

Evaluation of outpatient service quality in Eastern Saudi Arabia

Patient's expectations and perceptions

Khalid J. Al Fraihi, Dip FAMCO, Fellow FAMCO, Shahid A. Latif, DPH, M Med Science.

ABSTRACT

الأهداف: تناولت هذه الدراسة تصورات وتوقعات المرضى لخدمات العيادات الخارجية للمستشفى وذلك بدراسة نموذج الفجوة في جودة الخدمات والعوامل المؤثرة بتلك الفجوة.

الطريقة: في هذه الدراسة المستعرضة والتي أجريت في منتصف أكتوبر وحتى منتصف نوفمبر عام 2014م بالعيادات الخارجية بمستشفى بالمنطقة الشرقية للمملكة العربية السعودية. تم اختيار عينة لعدد 306 مريض بطريقة مناسبة. تم جمع المعلومات باستخدام نموذج (سيرفاكول) والتي تحتوي جزئيين: الخصائص الديمغرافية للمرضى و22 بند لردود المرضى الخاصة بالتوقعات والتصورات الخاصة بسيرفاكول. تم تحليل البيانات عن طريق التحليل التأكيدي وعينات تي المستقلة والمزدوجة وفحص أنوفا.

النتائج: أظهرت نتائج النموذج المقترح لإبعاد جودة الخدمة توافقها من خلال تلبية القيم الموصى بها. توقعات المرضى تجاوزت تصوراتهم بجميع الأبعاد الخاصة بجودة الخدمة مما يدل على وجود فجوة كبيرة من الناحية الإحصائية بجودة الخدمة ($t=26.3, p<0.000$). كما أظهرت نتائج الاستطلاع أن التعاطف كمؤشر للجودة ساهم بمعظم توقعات المرضى (4.7 ± 0.5) وتصوراتهم (3.7 ± 0.8) لجودة الخدمات، أما مؤشر الاستجابة فساهم بدرجة أقل بالتوقعات (4.5 ± 0.6) والتصورات (3.2 ± 0.8). الفجوة كانت كبيرة بالنسبة لجودة الخدمات. أما الخصوصية والتي يجب أن تراعى فكانت الفجوة فيها أقل. وأظهرت الدراسة وجود علاقة إحصائية قوية بين كل من الجنس، العمر، مستوى التعليم، تعدد الزيارات وأبعاد جودة الخدمة.

الخاتمة: النموذج المقترح بالدراسة صحيح وموثوق به مع اعطاء الأولوية لجميع الفجوات النوعية للأبعاد الخمسة بالخدمات والاهتمام وتركيز الجهود عليها من قبل إدارة المستشفى.

Objectives: To investigate perceptions and expectations of patients regarding hospital outpatient services by using a service quality gap model and factors influencing such gaps.

Methods: In this cross-sectional descriptive study conducted between October and November 2014 in the

outpatient waiting areas of a hospital in the Eastern Province of Saudi Arabia, a sample of 306 patients was selected by convenience sampling technique. The data was collected through an Arabic version of the service quality (SERVQUAL) questionnaire consisting of 2 parts: patients' demographic characteristics, and 22 items scales of patients' expectations and perceptions of SERVQUAL. The data was analyzed by confirmatory factor analysis, independent, and paired t samples tests and one way analysis of variance test.

Results: The results showed that the proposed model for service quality dimensions had a good fit by satisfying the recommended values. The patients' expectations exceeded perceptions in all service quality dimensions indicating statistically significant service quality gaps ($t=26.3, p<0.000$). Findings revealed that the empathy dimension contributed most patients' expectations (4.7 ± 0.5) and perceptions (3.7 ± 0.8) scores, and responsiveness contributed least to expectations (4.5 ± 0.6) and perceptions (3.2 ± 0.8) scores. Prompt services showed highest service quality gap, while observation of privacy showed the smallest service quality gap in the statements. The study showed a significant association between gender, age, education, multiple visits, and service quality dimensions.

Conclusion: The proposed model is valid and reliable and significant service quality gaps of all 5 dimensions need to be prioritized and addressed by focused improvement efforts of hospital management.

Saudi Med J 2016; Vol. 37 (4): 420-428
doi: 10.15537/smj.2016.4.14835

From the Preventive Medicine Department, King Abdulaziz Airbase Hospital, Dhahran, Kingdom of Saudi Arabia.

Received 11th January 2016. Accepted 6th February 2016.

Address correspondence and reprint request to: Dr. Shahid A. Latif, Preventive Medicine Department, King Abdulaziz Airbase Hospital, Dhahran, Kingdom of Saudi Arabia. E-mail: dlatifs@hotmail.com

Healthcare management is under increasing pressure to demonstrate that their services are patient focused and directed to providing the best possible medical care for their patients. Therefore, it has become prudent for hospital management to understand and measure the patient's perspectives, so that any perceived gap in delivery of service is identified and suitably addressed with constrained resources. A number of studies have been conducted to measure the service quality from the patient's perspectives. Marković et al's¹ study conducted in a specialty hospital for rehabilitation in Croatia using 34 statements in each section of the service quality (SERVQUAL) questionnaire revealed that the patient's expectations were higher than perceptions in all statements grouped in 4 service quality dimensions by exploratory factor analysis. Al-Borie and Damanhour's² study conducted on inpatients in private and public hospitals identified that the association between demographic factors, except age, with service quality was satisfactory. Yesilada and Direktor³ showed that the service quality gap in all 3 service quality dimensions in a private hospital is narrow as compared with public hospitals in Cyprus, as people are more satisfied with the services provided by private hospitals. Brahmhatt's⁴ study used 41 paired questions to measure service quality gaps and observed that patient's expectations were not met and they were not satisfied with the services provided by private and public hospitals. Bowling's et al⁵ study conducted in outpatients and general practices in the UK showed that older, British females were more satisfied with general practices compared with hospital outpatient services. Kumaraswamy's⁶ study using a service quality model in corporate and non-corporate healthcare centers revealed that patients are more satisfied with 4 service quality factors; physician attitude, supportive staff, environment, and service provision provided in corporate healthcare centers. Kayral's⁷ study used 6 service quality dimensions including 34 questions to determine the provision of service quality in private and public hospitals and observed that the patients perceived quality at higher levels in public hospitals; however, physical quality was better in private hospitals. Li et al⁸ addressed patients' perception related to the service quality of hospitals not considering the service quality gaps in 9 Chinese cities. Empathy and reliability emerged as strong perception predictors of service quality in Li et al's study.⁸ However, perceptions of service quality varied

between cities. Gronroos⁹ defined service quality as clinical management including diagnosis and treatment (technical quality), and the mode of delivery of services to patients, such as professional staff attitude, emotional support, and cleanliness of environment (functional quality). Parasuraman et al¹⁰⁻¹² defined service quality as the difference between expectations and perceptions of patients' along the 5 dimensions of quality. These studies were conducted in different places using different criteria and different settings for measuring the service quality. The outpatient department is the patients' first point of contact in the hospital, and the service quality provided by this department establishes the hospital image. A quality outpatient service can be cost-effective by reducing the workload on the inpatient services. Based on the notion that the patients are often unable to accurately evaluate technical quality of care, this study focuses on functional quality, namely, what the patient is receiving. Unfortunately, data on patient's perceptions and expectations on quality of outpatient services in the hospital studied, are scarce and there is a lack of studies to determine the gap in quality of service. The service quality model of Parasuraman et al,^{11,12} that defines the quality of outpatient service is best assessed by identifying the quality gap obtained from patients' expectations and perceptions, is used for our study. The objective of this study was to define service quality gaps in outpatient services by assessing the patient's expectations and perceptions and to determine the factors affecting such service quality gaps.

Methods. A cross-sectional descriptive study was conducted between October and November 2014 in the outpatient waiting areas of a hospital in the Eastern Province of Saudi Arabia. The study population was made up of patients who had visited the hospital at the time of the study. Patients who were willing to participate, visiting once or more, and >16 years of age were included and any accompanying visitor with the patient and inpatient discharged on the day of data collection and waiting for medicine from the pharmacy were excluded. Inpatient discharged on the day of data collection and waiting for medicine from the pharmacy were excluded. The convenience sampling technique was used. Probability sampling was difficult to use due to time, availability and effort needed, and presumed the higher response rate with convenience sampling technique. The decision to meet the patients in the outpatient department enabled on the spot data collection particularly from those who were in the process of receiving healthcare or those who just received care waiting for medicines from the pharmacy.

Disclosure. Authors have no conflict of interest, and the work was not supported or funded by any drug company.

Approval for conducting this study was received from the Research and Ethics Committee of the hospital.

A total of 306 survey questionnaires were randomly distributed to patients who attended the outpatient services during the hospital working hours between 8:00 and 11:30 am in the morning shift and from 1:00 to 4:00 in the afternoon shift during this period. According to SERVQUAL, a sample size of 200 is sufficient. The following formula was used to calculate the sample size¹³ with 5% margin of error:

$$N = \frac{Z^2 pq}{e^2}$$

Z - level of confidence (1.96), N - required sample size, pq - estimated proportion of attribute in population, e - desired level of precision estimated at 95%. The SERVQUAL instrument by Parasuraman et al¹¹ was adapted to collect the data for our study. The SERVQUAL instrument was reliable¹⁴ and the instrument has a concurrent validity.¹⁵ The questionnaire was first translated into the Arabic language as the majority of Saudi citizens are native speakers of Arabic. The questionnaire was piloted on 20 subjects not included as study participants. Some of the sentences were rephrased after the pilot study, and the final questionnaire was administered to the target sample through trained healthcare workers on site. Verbal informed consent was taken before giving the questionnaire to respondents. The aim of the study was explained by the healthcare workers, and confidentiality and anonymity of participants were guaranteed, and they were requested to complete the survey while at the hospital and not to take home. All questionnaires were directly collected from respondents by the trained healthcare workers after completion. Three hundred and 6 completed the questionnaires; thus, the overall response rate was 100%.

The required data collected comprised of 2 parts. The first part included questions regarding patients' demographic characteristics such as age, gender, marital status, education level, and type of visits. The second part included 22 items representing the 5 dimensions: 1) Tangibles: physical facilities, equipment and appearance of personnel; 2) Reliability: ability to perform the promised service dependably and accurately; 3) Responsiveness: willingness to help consumers and provide prompt service; 4) Assurance: competence, courtesy and security; 5) Empathy: caring and individualized attention.

Each statement appeared twice and in the expectations section patients answered questions on the desirable status of services, and in the perception section they answered the questions related to the current status of services. The simultaneous expectations and perceptions measurement was consistent with the previous study.¹¹ A 5-point Likert scale was used to measure the patients' expectations and perceptions of service quality whereby one referred to strongly disagreed and 5 referred to strongly agreed. The score for the quality of service was calculated by computing the difference between the ratings that patients assigned to paired perception and expectation statements according to the formula: SERVQUAL score was provided by the equation:

$$SQ = P - E$$

Wherein SQ means overall service quality, P means performance perception, and E means service quality expectations.

A positive gap score would indicate that expectations were met or exceeded, and perceptions on the outpatient services are very high if the gap score was negative it would indicate that the provided services did not meet their expectations and perceptions regarding services are low. If no quality gap is observed, it would indicate that the expectations are met and the quality of outpatient services is satisfying. The gap score for each individual paired statement was calculated and summed up to provide an overall gap score for each dimension. The effect size (strength of association) was calculated by Eta squared statistics. The guidelines proposed by Cohen¹⁶ for interpreting the effect size were as follows: 0.01 small effect, 0.06 moderate effect, and 0.14 large effect.

The collected data were analyzed using the Statistical Package for Social Sciences (Armonk, NY: IBM Corp.) Version 20.0 for Windows and SPSS Analysis of Moment Structures (AMOS) Version 22 (IBM Corporation, Armonk, NY, USA). Data was first analyzed descriptively by computing the means and standard deviations for continuous variables and frequencies and percentages for categorical variables. Confirmatory analyses was carried out to examine the measurements of the study and their reliability and validity. Paired t-test was used to assess the gaps in service quality dimensions. Confirmatory factor analyses is estimated by means of structural equation model through SPSS AMOS version 22. Univariate analysis including analysis of variance was performed to examine the relationship between patients' characteristics and mean gap score of expectations and means of individual items along 5 dimensions of scale. Cronbach's alpha analysis was used to reveal the reliability of scale used

in the study. The coefficient of 0.70 or higher indicated good to excellent internal consistency as recommended by George and Mallery.¹⁷

Results. The proposed service quality model of 5 dimensions is shown in Figure 1. Confirmatory factor analysis was performed to evaluate the proposed quality service model for the modeled constructs that are quality dimensions based on the collected samples. Each subscale consisting of multiple items was converted to single construct that reflected the quality dimension and it was carried out separately for expectation and perception scales for this analysis. Structural equation modelling evaluated the fitness of data with the theoretical model. The maximum likelihood method of estimation was used to estimate the CFA model.

A comparative fit index (CFI)¹⁸ of 0.95 and factor loading values of more than 0.70¹⁹ from established scales were achieved providing strong evidence of unidimensionality (how closely individual items represent the same construct) after running the CFA for all constructs. The goodness of fit indices shows a good fit between data and the model, and accepts the structural model. The overall fit measures, Chi square=143, degree of freedom=36, $p=0.000$, a sample size of more than 200 (300 in this study) could affect Chi-square test to indicate a significant p -value, CMIN/df (negative

minimum discrepancy divided by its degrees of freedom): 3.9, goodness of fit index (GFI): 0.91, normed fit index (NFI): 0.94, comparative fit index (CFI): 0.95, Tucker Lewis index (TLI): 0.94, and Root Mean Square Error of Approximation (RMSEA): 0.08, achieved the criteria values^{19,20} and indicated that proposed model fit the data.

In the next step, convergent validity, composite reliability, and discriminant validity were evaluated to examine the quality of the final measurement model. The results in Table 1 shown that the value of average variance extracted (AVE)²⁰ was greater than 0.50, and the factor loading of each item on the construct was more than 0.70.¹⁹ The composite reliability for each construct was more than 0.8, above the recommended value.¹⁹ The results revealed that the discriminant validity of the SERVQUAL measurement model is valid. The correlation between 2 sub-constructs was 0.17 and below 0.90,^{19,21} confirming discriminant validity of the instrument. It is evident from the results that the 2 factors with 10 composite sub-constructs achieved the psychometric value.

Outpatient characteristics from the analyzed sample (N=306) are as follows: 61.8% of the patients were male, whereas 38.2% were female. The mean age of male was 40 ± 11.6 years, and for females was 30 ± 10 years. Table 2 summarizes the demographic profile of patients measuring the out-patient service quality.

The reliability coefficient (Cronbach's coefficient alpha) values ranged from 0.89 for patients' perceptions scale and 0.95 for patients' expectations scale. None of reliability alphas for each dimension were below 0.7.¹⁷ The paired sample t test in Table 3 shows that there is a statistically significant difference between total

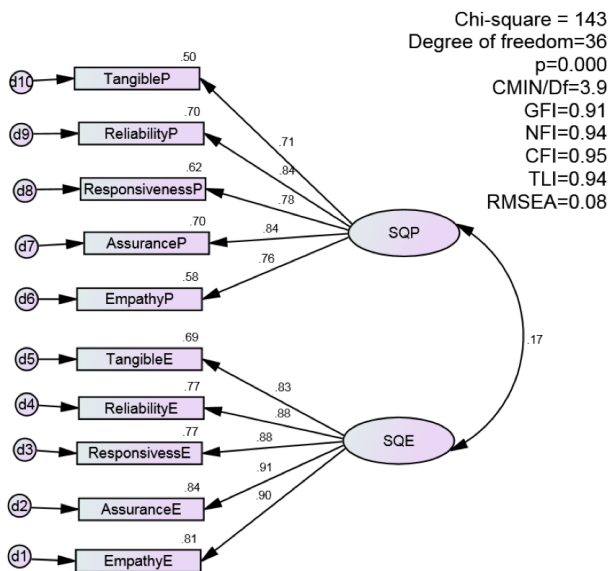


Figure 1 - Confirmatory factor analysis of service quality dimensions. SQE - Service quality expectation, SQP - Service quality perception, GFI - goodness of fit index, NFI - normed fit index, CFI - comparative fit index, TLI - Tucker Lewis index, RMSEA - Root Mean Square Error of Approximation, CMIN/DF - negative minimum discrepancy divided by its degrees of freedom

Table 1 - Results of convergent validity and composite reliability. (n = 306)

Sub-construct	Internal reliability Cronbach alpha (>0.7)	Factor loading (>0.70)	CR (>0.70)	AVE (>0.50)
<i>SQP</i>	0.89		0.84	0.62
Tangible P		0.71		
Reliability P		0.84		
Responsiveness P		0.78		
Assurance P		0.84		
Empathy P		0.76		
<i>SQE</i>	0.95		0.93	0.77
Tangible E		0.83		
Reliability E		0.88		
Responsiveness E		0.89		
Assurance E		0.91		
Empathy E		0.90		

SQP - Service quality perception, SQE - Service quality expectation, CR - composite reliability, AVE - average variance extracted, P - perceptions, E - expectation

perceptions mean scores and total expectations mean scores ($t=26.3, p<0.000$). The given Eta squared value of 0.69 for the difference between expectation and perception mean scores has a large effect. The negative gaps across all 5 dimensions indicated that patients' expectations generally are not met, with the largest gap observed in tangible dimension and smallest gap in empathy. The Eta squared statistics for tangible (0.67) responsiveness (0.65), reliability (0.61), assurance (0.57), and empathy (0.41) indicated a large effect size. The highest and lowest means of patients' perception were related to empathy, responsiveness, and tangibles dimensions. The highest and lowest means of patients' expectations were related to empathy and responsiveness dimensions. All the dimensions are ranked according to mean scores gap between patients' expectations and perceptions.

Table 2 - Demographic profile of patients measuring out-patient service quality (n=306).

Characteristics	Frequency (%)
<i>Gender</i>	
Male	189 (61.8)
Female	117 (38.2)
<i>Marital status</i>	
Single	55 (18.0)
Married	243 (79.4)
Divorced	4 (1.3)
Widowed	4 (1.3)
<i>Age (years)</i>	
≤30	102 (33.3)
31-44	119 (38.9)
45-58	73 (23.5)
59-72	10 (3.3)
>73	2 (0.7)
<i>Mean age (±SD)</i>	
Male	40 ± 11.6
Female	31 ± 10.1
<i>Education level</i>	
Primary	12 (3.9)
Elementary	27 (8.8)
Secondary	156 (51.0)
University	111 (36.3)
<i>Nationality</i>	
Saudi	304 (99.3)
Non-Saudi	2 (0.7)
<i>Type of visit</i>	
First visit	28 (9.2)
Multiple visit	278 (90.8)

Table 4 shows the mean gap scores in expectations and perceptions statements are ranked and displayed in the respected dimensions. Generally, patients' expectations statistically significantly exceeded perceptions in all statements ($p<0.000$). The patients had the highest expectations for toilet facilities that should be clean (4.7 ± 0.7) followed by doctor should explain the condition to the patient (4.7 ± 0.6), and treated with dignity and privacy (4.7 ± 0.6). The least expectation was for waiting time should not be more than 30 minutes. The highest perceptions of patients they are treated with dignity (3.9 ± 1) followed by privacy was observed during treatment (3.9 ± 0.9). There was a low perception in terms of promptness of service at appointed time (2.45 ± 1.3) and easy appointment system (2.75 ± 1.4).

The analysis of variance (ANOVA) results in Table 5 revealed the association between demographic factors and service quality dimensions. The female expectations are statistically significantly higher compared with male expectations in tangibility ($p=0.001$) and reliability dimensions ($p=0.01$). The Eta squared statistics was 0.04 for tangibility and 0.02 for reliability dimensions, which in Cohn's terms would be considered a small effect size. Therefore, despite reaching statistical significance, the actual difference in expectation and perception mean scores between males and females was small. Age group >73 years of age had statistically significantly higher expectations compared with other age groups in 3 dimensions. The Eta squared statistics for these dimensions were 0.04 showing a small difference. University graduate patients' have statistically significantly higher expectations than others in tangible ($p=0.002$) and reliability ($p=0.000$) dimensions. The Eta statistics for these dimensions were 0.05 for tangible and 0.08 for reliability, showing moderate effect. The patients who have had multiple visits to outpatient services had higher expectations in empathy dimension. The Eta statistics for this dimension was 0.02, which represent a small effect. Cross tabulation of marital status and nationality revealed no significant results in all dimensions.

Table 3 - Service quality dimensions gap scores analysis.

Quality dimensions	Perception	Expectation	Gaps	t value	P-value	Rank
Tangible	3.2 ± 0.9	4.6 ± 0.56	-1.42 ± 0.99	25.02	0.000	1
Reliability	3.5 ± 0.82	4.6 ± 0.54	-1.14 ± 0.92	21.7	0.000	3
Responsiveness	3.2 ± 0.83	4.5 ± 0.6	-1.32 ± 0.97	23.9	0.000	2
Assurance	3.5 ± 0.83	4.6 ± 0.54	-1.1 ± 0.95	20.2	0.000	4
Empathy	3.9 ± 0.84	4.7 ± 0.53	-0.76 ± 0.91	14.6	0.000	5
Total	3.4 ± 0.71	4.59 ± 0.5	-1.2 ± 0.8	26.3	0.000	

Table 4 - Individual statements contributing to gap scores of service quality dimensions.

Service quality attributes	Mean perception	Mean expectation	Gap	Rank	t-value	P-value
<i>Tangible</i>	3.2 ± 0.9	4.6 ± 0.56	-1.42 ± 0.99			
Well maintained equipment	3.3 ± 1.15	4.6 ± 0.64	-1.28 ± 1.28	4	17.5	0.000
Clean waiting facilities	3.1 ± 1.3	4.6 ± 1	-1.5 ± 1.4	3	18.6	0.000
Neat professional appearance	3.9 ± 0.96	4.57 ± 0.62	-0.67 ± 1	6	11.7	0.000
Comfortable room	3.4 ± 1.2	4.5 ± 0.67	-1.15 ± 1.3	5	15.5	0.000
Clean toilet	2.9 ± 1.4	4.7 ± 0.7	-1.76 ± 1.5	2	20.5	0.000
Prompt services	2.45 ± 1.3	4.6 ± 0.7	-2.13 ± 1.5	1	24.2	0.000
<i>Reliability</i>	3.5 ± 0.82	4.6 ± 0.54	-1.14 ± 0.92			
Doctor/staff should be pleasant	3.7 ± 1	4.6 ± 0.68	-0.84 ± 1.1	4	12.8	0.000
Error free record	3.3 ± 1.1	4.6 ± 0.6	-1.3 ± 1.3	1	17.9	0.000
Punctual at clinic	3.4 ± 1.2	4.6 ± 0.62	-1.2 ± 1.2	2	16.3	0.000
Adequate medical examination time	3.35 ± 1.2	4.6 ± 0.6	-1.2 ± 1.35	3	16.1	0.000
<i>Responsiveness</i>	3.2 ± 0.83	4.5 ± 0.6	-1.32 ± 0.97			
Easy appointment system	2.75 ± 1.4	4.62 ± 0.64	-1.87 ± 1.5	1	21.2	0.000
Prompt responsive to any query	3.7 ± 1	4.62 ± 0.66	-0.88 ± 1.1	5	13.42	0.000
Waiting time not >30 min	3 ± 1.35	4.34 ± 0.94	-1.3 ± 1.6	3	14.7	0.000
Prompt service of OPD reception desk	2.9 ± 1.3	4.4 ± 0.82	-1.5 ± 1.5	2	17.8	0.000
Easy and adequate medical information to patients	3.7 ± 1	4.7 ± 0.6	-0.98 ± 1.1	4	15.01	0.000
<i>Assurance</i>	3.5 ± 0.83	4.6 ± 0.54	-1.1 ± 0.95			
Good professional knowledge	3.7 ± 0.98	4.62 ± 0.62	-0.94 ± 1	4	15.02	0.000
Courteous OPD staff	3.5 ± 1.2	4.5 ± 0.7	-0.99 ± 1.3	2	13.1	0.000
Feel confident and safe	3.6 ± 0.98	4.6 ± 0.6	-0.96 ± 1.1	3	15.3	0.000
Error free services	3.1 ± 1.2	4.6 ± 0.6	-1.5 ± 1.3	1	19.5	0.000
<i>Empathy</i>	3.9 ± 0.84	4.7 ± 0.53	-0.76 ± 0.9			
Treated with dignity and respect	3.9 ± 1	4.7 ± 0.55	-0.76 ± 1.1	2	12.5	0.000
Understand the specific need of patient	3.8 ± 0.99	4.6 ± 0.6	-0.83 ± 1.1	1	12.9	0.000
Privacy should be observed	3.96 ± 0.99	4.7 ± 0.6	-0.7 ± 1	3	11.2	0.000

Value are presented as mean ± standard deviation. OPD - outpatient department

Discussion. This study addressed the service quality gaps in all 5 dimensions after taking the views of patients on what they observed during a visit to the outpatient department during the study period. The study also defined the association between service quality gaps and demographic profiles of patients. The proposed quality model has shown strong evidence of unidimensionality and reliability. The 2 scales showed good validity as 2 separate measures, patients' expectations, and perceptions of outpatient services. The study results identified that these 2 scales can be successfully implied to evaluate the extent of service quality gap. Therefore, all the 5 service quality dimensions of SERVQUAL appear to be highly suited for monitoring the expectations and perceptions of patients concerning the outpatient service quality in hospital. Chan et al's²² study recommended 5-10 participants per estimated parameters. There were 19 estimated parameters in our study revealed by confirmatory factory analysis.²² Our study sample of 306 yielded meaningful and interpretable results. The present study using Parasuraman et al's^{10,11} SERVQUAL showed that patients' expectations (4.59 ± 0.5) were more than the perceptions (3.4 ± 0.7) of the provided services across all dimensions, possibly reflecting the new paradigm of

increasing patients' expectations and demand for good quality care. Butt and de Run,²³ Anbari and Tabaraie,²⁴ and Bahadori et al²⁵ produced similar results in all service quality dimensions, in line with our results. Comparison of service quality gap scores suggested that the highest gap as far as patients' assessment of service quality was in the tangibility dimension (-1.42 ± 0.99) followed by responsiveness (-1.32 + 0.97), reliability (-1.14 ± 0.92), assurance (-1.1 ± 0.9), and empathy (-0.7 ± 0.9). Zarei et al's²⁶ study conducted in private hospitals in Iran showed the highest average score for tangible dimension (environmental quality) and lowest average score in empathy dimension (interaction quality). Ramez²⁷ study ranked reliability as the highest and assurance the lowest service quality dimension. Abu Kharmeh²⁸ identified responsiveness as the most important dimension, and reliability as the least important dimension. Adebayo et al²⁹ study observed the highest service quality gap in assurance and positive gap in empathy dimensions, indicating expectations are met in this dimension among the patients attending the dental clinic. Bahadori et al²⁵ mentioned the largest gap in empathy and smallest gap in tangibility in contrast to our study results.

Table 5 - Patients' demographic characteristics and gap scores of service quality dimensions.

Characteristics	Quality dimensions				
	Tangible	Reliability	Responsiveness	Assurance	Empathy
<i>Gender</i>					
Male	-1.27 ± 0.99	-1.03 ± 0.92	-1.32 ± 1	-1.1 ± 0.95	-0.7 ± 0.9
Female	-1.65 ± 0.94	-1.31 ± 0.9	-1.32 ± 0.91	-1.15 ± 0.93	-0.86 ± 0.8
F-value	11.1	6.8	0.002	0.6	2.04
P-value	<0.001	<0.01	0.96	0.44	0.153
<i>Marital status</i>					
Single	-1.6 ± 0.9	-1.31 ± 0.9	-1.31 ± 0.9	-1.2 ± 0.9	-0.8 ± 0.8
Married	-1.4 ± 1	-1.1 ± 0.93	-1.33 ± 0.98	-1.1 ± 0.9	-0.7 ± 0.9
Divorced	-1.9 ± 1.2	-1 ± 0.7	-1.2 ± 0.86	-0.2 ± 0.46	-0.6 ± 0.4
Widowed	-1.3 ± 1.03	-1.1 ± 0.6	-1.2 ± 0.85	-1.6 ± 1.2	-0.7 ± 0.74
F-value	1.1	0.8	0.04	1.7	0.24
P-value	0.362	0.5	0.99	0.2	0.8
<i>Age, years</i>					
≤30	-1.46 ± 0.95	-1.24 ± 0.9	-1.24 ± 0.93	-1.04 ± 0.91	-0.75 ± 0.9
31-44	-1.4 ± 1	-1.45 ± 1	-1.45 ± 1.04	-1.22 ± 1.03	-0.8 ± 0.9
45-58	-1.3 ± 0.9	-1.2 ± 0.8	-1.2 ± 0.8	-0.96 ± 0.8	-0.6 ± 0.9
59-72	-1.5 ± 1.1	-1.34 ± 0.85	-1.3 ± 0.8	-0.8 ± 0.6	-0.033 ± 0.7
>73	-2.2 ± 0.7	-3 ± 0.8	-3 ± 0.8	-2.5 ± 0.0	-1.8 ± 0.2
F-value	0.47	2.9	2.7	2.3	3.1
P-value	0.76	0.02	0.03	0.06	0.02
<i>Education level</i>					
Primary	-0.7 ± 0.9	-0.6 ± 0.8	-1.3 ± 0.97	-0.9 ± 0.1	-0.7 ± 0.8
Elementary	-1.5 ± 0.8	-0.8 ± 0.7	-1.25 ± 1.1	-1.1 ± 0.9	-0.6 ± 1
Secondary	-1.3 ± 1	-1 ± 0.9	-1.2 ± 0.19	-1 ± 0.9	-0.7 ± 0.9
University	-1.6 ± 0.96	-1.45 ± 0.9	-1.5 ± 0.9	-1.3 ± 0.9	-0.9 ± 0.9
F-value	5.2	8.2	1.9	1.9	1.8
P-value	0.002	0.000	0.13	0.13	0.14
<i>Nationality</i>					
Saudi	-1.43 ± 1	-1.14 ± 0.9	-1.3 ± 0.97	-1.1 ± 0.9	-0.8 ± 0.9
Non-Saudi	-0.33 ± 0.5	-0.4 ± 0.5	-1.14	-0.9 ± 1.2	-0.5 ± 0.7
F-value	2.4	1.4	0.22	0.11	0.16
P-value	0.121	0.239	0.64	0.74	0.7
<i>Type of visit</i>					
First visit	-1.4 ± 1.1	-1.01 ± 0.97	-1.13 ± 0.9	-1 ± 1.1	-0.4 ± 0.8
Multiple visit	-1.42 ± 1	-1.15 ± 0.9	-1.34 ± 0.97	-1.1 ± 0.9	-0.8 ± 0.9
F-value	0.09	0.52	1.15	0.3	4.8
P-value	0.76	0.5	0.3	0.6	0.03

F - functional analysis of variance test, $P < 0.05$ indicates significant level

The hospital physical environment plays an important role in improving the service quality, an attractive outpatient environment, and suitable outpatient services are considered one of the most important reasons for patients coming to the hospital. Previous studies^{23,26,30} reported that the highest expectations and perceptions were observed in the tangible dimension, as it is concerned with the physical infrastructure of care at private hospitals in Jordan, Saudi Arabia, Iran, and Malaysia. The statement 6, services should be prompt at appointment time achieved this highest quality gap score (-2.13 ± 1.5) among all the statements. Toilet cleanliness achieved the second priority in tangible dimension. Zarei et al's²⁶ study revealed that the quality of tangible factors have no significant influence on

patients' trust. Ramirez et al's³¹ study observed the strong impact of physical environment on the service quality. The gap in the tangible dimension is a wake up call for hospital management to drastically improve the physical environment of outpatient services.

Responsiveness refers to the level of receptiveness, openness, sensitivity, and awareness of staff in the outpatient department. The highest quality gaps between expectations and perceptions were observed for the necessity of an easy appointment system (-1.87 ± 1.5) followed by OPD reception desk are not answering outside calls promptly (-1.5 ± 1.5). This dimension has the lowest perceptions compared with other dimensions, threatening the hospital's ability to achieve patients' satisfaction. Ali et al's³² study observed

the lowest perception scores in this dimension similar to our study; however, high negative service quality gap scores rated this as the top dimension in contrast to our results that showed this dimension rated as second after the tangible dimension.

Reliability refers to dependability and steadiness of service. The highest gap observed that outpatient department is not maintaining an error-free record (-1.3 ± 1.3). This result is in contrast to Chakravarty³³ study that showed zero gap in this statement indicating services are accurate and dependable. However, statistically significant quality gaps occurred across all the statements ($p < 0.000$).

Assurance refers to guarantee that outpatients will receive a particular level of service. The highest gap scores (-1.5 ± 1.3) observed that services are not carried out right at the first time. The gap between patients' expectations and perceptions in other statements were statistically significant ($p < 0.000$). Adebayo et al's²⁹ study reported highest service quality gap in this dimension contrary to our study results. Marzban et al's³⁴ study revealed that assurance dimension was considered as the most significant dimension with highest scores in contrast to our study results.

Empathy refers to the level of understanding, sympathy, and compassion given by the staff in the outpatient department. The highest expectations (4.7 ± 0.53) and perceptions (3.9 ± 0.84) were observed across all the statements in this dimension. The smallest quality gap scores were identified in the statements indicating that patients' expectations are nearly met as the patients' perceived that they have been treated with full privacy and dignity, and the outpatient staff understood their needs. Anbari et al's²⁴ study observed the highest perception scores in this dimension similar to our study; however, negative gap scores rated third compared with our results that rated this dimension last among other dimensions.

The results of our study showed a significant association between gender and mean scores gap in tangible and reliability dimensions. The female expectations were higher across these dimensions than the male. There was a significant association between age groups and reliability, responsiveness, and empathy dimensions. The age group >73 years has higher expectations in all dimensions, but a significant difference was observed in reliability ($p = 0.02$), responsiveness ($p = 0.03$), and empathy ($p = 0.02$) dimensions compared with other age groups. Bahadori et al's²⁵ study showed no such association. The quality gap in patients' expectations with university education was higher than other group in tangibility and reliability dimensions. The patients who made multiple visits to

outpatient services have higher expectations related to empathy dimension, as to be treated with honor in contrast with Adebayo et al's²⁹ study shows frequency of dental visit and gender had no statistically significant association to quality gaps analyzed. Kavitha's³⁵ study conducted in India to determine the factors influencing service quality gap observed no association between age, gender, education, and occupation in contrast to our results.

Study limitations. 1) study design is cross-sectional, longitudinal study evaluates better understanding of variables analyzed as the patient may change opinions over a period of time, 2) this study involves only outpatient services and sampling technique was convenient sampling, limiting the generalizability of results. We excluded inpatients and providers' perspectives, 3) study was confined to a hospital serving a special population not the general or private public, and 4) the study did not determine the association between service quality dimensions, and overall satisfaction. Although our study was cross-sectional and based on one population, our findings have merit as we performed confirmatory factor analysis using large sample size and with a broad variety of indices to judge the fitness of model to the data and assessed its reliability for measuring service quality.

In conclusion, the analysis of our study results revealed areas in which outpatient services are close to achieving the patients' expectations, and areas in which outpatient services are short of expectations. The 3 most significant service quality gaps of patients were related to outpatient environment, promptness of services, and reliability of outpatient services. In the present study, expectations are higher than the perceptions of provided service quality, suggesting room for improvement in all quality dimensions. A gap in one dimension can have a synergistic effect on other dimensions of service quality, and leads to a decrease in those dimensions. Therefore, aside from focusing on dimensions with the largest gap, hospital management the service providers should consider the improvement of other dimensions. Finally, it provides support to the idea that although difficult, service quality in the healthcare sector can be measured and consequently be monitored to identify gaps and take corrective actions whenever possible. This study can be further extended to include the association between overall satisfaction and service quality dimensions. The views of inpatients and service providers should also be considered in future studies. It should be kept in mind that the patients' perceptions and expectations for service quality cannot be collected by one instrument; therefore, it is important to conduct qualitative research

along with quantitative method to better understand the complexity of service quality in future studies.

Acknowledgment. We would like to thank the hospital director and other associated staff who enable this study to be completed on time. We thank to Jasser Al-Shehri, Amal Jishi, Fahad Al Manjoumi, and Wafa Al Muhawish for data collection, and Abrar K. Barshaid for data entry.

References

1. Marković S, Lončarić D, Lončarić D. Service quality and customer satisfaction in the health care industry - towards health tourism market. *Tourism and Hospitality Management* 2014; 20: 155-170.
2. Al-Borie HM, Damanhouri AM. Patients' satisfaction of service quality in Saudi hospitals: a SERVQUAL analysis. *Int J Health Care Qual Assur* 2013; 26: 20-30.
3. Yesilada F, Direktor E. Health care service quality: A comparison of public and private hospitals. *African Journal of Business Management* 2010; 4: 962-971.
4. Brahmabhatt M, Baser N, Joshi N. Adapting the SERVQUAL scale to hospital services: An empirical investigation of patients' perceptions of service quality. *International Journal of Multidisciplinary Research* 2011; 1: 27-42.
5. Bowling A, Rowe G, McKee M. Patients' experiences of their healthcare in relation to their expectations and satisfaction: a population survey. *J R Soc Med* 2013; 106: 143-149.
6. Kumaraswamy S. Service quality in health care centres: An empirical study. *International Journal of Business and Social Science* 2012; 3: 141-150.
7. Kayral HI. Perceived Service quality in healthcare organizations and a research in Ankara by hospital type. *Journal of Ankara Studies* 2014; 2: 22-34.
8. Li M, Lowrie BD, Huang YC, Lu CX, Zhu CY, Wu HX, et al. Evaluating patients' perception of service quality at hospitals in nine Chinese cities by use of SERVQUAL scale. *Asian Pac J Trop Biomed* 2015; 5: 497-504.
9. Gronroos C. A service quality model and its marketing implications. *European Journal of Marketing* 1984; 18: 36-44.
10. Parasuraman A, Zeithaml VA, Berry I. A conceptual model of service quality and its implications for future research. *Journal of Marketing* 1985; 49: 41-50.
11. Parasuraman A, Zeithaml VA, Berry I. "SERVQUAL: multiple item scale for measuring consumer perceptions of service quality." *Journal of Retailing* 1988; 64: 12-40.
12. Parasuraman A, Zeithaml VA, Berry I. Refinement and reassessment of the SERVQUAL scale. *Journal of Retailing* 1991; 64: 12-40.
13. Israel GD. Sampling the evidence of extension program impact. Program evaluation and organizational development, IFAS, University of Florida. [Updated 1992 October; 2015 September]. Available from URL: <https://edis.ifas.ufl.edu/document%20pd005>
14. Sulisworo D, Nora M. Integrating Kano's Model and SERVQUAL to improve healthcare service quality. [Cited 2015 October]. Available from URL: https://www.researchgate.net/publication/277759782_Integrating_Kano's_Model_and_SERVQUAL_to_Improve_Healthcare_Service_Quality
15. Resnick SM, Griffiths MD. Service quality in alcohol treatment: a research note. *Int J Health Care Qual Assur* 2011; 24: 149-163.
16. Cohen JW. Statistical power analysis for the behavioral sciences. 2nd ed. New York (NY): Erlbaum; 1988.
17. George D, Mallery P. SPSS for Windows step by step: A simple guide and reference. 11.0 update. 4th ed. Boston (MA): Allyn & Bacon; 2003.
18. Byrne BM. Structural equation modeling with EQS and EQS/Windows. Thousand Oaks (CA): Sage Publications; 1994.
19. Hair JF, Black B, Babin B, Anderson RE, Tatham R. Multivariate data analysis: a global perspective. 7th ed. New Jersey (NJ) Pearson Education Inc.; 2010.
20. Afthanorhan W, Ahmad S, Mamat I. Pooled confirmatory factor analysis using structural equation modeling on volunteerism program: A step by step approach. *International Journal of Asian Social Science* 2014; 5: 642-653.
21. Fornell C, Larcker DF. Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research* 1981; 18: 39-50.
22. Chan F, Lee K Gloria, Lee J E, Kubota C, Allen A C. Structural equation modeling in rehabilitation counseling research. *Rehabilitation Counseling Bulletin* 2007; 51: 53-66.
23. Butt MM, de Run CC. Private healthcare quality: applying a SERVQUAL model. *Int J Health Care Qual Assur* 2010; 23: 658-673.
24. Anbari Z, Tabaraie Y. Measurement of quality of hospital services via SERVQUAL Model. *Bull Env Pharmacol Life Sci* 2013; 3: 51-56.
25. Bahadori M, Raadabadi M, Jamebozorgi HM, Salesi M, Ravangard R. Measuring the quality of provided services for patients with chronic kidney disease. *Nephrourol Mon* 2014; 6: e21810.
26. Zarei E, Daneshkohan A, Khabiri R, Arab M. The effect of hospital service quality on patient's trust. *Iran Red Crescent Med J* 2015; 17: 2-5.
27. Ramez WS. Patients' Perception of Health Care Quality, Satisfaction and Behavioral Intention: An Empirical Study in Bahrain. *International Journal of Business and Social Science* 2012; 3: 131-141.
28. Abu-Kharmeh SS. Evaluating the quality of health care services in the Hashemite Kingdom of Jordan. *International Journal of Business and Management* 2012; 7: 195-205.
29. Adebayo ET, Adesina BA, Ahaji LE, Hussein NA. Patient assessment of the quality of dental care services in a Nigerian hospital. *Journal of Hospital Administration* 2014; 3: 20-28.
30. Al-Hawary SI. Health care services quality at private hospitals, from patients' perspective: A comparative study between Jordan and Saudi Arabia. *African Journal of Business Management* 2012; 6: 6516-6529.
31. Ramirez FC, Pineda MD. Post behavioral perceptions of service quality in a service setting; Private hospital in México. *American International Journal of Social Science* 2014; 3: 37-40.
32. Ali M, Hamid A, Emadi A. Measuring and improving the quality of health care services based on patient satisfaction with provided services (improved SERVQUAL model). *Journal of Applied Environmental and Biological Sciences* 2015; 5: 291-294.
33. Chakravarty A. Evaluation of service quality of hospital outpatient department services. *Medical Journal Armed Forces India* 2011; 67: 221-224.
34. Marzban S, Najafi M, Etedal MG, Moradi S, Rajae R. The evaluation of outpatient quality services in physiotherapy in the teaching health centers of Shahid Beheshti University based on SERVQUAL tools. *European Journal of Biology and Medical Science Research* 2015; 3: 46-53.
35. Kavitha R. Factors Influencing the Service Quality Gap between Expected Service and Perceived Service- A Study of Sri Gokulam Hospitals., Salem. *International Journal of Business and Management Invention* 2012; 1: 30-36.