Nephro Urol Mon. 2014 September; 6(5): e21810. DOI: 10.5812/numonthly.21810

Published online 2014 September 5. **Research Article**

Measuring the Quality of Provided Services for Patients With Chronic Kidney Disease

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Received: July 6, 2014; **Revised:** July 15, 2014; **Accepted:** July 19, 2014

Background: The healthcare organizations need to develop and implement quality improvement plans for their survival and success. Measuring quality in the healthcare competitive environment is an undeniable necessity for these organizations and will lead to improved patient satisfaction.

Objectives: This study aimed to measure the quality of provided services for patients with chronic kidney disease in Kerman in 2014.

Patients and Methods: This cross-sectional, descriptive-analytic study was performed from 23 January 2014 to 14 February 2014 in four hemodialysis centers in Kerman. All of the patients on chronic hemodialysis (n = 195) who were referred to these four centers were selected and studied using census method. The required data were collected using the SERVQUAL questionnaire, consisting of two parts: questions related to the patients' demographic characteristics, and 28 items to measure the patients' expectations and perceptions of the five dimensions of service quality, including tangibility, reliability, responsiveness, assurance, and empathy. The collected data were analyzed using SPSS 21.0 through some statistical tests, including independent-samples t test, one-way ANOVA, and paired-samples t test.

Results: The results showed that the means of patients' expectations were more than their perceptions of the quality of provided services in all dimensions, which indicated that there were gaps in all dimensions. The highest and lowest means of negative gaps were related to empathy (-0.52 ± 0.48) and tangibility (-0.29 ± 0.51). In addition, among the studied patients' demographic characteristics and the five dimensions of service quality, only the difference between the patients' income levels and the gap in assurance were statistically significant ($P < 0.001$).

Conclusions: Overall, the results of the present study showed that the expectations of patients on hemodialysis were more than their perceptions of provided services. The healthcare providers and employees should pay more attention to the patients' opinions and comments and use their feedback to solve the workplace problems and improve the quality of provided services. In addition, training the health staff to meet the patients' emotional needs and expectations is suggested.

Keywords: Healthcare Quality Assessment; Chronic Kidney Disease; SERVQUAL

1. Background

Measurement is one of the cornerstones of the scientific research (1). In the health studies, the best and most important indicators for measurement are the quality and quantity of provided services for the patients as well as their satisfaction of received services (2). Patients' satisfaction, which is a key indicator of quality in the healthcare organizations (3), is the responses of the patients receiving the services to the provided services and reflects their overall perceptions of service quality (4). In addition, increasing patients' satisfaction is important because it can ensure the patient participation in the care and services (5). Therefore, the healthcare organizations need to develop and implement quality improvement plans for their survival and success. Measuring quality in the healthcare competitive environment is an undeniable necessity for these organizations, which will improve patient satisfaction (6, 7).

High quality of the health sectors and their services is also considered as a desirable goal from the viewpoints of health planners and policymakers because healthy people in any society provide the opportunity for its economic development (8-10). Service quality is a strategic factor

for healthcare organizations' productivity and is considered as a competitive advantage that should be continuously measured and improved (11). When customers have a good understanding of the quality of health services, they will probably attend the hospital again in the future, if needed, and suggest it to their family and friends (11). Thus, healthcare has a special place among other services because of its risky and precarious nature and therefore, the lack of patients' awareness of received services should be evaluated (12).

Generally, measuring the quality of services in the health sector is associated with a number of difficulties. Service quality in health has a multi-dimensional structure (10, 13), which was measured in the traditional approach using some objective indicators such as mortality and morbidity rates. Although these indicators are essential tools for assessing and evaluating the quality of clinical services, nowadays it is common to use more subjective assessments and indicators.

It can be said that the field of healthcare is moving from providing services to evaluating the quality of services and consequently, the patients' role in defining the quality of services becomes evident more than ever (14). It has led to the increasing uses and high acceptance of the measurement of service quality from the viewpoint of patients (15-17). In addition to relying on economic criteria to maintain and improve the quality of health services, managers can use customers' expectations and perceptions as an important tool to determine the healthcare system's weaknesses (18). As a result, service providers are trying to apply client-centered assessment tools (19).

There are different measurement models for assessing the quality of services, including Kano, Fornel and Scamper, the European Foundation for Quality Management (EFQM), and SERVQUAL (20). In the present study, the SERVQUAL model, introduced in the mid-1980s by Parasuraman et al. (21), was used. This instrument measures the customers' perceptions and expectations of services in five dimensions, including tangibility, reliability, responsiveness, assurance, and empathy.

Several studies have been conducted using SERVQUAL model, including studies by Al-Borie and Damanhouri (22), Camgöz-Akdag et al. (23), Işik et al. (24), Altuntas (25), Tabibi et al. (26), Jenaabadi et al. (27), Ramanujam (28), and Shaikh et al. (29).

Chronic kidney disease (CKD) endangers physical health as well as other aspects of health. Therefore, making accurate and comprehensive plans for the rehabilitation of patients affected by CKD is inevitable (30). However, this disease is a global public health concern (31, 32) and the number of patients with the CKD is increasing worldwide. This disease treatment is very costly, especially in developing countries, and these patients are forced to use hemodialysis (HD). They usually receive HD services two to three times a week, and three to four hours in each session.

Measuring the quality of services among patients on HD is of paramount importance and can offer appropriate opportunities for improving provided services for these patients. Therefore, it is essential to continuously measure and improve the quality of provided services for this group of patients who spend long hours in HD centers.

2. Objectives

The present study aimed to measure the quality of provided services for patients with CKD in Kerman in 2014.

3. Patients and Methods

This cross-sectional descriptive-analytic study was conducted from 23 January 2014 to 14 February 2014 in all four HD centers affiliated to Kerman University of Medical Sciences, including two general hospitals (Afzalipour and Shafa), Javad-ol-Aeme Specialty Clinic, and Samen-ol-Hojaj Charity (a specific patient treatment center). All of patients on chronic HD (n = 195) who were referred to these centers were selected and studied using census method.

Patients in all studied centers were admitted for HD in two shifts of six days a week, morning shifts from 9 A.M. to midday and afternoon shifts from 3 P.M. to 6 P.M.; one patient was being admitted per each dialysis bed in each shift. Among the studied patients, 11 patients refused to participate in the study. The frequency of performing HD for referred patients was three times a week each of which took four hours. All of studied patients had attended for HD at least 15 times and therefore, they were completely familiar with the centers and its staff.

The required data were collected using the standard questionnaire of SERVQUAL model (21), consisting of two parts. The first part included questions regarding the patients' demographic characteristics such as age, sex, marital status, education level, income level, and duration of dialysis. The second part included 28 items to measure the patients' expectations and perceptions of the five dimensions of service quality as follows:

a) Tangibility (6 items); the conditions and physical space of the service delivery environment, including equipment, having adorned and groomed staff, furniture, toilets, and bathrooms, payment process, cleanliness and quality of the materials used in the treatment, and the existence of car parking.

b) Reliability (8 items); the ability to provide the committed services dependably and accurately through providing treatment at the predetermined time, listening to the patients' expectations, clear nurses' descriptions of the provided services, disease prevention and the treatment processes, the explanation of the treatment processes, proper maintenance of patients' records, the lack of duplication, and the effectiveness of services.

c) Responsiveness (6 items); the willingness to help customers through decreasing admission time, quick and easy process of providing services, attracting patients' trust, employees' accountability to arranging an appointment for HD, clear physicians' descriptions

of patient's disease, and employees' willingness to response to the patients.

d) Assurance (4 items); ability to serve reliably through having polite employees and respecting patients' privacy, employees' awareness of the new medical techniques, ensuring the medical staff's skills, and the center reputation from the patients' viewpoints.

e) Empathy (4 items); the provision of caring, individualized attention to customers through small time interval between admission and the start of dialysis, listening to the patients' comments and ideas, nurses' attention to the patients' needs, and paying attention to the patients' financial costs (33).

A five-point Likert scale was used to measure the patients' expectations and perceptions of service quality whereby one referred to very poor and five to excellent.

Considering the nature of the dialysis centers and their services, it was necessary to make minor changes to the questionnaire. After making those changes, the validity of the questionnaire was approved through getting the opinions of ten faculty members, including four nephrologists, four nurses and two experts in health services management. In addition, the reliability of the questionnaire was confirmed using the inter-item consistency scores ($\alpha = 0.77$ and $\alpha = 0.70$ for patients' expectations and perceptions, respectively).

In the expectations section, patients answered to the questions about the ideal or desirable status of services and in the perception section, they answered to the questions about the current status of services. To determine the quality gap, the scores of patients' perceptions of the quality of services provided were compared with the scores of patients' expectations of service quality. If the difference between the patients' perceptions and expectations was positive, it would indicate that the provided services for the patients had been more than their expectations and if it was negative, it would indicate that the provided services for the patients had not meet their expectations. Finally, if there was not any difference between the patients' perceptions and expectations, it would indicate that the provided services was at the level of patients' expectations, i.e. the provided services were at the level of patients' expectations. An approval for conducting this study was received from the Ethic Committee of Kerman University of Medical Sciences. The verbal consent was obtained from all participants and all of them were assured of the confidentiality of their responses. Moreover, the university and studied centers were provided with the results of the study. The collected data were analyzed using SPSS 21.0 (IBM Corporation, Armonk, NY, USA) through some statistical tests, including independent-samples T Test, one-way ANOVA, and paired-samples t test.

4. Results

The results showed that 109 patients were male (59.2%), 117 (63.6%) were married, 112 (60.9%) were older than 40 years, 61 (33.2%) were illiterate, 83 (45.1%) were unemployed, 122 (66.3%) had sufficient income for HD, and 70 (38%) had been treated with HD for one to three years (Table 1).

Furthermore, the results showed that the means of patients' expectations were more than the current status and their perceptions of the quality of provided services in all dimensions of service quality. In addition, the highest and the lowest means of the patients' perception dimensions were respectively related to assurance (4.30 ± 0.36) and empathy (3.84 ± 0.34). The highest and the lowest means of the patients' expectations dimensions were related to assurance (4.72 ± 0.27) and tangibility (4.30 ± 0.35), respectively. After computing the differences between the means of expectations (ideal status) and the perceptions (the current status), the results revealed that there were gaps in all dimensions. The highest and lowest means of negative gaps were related to empathy (-0.52 ± 0.48) and tangibility (-0.29 ± 0.51). The differences between the patients' perceptions and expectations (gaps) in all five dimensions of HD services quality were statistically significant ($P > 0.001$) (Table 2).

In addition, among the patients' demographic characteristics and the five dimensions of service quality, only the difference between the patients' income levels and the gap in assurance was statistically significant ($P < 0.001$); in other words, the decrease in the income levels resulted in the significant decrease in the absolute values of gap means (Table 3).

Table 1. Demographic Characteristics of Studied Patients (n = 184)

Variables	Frequency (%)
Sex	
Male	109 (59.2)
Female	75 (40.8)
Marital Status	
Single	67 (36.4)
Married	117 (63.6)
Age, y	
< 30	32 (17.4)
30-40	40 (21.7)
> 45	112 (60.9)
Education Levels	
Illiterate	61 (33.2)
Read and Write Literacy	60 (32.6)
Diploma	40 (21.7)
Academic Degrees	23 (12.5)
Employment Status	
Employed	62 (33.7)
Retired	39 (21.2)
Unemployed	83 (45.1)
Income Levels (to Perform Hemodialysis)	
Sufficient	122 (66.3)
Moderate	38 (20.7)
Insufficient	24 (13)
Duration of Hemodialysis, y	
< 3	52 (28.3)
3-5	70 (38)
> 5	62 (33.7)

Table 2. The Studied Patients' Expectations and Perceptions of the Quality of Provided Services [a]

Quality Dimensions	Expectations	Perceptions	Gaps	P Value
Tangibility	0.35 ± 4.30	0.38 ± 4.01	- 0.29 ± 0.51	< 0.001
Reliability	4.60 ± 0.22	0.32 ± 4.26	-0.34 ± 0.35	< 0.001
Responsiveness	4.57 ± 0.29	0.35 ± 4.21	-0.36 ± 0.42	< 0.001
Assurance	4.72 ± 0.27	0.36 ± 4.30	-0.42 ± 0.42	< 0.001
Empathy	4.37 ± 0.35	0.34 ± 3.84	-0.52 ± 0.48	< 0.001
Total means	4.51 ± 0.17	4.12 ± 0.23	- 0.39 ± 0.24	< 0.001

[a] Data are presented as mean ± SD.

Table 3. The Association Between the Patients' Demographic Characteristics and the Means of Gaps of Five Dimensions of Service Quality

Variables	Tangibility	Reliability	Responsiveness	Assurance	Empathy
Sex					
Male	-0.34 ± 0.50	-0.31 ± 0.35	-0.38 ± 0.41	-0.41 ± 0.43	-0.55 ± 0.48
Female	-0.21 ± 0.52	-0.38 ± 0.34	-0.33 ± 0.43	-0.44 ± 0.42	-0.49 ± 0.49
P-value	0.43-	0.9	0.94	0.66	0.81
Marital Status					
Single	-0.25 ± 0.49	-0.34 ± 0.34	-0.36 ± 0.41	-0.45 ± 0.42	-0.54 ± 0.48
Married	-0.36 ± 0.54	-0.34 ± 0.36	-0.36 ± 0.44	-0.36 ± 0.44	-0.50 ± 0.48
P-value	0.25	0.63	0.30	0.63	0.51
Age, y					
< 30	-0.15 ± 0.43	-0.29 ± 0.37	-0.24 ± 0.41	-0.29 ± 0.42	-0.42 ± 0.53
30-45	-0.41 ± 0.51	-0.39 ± 0.33	-0.38 ± 0.38	-0.40 ± 0.43	-0.48 ± 0.49
> 45	-0.29 ± 0.53	-0.35 ± 0.35	-0.38 ± 0.44	-0.46 ± 0.42	-0.57 ± 0.46
P-value	0.1	0.27	0.22	0.13	0.27
Education Levels					
Illiterate	-0.31 ± 0.54	-0.36 ± 0.30	-0.44 ± 0.45	-0.46 ± 0.45	-0.55 ± 0.43
Read and Write Literacy	-0.30 ± 0.56	-0.34 ± 0.42	-0.36 ± 0.45	-0.41 ± 0.43	-0.58 ± 0.51
Diploma	-0.22 ± 0.44	-0.32 ± 0.34	-0.27 ± 0.34	-0.42 ± 0.43	-0.43 ± 0.54
Academic Degrees	-0.31 ± 0.44	-0.33 ± 0.28	-0.31 ± 0.39	-0.32 ± 0.34	-0.50 ± 0.44
P-value	0.85	0.97	0.22	0.61	0.46
Income Levels (to Perform Hemodialysis)					
Sufficient	-0.26 ± 0.47	-0.32 ± 0.33	-0.36 ± 0.43	-0.57 ± 0.45	-0.48 ± 0.53
Moderate	-0.25 ± 0.54	-0.25 ± 0.38	-0.33 ± 0.40	-0.49 ± 0.40	-0.58 ± 0.43
Insufficient	-0.25 ± 0.58	-0.35 ± 0.36	-0.35 ± 0.46	-0.41 ± 0.34	-0.59 ± 0.40
P-value	0.68	0.14	0.97	< 0.001	0.69
Duration of Hemodialysis, y					
< 3	-0.31 ± 0.55	-0.37 ± 0.35	-0.28 ± 0.34	-0.42 ± 0.42	-0.55 ± 0.57
3-5	-0.30 ± 0.49	-0.31 ± 0.33	-0.36 ± 0.43	-0.41 ± 0.43	-0.54 ± 0.45
> 5	0.26 ± 0.51	-0.35 ± 0.38	-0.42 ± 0.46	-0.43 ± 0.43	-0.48 ± 0.44
P-value	0.83	0.69	0.23	0.98	0.70

5. Discussion

Measuring the quantity and quality of provided services to identify their weaknesses is one of the most important and most effective strategies of healthcare managers to improve the quality of services. In addition, due to the effects of services quality on the patients' satisfaction, quality measurement from their viewpoints is considered as an important indicator (16, 17). Accordingly, the present study aimed to measure the quality of provided services for patients with CKD, who were referred to all four HD centers in Kerman, using the SERVQUAL instrument.

The results of the present study showed that patients' expectations were more than the current status of the provided services in all dimensions. In addition, there were negative gaps and statistically significant differences between the means of patients' expectations and their perceptions (gap) in all five dimensions of HD service quality, indicating that the patients' expectations in all five studied dimensions were more than their perceptions of the current status of provided services. Although there were gaps between patients' expectations and perceptions of services, these gaps were not very large, indicating that the studied centers had paid special attention to the quality of provided services and overall, the level of services was acceptable. However, they should make efforts to reach an optimal level.

Butt and de Run (34), Lin et al. (35), Bakar et al. (36), and Arasli et al. (37) concluded that there were negative gaps between patients' perceptions and expectations in all dimensions of service quality, which were in agreement with the results of the present study. The results of the mentioned studies indicate that the provided services in the studied hospitals and centers had not been consistent with the patients' expectations and their managers should do proper planning and priority setting for improving all dimensions of services quality. Therefore, hearing the voice of customers is an important tool in modern organizations management and the studied hospital managers should re-engineer the processes and use the improvement techniques with regard to the patients' feedback and comments.

In the present study and among the available gaps in the studied dimensions of quality, the largest and smallest gaps were in the empathy and tangibility dimensions, respectively. As mentioned above, the tangibility had the smallest gap indicating that the studied centers had a clean environment, adorned and groomed staff, adequate physical resources and facilities such as furniture, toilets, and bathrooms, car parking, and modern and updated technologies and equipment, all of which had led to greater patients' satisfaction in this dimension than other dimensions. However, because the hospital physical environment plays an important role in improving the service quality and patients' evaluations of service quality, attractive environment and appropriate hospital hoteling services are considered as one of the most important reasons for referring patients to a hospital (33, 38). Therefore, hospital managers should provide more amenities and facilities based on the patients' needs in order to decrease the gap between patients' perceptions and expectations in the tangibility admission. Lee and Yom found that tangibility had the smallest gap, which was in accordance with our results (11). In contrast to our results, Zarei et al. reported the largest and smallest gaps in the tangibility and empathy dimensions, respectively (39).

Furthermore, the largest negative gap was in the empathy, indicating that service providers did not have enough attention to the patients' views and comments and did not apply their opinions and comments in their planning and programs. It seems that the high volume of work in the HD wards and downplaying the proper patient-physician relationships had led to physicians' low opportunities to express their empathy, listen to, and understand the patients' opinions and comments.

Moreover, the large gap in the empathy could be due to physicians, nurses and employees' poor communication with patients. Efforts in this area should, also be made to improve staff behavior and communication with patients. Unlike the results of Jabnoun and Chaker (40), the results of Huang and Li's study (41) were similar to our results. Because the services are inherently untouchable, interpersonal interaction during the process of service delivery has an important effect on the patients' perceptions of service quality. In addition, the results of several studies have shown that human factors have greater effect on the patients' perceptions of the quality of services than non-human factors, and interpersonal interaction and relationship is one of the most important factors affecting the patients' perceptions of service quality (42-44). Therefore, physicians and staff should recognize and pay attention to the patients' social and emotional needs and wants and should be available for patients when needed.

A gap in one dimension can have synergistic effect on other dimensions of service quality and lead to the decrease in those dimensions (45). Therefore, in addition to focusing on dimensions with the largest gap, managers and service providers should consider the improvement of other dimensions.

In the present study, the means of service quality dimensions did not have significant associations with sex, age, and marital status. Some of the previous studies have reported higher expectations in women than in men (35, 46), which was inconsistent with our results.

In the current study, there was no significant association between the means of service quality dimensions and the patients' education levels; however, the gap in the patients with academic and university education and degrees was larger than that in the illiterate patients. It seems that the patients' expectations had become more reasonable by increasing their education level, and their expectations had been decreased by increasing their knowledge and awareness of treatment processes. In

contrast to our findings, Lin et al. (35) and Bakar et al. (36) showed that the expectations of patients with academic and university education and degrees were higher than that of other patients.

In addition, there was a significant association between assurance and income levels. In other service quality dimensions, except for reliability, the expectations of patients with sufficient income levels were higher than expectations of patients with insufficient income levels. One explanation might be that the paid hospital costs by the patients with sufficient income levels did not put any considerable pressure on their economic conditions; hence, they expected the hospitals to meet their expectations completely. Bakar et al. (36) found that the uninsured patients were less satisfied with the quality of hospital services compared with the insured patients.

5.1. Limitations of the Study

One of the limitations of the present study was using only patients' perspectives to determine the quality of provided services. It is essential to investigate the viewpoints of physicians, nurses, and other employees on the service quality because most of patients are not fully aware of the treatment processes. Another limitation of the present study was using a questionnaire to determine the patients' perceptions and expectations. Although SERVQUAL questionnaire is valid and reliable, the researchers cannot investigate all dimensions of the service quality using only a questionnaire; in that regard, some qualitative studies should also be performed. Overall, the results of the present study showed that the expectations of patients on HD were higher than their perceptions and the level of provided services.

The healthcare providers and employees should pay more attention to the patients' opinions and comments and use their feedback and suggestions in order to solve the workplace problems and improve the quality of provided services. Moreover, training the health staff to meet the patients' emotional needs and expectations is recommended.

Acknowledgements

The researchers would like to thank the studied hospitals and hemodialysis centers' administrators and staff as well as all patients who participated in this study for their kind cooperation with the researchers in collecting and analyzing data.

Authors' Contributions

Mohammadkarim Bahadori and Ramin Ravangard developed the study concept, design, and methods. Mehdi Raadabadi and Majid Heidari Jamebozorgi collected the data. Mohammadkarim Bahadori and Mahmood Salesi analyzed and interpreted the data. Mehdi Raadabadi and Majid Heidari Jamebozorgi wrote the primary draft of the manuscript. All of the authors contributed to the revision of the manuscript, read, and approved the final version.

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