	4.21 ± 0.66	1.02 ± 0.94	
Empathy	21. Patients are kept informed, and their ideas and opinions are heard.	2.97 ± 0.804	3.96 ± 0.912	0.99 ± 1.14	< 0.001
	22. Feedback about the service quantity and quality is taken from patients.	2.93 ± 0.723	3.33 ± 0.897	0.39 ± 1.03	
	23. The staff and dentists show that they are interested in providing services to patients.	3.06 ± 0.768	3.93 ± 0.851	0.87 ± 1.09	
	24. The special needs of patients are noticed and understood.	3.14 ± 0.702	3.90 ± 0.889	0.76 ± 1.07	
	Total	3.02 ± 0.65	3.78 ± 0.74	0.75 ± 0.92	
Access	25. Appropriate facilities are provided for patients' companions.	2.85 ± 0.705	2.39 ± 1.138	-0.46 ± 1.26	< 0.001
	26. While there is easy access to the dentistry school, treatment costs are affordable.	3.31 ± 0.690	4.39 ± 0.907	1.08 ± 1.00	
	27. Access to dentists and staff is good.	2.99 ± 0.719	3.70 ± 1.208	0.70 ± 1.35	
	28. Services are provided 24 hours a day.	2.71 ± 0.747	2.41 ± 1.033	-0.30 ± 1.06	
	Total	2.96 ± 0.58	3.22 ± 0.77	0.25 ± 0.90	
	Total quality	3.11 ± 0.56	3.87 ± 0.56	0.76 ± 0.75	

the desirable status of healthcare organizations, this can be determined by investigating the gap between the existing and desired states. Thus, the smaller the gap between the patient's expectations and the services they receive, the higher the quality of services.²⁰

Baldwin conducted a study on the patients of Australian dentistry clinics using the SERVQUAL model and found a positive gap between the participants' expectations and perceptions of the quality of services offered by the clinics.²¹ Moreover, Ghanbarzadegan et al investigated the provision of clinical services in the dentistry school of Rafsanjan University of Medical Sciences. Unlike the current study, they found a negative gap between the expectations and perceptions in all aspects of the questionnaire.²² Bahreini et al investigated dentistry students' opinions concerning the gap in the quality of educational services and found a negative gap in every aspect.²³ Sadiq Sohail conducted a study titled "The Quality of Services in Hospitals: Better than What You Think" and investigated the quality of the services provided by private hospitals in Malaysia. The study showed that a gap existed between the expected and perceived quality scores. In other words, they demonstrated that the patient's perceived quality of the offered services exceeded their expectations.²⁴

The quality gap in the current study was positive, and the quality of the offered services exceeded the participants' expectations in every aspect. Nevertheless, more accurate investigations indicated that this gap was not significant. A significant positive quality difference was observed in the assurance aspect. Investigating the items of the questionnaire indicated that this aspect was mostly associated with the dentists' specialized knowledge and honoring and dignifying the patients and their privacy, and the highest rate of satisfaction was observed in this aspect.

Karydis et al²⁵ in a study on dentistry services in Greece and Lim & Tang in another study on Singaporean patients,²⁶ indicated that responsiveness had the greatest gap. Various studies have been performed on the healthcare service quality in Iran. Aghamolaei et al found that 64% of the people gave an average service quality assessment. The most significant aspect of the service quality according to the participants' perceptions and expectations was assurance, then the responsiveness, tangibility, and empathy ranked next, in decreasing order.²⁷

In the present study, the least considerable positive difference was founded in the access and tangibility aspects. Actually, the patients who visited the dentistry school were less satisfied with items like access to services and the physical and environmental conditions of the school and its wards. Mohammadi and Shoghli showed that their participants perceived the tangibility aspects of the services as better compared to other aspects. Nevertheless, assurance received the lowest perceived

score in terms of service quality in that study,¹⁸ which was contradictory to the present study findings. Moreover, Ghanbarzadegan et al found that the highest dissatisfaction rate was related to access, and the least dissatisfaction was found in assurance.²² The study by John et al indicated a meaningful relationship among the patient's expectations and perceptions of the provided services across entire aspects.²⁸ This was similar to the findings of the present study. Rad et al found that the patients and employees had high expectations of dentistry services.²⁹ Pekkaya et al showed that reliability was the most significant dimension of outpatient patients' satisfaction.³⁰

Looking at the findings of the researchers that have used the SERVQUAL approach to investigate dentistry departments indicates that the aspect of access received the lowest scores of satisfaction in almost all of them. Although in our study, the quality of services in dentistry school was far from ideal, it received acceptable scores across all quality aspects. Thus, no modification (except in a limited number of cases) is necessary.

The findings of the study can make service providers aware of the patient's needs so that they can make plans to progress the function quality to meet patients' needs. Thus, the officials of the dentistry school should introduce mechanisms that encourage dentistry students to offer client-oriented services and guarantee their patients' satisfaction. This requires that the students attain a more profound understanding of their roles and statuses in making their patients feel satisfied and adapt to roles that are related to educational, communicative, and care provision aspects (among others). Moreover, bridging the gap and increasing the quality requires providers to take good care to give services in a careful and in time. Committing to the promised services creates trust and satisfies the clients. Thus, the above considerations indicated that adopting solutions like renovating the physical environment of the clinic, implementing convenient equipment, and strengthening the employees' motivation and organizational commitment can increase the clients' satisfaction regarding the offered services.

Strengths and limitations

Examination of the service quality from different dimensions is the main point of this research which led to a comprehensive evaluation of the services.

Assessing the service quality in this research has been done by comparing the existing and desired conditions of services in the patients' perspective, so the independence of opinions and differences in people's preferences have been considered, and prescriptive standards have been avoided.

One of the most important this study limitations is the utilization of a questionnaire as a data collection tool. Because of its natural limitations, this tool alone is an imperfect instrument for collecting data.

Converting qualities into numbers (questionnaire choices) commonly creates limitations in generalizing the results, and the current research is faced with this problem too. Answering the questions of the questionnaire depends on the judgment of the subjects, so their inclinations, prejudices, and experiences may have affected the results of the research.

Conclusion

The current study indicated an overall positive gap between the participants' expectations and the services they obtained from the dentistry school. Moreover, investigating the items of the questionnaire showed that fields related to the dentists' professional qualifications and their knowledge and expertise had the smallest gap, and the participants mostly considered the dentists as having sufficient qualifications and skills. This can be regarded as the most significant potential of the dentistry school to gain the patients' trust and meet their needs.

Acknowledgments

The authors wish to declare their appreciation to the Deputy of Research and Technology and the Student Research Committee of Kerman Medical Sciences University of for their support.

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Competing Interests

The authors do not have any conflict of interest.

Data Availability Statement

The authors confirm that the supporting data is accessible.

Ethical Approval

The current study was passed by the Research Ethics Committee of Kerman Medical Sciences University with the code of ethics IR.KMU.REC.1399.284.

Funding

Research and Technology Deputy and the Student Research Committee of Kerman Medical Sciences University have supported this article.

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