Adapting the Servqual Scale to a Private Hospital Emergency Services: An Empirical Investigation[*]

Luis E. Ibarra, Vanessa Casas M , Ana L. Partida
Universidad Estatal de Sonora, Hermosillo, México

Most of the time, clients only have one opportunity to evaluate a service received in terms of quality and satisfaction; under this premise organizations have been concerned with developing, in a permanent manner, a quality evaluation culture in the services offered to their clients. To do this, procedures and methods that let them achieve it, have been implemented. That is the case of the model that concedes to measure and evaluate service quality, which is redefined and named Servqual, considering a multidimensional theoretical construct that explains the client's perception of quality service considering the differences between what is expected and what is received. Therefore, the goal of this study is to identify the factors that define the quality of emergency services provided by a private hospital in Hermosillo, Sonora, México, a sample of 384 patients, with a confidence level of 95% and a margin of permissible error of 5%. A questionnaire with 22 items was applied to measure the perceptions and expectations of users in terms of the quality of the service, which was subjected to an extensive evaluation of reliability and construct validity, with an estimate Cronbach's alpha of 95.6% and 97.9% respectively. The results showed that Servqual is a valid, reliable, and dependable instrument to monitor and measure the quality of the services offered in private hospitals in Hermosillo, and permit hospital administrators to identify opportunities or improvement areas, from the patients' perspective.

Keywords: methodology Servqual, quality of service, level of satisfaction, perceptions and expectations of the users

Introduction

The World Health Organization (WHO) recognizes the following as basic components in health care quality: a high grade in professional excellence, an efficient use of resources, minimal risks to patients, clients' satisfaction and getting health back. Hospitals' emergency services, despite the characteristics that differentiate them from other levels and care services, cannot be left out from evaluation and quality control. Patient's care in an emergency unit is under a continuous scrutiny and evaluation, probably more than other medical units, by

patients along with doctors that will take care of the patients, once they are discharged from the emergency unit. This culture of continuous self-evaluation and external evaluation, far from representing a difficulty, constitutes an opportunity to put in place programs of quality evaluation concerning the care delivered in those services (Felisart, Requena, Roqueta, Saura, Suñol, & Tomás, 2001).

All the professionals in an emergency unit are involved, in a greater or lesser degree, in improving quality; even though the technical quality in care service is essential, there are other conditions, not in a lesser degree, which influence in a very decisive manner the way the patient and companions perceive the quality; such as giving the certainty that the organization is efficient, an adequate attention, and that the information constantly delivered during the process is reliable.

Patients must feel, as part of the health system that the assistance they receive in a hospital is coordinated, efficient, and guaranteed. Thereby, searching for an efficient operation in the health service and particularly in hospitals leads to finding instruments and quality models more efficient. In that manner, measuring quality service is a matter of discussion and research by experts in the field; however, most of the authors pointed that the studies were initiated by Parasuraman, Zeithaml, and Berry (1982, 1985, 1988), where Servqual (SERVice QUALity) was validated as the model with the most diffusion and application for measuring quality service.

The main objective of this investigation is to identify the factors that determine the quality in the emergency care unit offered by a private hospital in the city of Hermosillo, Sonora, México; as well as to divulge the results from the study that examined the usefulness of Servqual scale adapted to hospital services, to prove if the five dimensions are evaluated, considering if the patients' perceptions and expectations are influenced in the satisfaction level, linked to the quality of the service received. This fact, combined with authors' concerned in evaluating the service offered by the emergency unit of an acknowledged private hospital in Hermosillo, Sonora, leads to the current investigation.

With this objective in mind, this investigation begins by doing a literature review about the antecedents of quality service concept, quality perception, expectations made, patients' satisfaction and reliability, in conjunction with Servqual model and scale designed by Parasuraman et al. (1982, 1985, 1988) and adapted for the investigation realized in the private hospital, specifically in the emergency care unit. Next, the methodology applied in the study is explained, the different hypothesis and the empirical contrast of them are elaborated. The research concludes with the main outcomes reached from the questionnaires applied to an aleatory sample calculated from the universe subject of the study. Along with conclusions there are implications for the responsibilities of quality service of the emergency unit.

Relevant Literatures and Research Models

Literature of service marketing, quality and satisfaction has been always a basic pillar to determine client's loyalty (Setó, 2005). The implementation of a quality management's strategy in the service area becomes arduous, given the problems established by the definition and measurement of quality in that sector. Among the models developed by researchers, the pioneer work of Parasuraman et al. (1982, 1985, 1988) can be considered as the one with the most important aftereffect.

The model defines service quality as a fact of the difference between clients or consumers' expectations about the service they expect, and the perception of the service given by the organization or company. The authors of the model proposed that as factors of quality service, five dimensions make reference to tangible elements, even though services are intangible. The elements considered sufficient to affect client's perception

are the facilities where the service takes place, personnel presence, immaculacy, uniformity, quality in support resources, communication and diffusion, facilities and infrastructure usefulness, and the equipment used: reliability, meaning if the service received matches the one expected and if it fits the sector's standards; the same way, it considers the ability to fulfill the service promised in a reliable and careful manner; response competence, according to company's ability to deal in an effective and rapid way with the client's questions, complaints or requests; confidence, understood as the believability in the service given by employees; as well as their knowledge, care and abilities to inspire reliability; and the empathy shown at the moment of adapting the service to each client in particular, through a personal attention.

According to Reeves and Bednar (1994), quality has adopted multiple approaches that coexist at the present time (excellence approach, canon's adjustment, value and satisfaction to client's expectations) presenting in the industry sector, as well as in the service. For Albacete (2005), in Albacete, Fuentes, and Lórens (2007) and García (2001), quality has evolved along with economy. Service sector development has boosted the development of a new quality concept with reference to client's point of view.

Nowadays, client's attitude, behavior and emotional aspects have taken relevance in the analysis of quality service, and variables, as expectations and perceptions have been incorporated, while numerous investigators, such as Albacete et al. (2007), Grönroos (1984) and Santomá (2004), consider the client as the main element, the judge and axis of quality. Therefore, quality service can be measured as the difference between the value expected and the value received by the client (Kotler, Bowen, & Makens, 2005). For Pizam and Ellis (1999), client's satisfaction is the main criteria when it refers to determine products or service quality, and is the key for the perdurability of a company, since it is the client's decision to repeat the service experience and the multiplier effect, in marketing terms, "word-of-mouth". According to Kotler and Armstrong (2003), quality is linked to client's value and satisfaction. In a wider context meaning, quality is defined as the total aspects and characteristics of a product or service related in their ability of satisfying client's needs. Along with Kotler et al. (2005), quality goes beyond the concept of having no defects. Quality begins with client's needs (what is expected) and ends with client's satisfaction (perceived value).

In relation to the entailment between quality service and client's satisfaction and taking into consideration that satisfaction level is a direct, easy, and inexpensive manner of measuring expectation's complaisance, client's needs and wishes, and that according to specialists like Hoffman and Bateson (2002) and Zeithaml and Bitner (2002), Parasuraman et al. (1988), service quality incises on client's satisfaction and vice versa, before emitting any asseveration about investigate quality service, it is required to investigate about the satisfaction levels of the service received.

In agreement to Setó (2005), some of quality service measurement models more pervaded are the model of differences between expectations and perceptions, the five dimensions of service model, gaps model of service quality, Servqual scale designed by the investigators like Parasuraman et al. (1985), diffused in numerous publications, and the Servperf scale designed by Cronin and Taylor (1994). Besides, the Servqual methodology is based on direct surveys applied to customers and incorporates quantitative and qualitative aspects. For these reasons, in the present study it was considered pertinent that the application of that method to measure the service quality of the emergency care unit of a private hospital in Hermosillo, Sonora.

Quality studies in the health care sector are unanimous considering that even aspects like accessibility, scientific-technical efficiency or quality can be measured, no study will be completed if the differences between expectations and real perception of a service are not analyzed (Niedz, 1998; Neto, 2000; Vinagre & Neves,

2008). Thus, studies to measure the quality perceive of a service in the health sector have been done from the analysis of client's satisfaction level, methodology has evolved from surveys of dubious credibility to factorial studies with important foundation of statistics (Lee, Delene, Bunda, & Kim, 2000; Crow, Gage, Hampson, Hart, Kimber, Storey, & Thomas, 2002; Moret et al., 2007).

Taking it from there, it is important to define what an emergency medical attention is, which is offered to a patient in the cases when their medical condition requires an immediate attention. For the present study an emergency service is granted in the private hospital in Hermosillo, Sonora. Quality in emergency care units demands a special attention, referring to the services offered. The support given to patients is related directly to their emotional state; as well as other aspects like approachability, kindness, and specially quality service. Niedz (1998) assured that a well managed health service requires the involvement of all the team members of the emergency care unit. Thus, service management focusing on quality must be favored, oriented to patient's engagement and welfare, avoiding clinical risks and spreading a safety culture, in the context of improving the medical practice (Neto, 2000).

Quality is considered as a key factor in the differentiation and excellence of a service, and a potential source of competitive advantage for its comprehension, measurement, and improvement, which are important challenges for the health department in all organizations (Karassavidou, Glaveli, & Papadopoulos, 2009). Hospitals provide similar services with different quality. Quality can be used as a strategic differentiation to establish a competitive distinction that will be difficult to follow or copy by their competitors. Many researchers have emphasized the relevance of quality when patients choose a hospital; as well as their satisfaction and favor. They assure that quality improvement in hospital's services will increase the number of satisfied patients, and therefore, patients' loyalty. Quality in health services implies two dimensions: functional quality (results' quality) and technical quality (process' quality).

The technical quality focused on procedures and medical diagnosis' accuracy, while functional quality refers to the manner in which health services are delivered to patients (Lin, Xirasagar, & Laditka, 2004). Since most of the patients do not have the required knowledge to evaluate the technical quality of the service, their evaluation is based on medical attention quality (Lam, 1997).

As mentioned previously, there are different methods to determine patients' expectations and the way they are achieved. However, the Servqual model, developed by Parasuraman et al. (1985), is one of the best and most used models to evaluate client's expectations and their perception about service quality. In this model, quality is equivalent to the output minus expectations. Servqual is based on the premise that the quality is a client's subjective evaluation; a service is not a physical exam, but an experience.

Therefore, client's perception is the best comparative with other performance measurements (Pakdil & Aydin, 2007). Servqual is useful to show the difference between patients' preferences and their real experience, and emphasizes the areas that need improvement. Service quality analysis allows hospitals to manage administration for the financial resources, and with this, improve the performance in the required areas according to clients' perception (Lim & Tang, 2000).

Servqual scale, considering the five dimensions of quality service (reliability, assurance, tangible, empathy and responsiveness) includes 22 items that pretend to gather and measure with six level scale expectations of an excellent service and then collect the perceptions over the same dimensions of the service delivered. Once that expectations' calculation and patients' perceptions are obtained, an analysis is realized, applying the methodology used by Parasuraman et al. (1982), for Servqual scale, where perceptions and expectations of the

service are compared for each one of the 22 items.

These differences are known as Servqual ratings, as is shown in Table 1, which were calculated for each one of the patients that were attended at the emergency care unit and were subject of the questionnaire, as well as for each one of the 22 items established in the Servqual scale.

Table 1

Servqual Model Ratings

Servqual ratings: Service perception – Service expectation		
Servqual rating	= 0	There is quality service.
Servqual rating	> 0	There is an excellent or extraordinary quality level.
Servqual rating	< 0	There is a deficit or lack of quality (deficient quality).

Source: From Parasuraman et al. (1982).

As it can be observed in Figure 1, the general adjustment (Gap 5) can be consequence of four adjustments (Gap 1, Gap 2, Gap 3, and Gap 4). The Servqual model has become of interest for a great number of researchers Ekinci, Riley, and Fife-Schaw (1998).

The model expression

$$\text{Gap } 5 = f \text{ (Gap1, Gap2, Gap3, Gap4)} \tag{1}$$

Where:

Gap 1: between consumer expectation and management perception;

Gap 2: between management perception and service quality specification;

Gap 3: between service quality specification and service delivery;

Gap 4: between service delivery and external communication;

Gap 5: between expected service and experienced service.

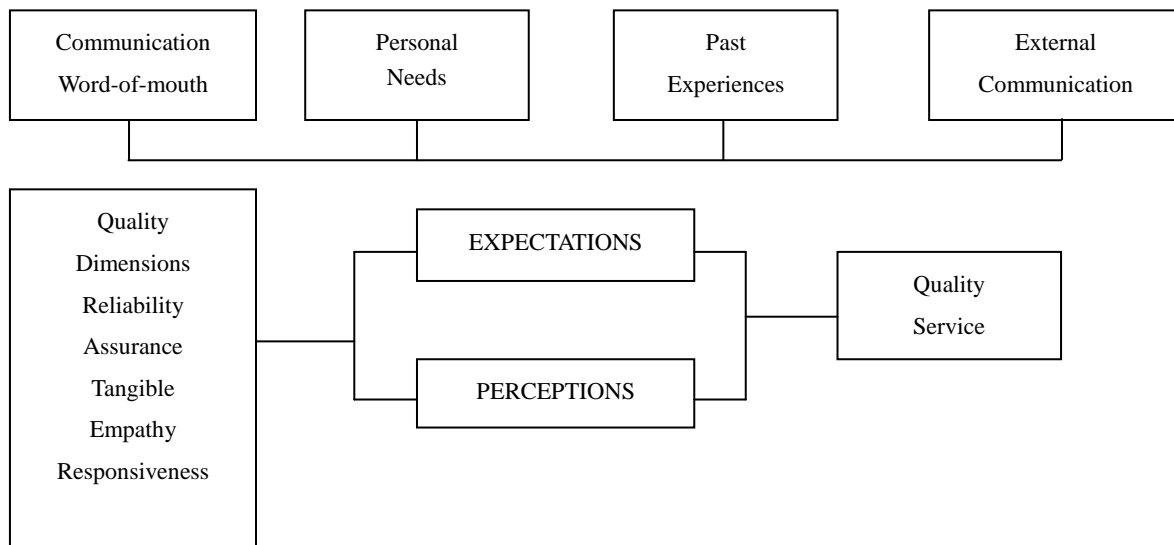*Figure 1.* Service quality model. Source: a conceptual model of service quality (Parasuraman et al., 1982).

In this model it is established that clients expect a service (expectations) and is supposed to receive it. Conscious and unconscious clients evaluate some characteristics (service dimensions) during the performance of the service, which gives an impression of it (perception) and emits a judgment once it is concluded.

On one hand, client's perception comes from the fact that he has real needs, even sometimes, he is not aware of them. These needs are perceived by the system for the later service accomplishment. Some systems are able to identify clients' real needs, while others only perceive the needs that client is aware of. On the other hand, expectation is what client expects from a service; this expectation is found by the communication word-of-mouth, external information, past experiences and conscious needs.

For this reason, Servqual is one of the main information sources for companies to recognize clients' level satisfaction, to detect opportunity areas, propose, and implement improvements to have satisfied clients. Clients' satisfaction is very important for organizations, for that reason they have started to find the manner to improve it by offering a quality service to keep up with other companies and maintain clients' loyalty (Ibarra, Casas, & Partida, 2013)

Research Design

Objective of the Research

It is to identify the factors that determine the quality service in the emergency care unit offered by a private hospital in Hermosillo, Sonora, México considering the Servqual method, and to prove if the five dimensions evaluated influence the patients' satisfaction level.

Hypotheses

H1: Patient's quality perception of a service delivered increases his satisfaction level.

H2: Patient's satisfaction of an emergency service delivered has a positive effect on hospital quality's perception.

Methods

To achieve the objective of this study, an investigation with observational, descriptive, transversal, and correlation approaches was designed. Data was collected from questionnaires applied in the emergency care unit of a private hospital in Hermosillo, Sonora, where the service offered from January to March 2014 was evaluated.

Sampling

The study population was composed by 456,209 people, 18 years or older, residents of Hermosillo, Sonora. The sample obtained was probabilistic type according to the formula of sample size for finite population and was composed by 384 patients that were checked into the emergency care unit of the private hospital. Two groups of study were conformed to measure the expectations and perceptions about the service quality delivered in the emergency unit, to whom a questionnaire was applied, as detailed next.

To 384 patients "in situ" in the emergency care unit of the private hospital subject of this study, with an attention no longer than 24 hours and that were willing to participate in the study and, 384 people randomly selected, with the determinant of having received a service in the emergency care unit in some of the five private hospitals located in Hermosillo, the sample selection for each group was made through a simple random probability sampling.

The selection criteria were:

(1) Men and women 18 years or older;

(2) Residents of Hermosillo, Sonora;

(3) People that have been hospitalized and attended in the emergency care unit of the private hospital in

the town of study.

Samples were selected randomly and the questionnaires were applied to each one of the patients the same day of admission and stay in the emergency unit. The purpose of the questionnaire was explained to the patients, and privacy and confidentiality of the information given was assured. Finally, a total of 768 questionnaires were applied to patients and clients of the emergency care unit (Response rate = 100%).

$$n = \frac{N * Z_a^2 * p * q}{d^2 * (N - 1) + Z_a^2 * p * q} \quad (2)$$

where:

N = Population size;

Z = Confidence level;

p = Probability of success;

q = Probability of failure;

d = Maximum permissible error.

It is important to mention that, according to Santesmases (2009), the size of users' sample for finite populations, considering an error of 5%, with a confidence interval of 95% and attribute-level heterogeneity (p and q) of 50%, gives as a result a sample size of 384 clients. When probability and proportion of success are unknown, a conservative criteria has to be applied ($p = q = 0.5$), which maximizes the sample size. If the certainty of Z_α is equal to 95%, then the coefficient is 1.96.

Survey Instrument

Two questionnaires were applied, both structured by 22 items, through a random application, according to the sample obtained for patients and clients. A first questionnaire was designed to compile the perceptions of the patients that used the emergency service; a second questionnaire was designed to collect the patients' expectations that at some point have been attended in an emergency care unit in one of the five private hospitals located in Hermosillo.

Both questionnaires were subjected to tests of validity and reliability. In Table 2, results corresponding to internal consistency analysis are observed, through Cronbach's alpha coefficient, for each one of the dimensions that were evaluated and for each questionnaire (Cronbach, 1951). It is important to mention that both questionnaires were modified and adapted to hospital environment to evaluate the patients' perceptions and expectations about quality service. The five quality dimensions evaluated are: tangibles (five items), referring to appearance of physical facilities, equipment, personnel and communication materials. Reliability (four items), concerning of the capacity to deliver the service promised in a formal, serious, secure, harm free, and risk-free manner.

Responsibility and responsiveness (four items) are considered as the willing and disposition showed by the personnel to help the patient and provide them with a fast and good service. Assurance (four items), is considered as the courtesy, knowledge, professional competency, and the capacity to inspire confidence in patients and their relatives. Empathy (five items), is understood as the respect and personal care to the patient. Servqual questionnaire was translated to Spanish for its application.

To evaluate the questionnaires' reliability, an internal consistency analysis through Cronbach's alpha was made. It refers to a rating that takes values between 0 and 1, and is used to prove if the instrument that is evaluated collects faulty information, and therefore, it will lead to wrong conclusions; or if it is a reliable tool

that make consistent and stable measures (Santesmases, 2009; Ibarra et al., 2013). Within these coefficients categories, Cronbach's alpha, is without doubt, the most used by researchers. Alpha estimates the lower limit of reliability coefficient and is expressed by the following formula:

$$\alpha = \left(\frac{K}{K-1} \right) \times \left[1 - \left(\frac{\sum_i^2 S}{S_{sum}^2} \right) \right]$$

(3)

Where k is the number of test items, $\sum_i^2$ is the items variance (from $2\ldots i$) and S_{sum}^2 is the total test variance. The coefficient measures the test's reliability depending on two terms: the items number (or test length) and the test's proportion of total variance due to item covariance. This means that reliability depends on test length and item covariance (Santesmases, 2009; Ibarra et al., 2013). Therefore, Alpha is a square correlation coefficient that, broadly, measures homogeneity of questions, averaging the correlation among all the items to prove that effectively, they are alike. For this research, the two questionnaires applied to evaluate the perceptions and expectations of the emergency care unit services, gave as a result a Cronbach's alpha of 0.956 and 0.979 respectively, which means that the tools used are acceptable and, therefore, reliable; it also indicates a high reliability level, validating its use for data collection as shown in Table 2.

Table 2

Results Corresponding to Cronbach's Alpha Coefficient for Each One of the Questionnaires Applied

Survey Mean SD Cronbach's alpha			
Expectation	6.10	1.17	97.9 %
Perception	6.61	0.76	95.6 %

Alpha coefficient values for the perceptions subscales were 0.893, 0.864, 0.777, 0.862, and 0.921 for tangible, reliability, responsiveness, assurance, and empathy, respectively. Alpha coefficient values for the expectations subscales were 0.956, 0.963, 0.934, 0.897, and 0.933 for tangible, reliability, responsiveness, assurance, and empathy, respectively.

Definition and Measurement of Variables

Both questionnaires were evaluated using the Seven Points Likert's scale, codified from strongly satisfied (7) to strongly unsatisfied (1) to evaluate patient's level of perception and expectation of quality service (Likert, 1932); besides, in the perceptions questionnaire a question was included to evaluate the general scale of the service received and be able to contrast it with each dimension evaluated. In some cases, more items were included according to its importance, while others were reduced and adequate for the emergency services. Likert's scale was used, as Servqual does, because it simplifies answering the questionnaire and facilitates information's interpretation, according to Table 3. It is worth mentioning that satisfaction level values in the percentage range have been adjusted for a better distribution and requirement of the researchers.

Data analysis was realized using the software Statistical Package for the Social Sciences (SPSS v21.0). Exploratory factor analysis (EFA) was used to determine quality service dimensions. Besides, non-parametric analysis was made with Friedman and Kuskal-Wallis tests to analyze, in an ordinal level, if the data collected form patient's perceptions corresponding to the same population, having in Friedman's test results a significant statistical difference; implying that the questionnaire achieved it, given that p-value 0.000 was significant to an asymptotic level of 0.05; while for Kuskal-Wallis tests the results were similar, saying that the coefficient was significant to a 0.05 level, given a p-value of 0.000 for all the answers' groups.

Table 3

Client's Satisfaction Likert Scale (Perceptions and Expectations)

Likert level	Signification	Client's satisfaction range
1	Strongly dissatisfied	0-15
2	Somewhat dissatisfied	15-30
3	Slightly dissatisfied	30-45
4	Undecided	45-55
5	Slightly satisfied	55-70
6	Somewhat satisfied	70-85
7	Strongly satisfied	85-100

Note. Source: Adapted from Hern ández, Fern ández, and Baptista (2006).

Likewise, the Chi-square test was applied. The results obtained are discussed in the homonymous paragraph. Pearson and Spearman correlation tests were also applied among the evaluated dimensions to measure the coincidence level among the distributions observed; as well as the application of descriptive and frequency statistics for numerical and categorical variables.

The first objective of the study was to determine quality service dimensions in private hospitals in Hermosillo, from patients' perspective. Validity was established by using the EFA (EFA with Varimax rotation method) which showed that with five factors or items, the 73.18% of the total variance was explained in the perceptions' questionnaire, while 77.40% for expectations' questionnaires and that they are correlated as is shown in Table 4 for patients' perceptions. Considering the items saturation in each factor derived from the previous factorial analysis (rotated component matrix), they were nominated as follows:

(1) Factor 1. Variables association that integrates assurance and empathy dimensions, is associated and strongly related to medical attention, information facilitated by doctors, registration time, considered adequate by patients.

(2) Factor 2. The association between empathy and tangible corroborates the hypothesis that satisfaction is founded on the service's experience, while the perception of quality service is not necessarily based on experience.

(3) Factor 3. It directly focuses on reliability dimension, where variables involved are associated with attention and communication with patients.

(4) Factor 4. The association between tangible variables or elements is associated with the private hospital's equipment and emergency care unit personnel.

(5) Factor 5. Responsibility dimension is completely associated with the private hospital's responsiveness level for complementary studies in addition to the attention delivered in the emergency care unit; as well as the treasury modules.

Sample adaptation for extracting factors was accepted through Kaiser-Meyer-Olkin (KMO Measure) and Bartlett Test of Sphericity construct validity test. The results of the Bartlett Test for Sphericity were significant, showing the value ($P < 0.000$), which indicates the association among variables, and the value KMO for both questionnaires was 0.0950 and 0.975 respectively, reinforcing what explained previously, since it was proved that the studied variables are very associated and related, which permits reducing the number of factors, and therefore, becomes convenient using the questionnaire for the investigation.

Table 4

Rotated Component Matrix (Varimax) for Perceptions

Perceived	Loadings				
	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
P1		0.717			
P2		0.720			
P3				0.642	
P4				0.776	
P5				0.713	
P6			0.776		
P7			0.653		
P8			0.524		
P9			0.639		
P10					0.442
P11					0.717
P12					0.720
P13					0.728
P14	0.637				
P15	0.465				
P16	0.443				
P17	0.612				
P18		0.636			
P19		0.622			
P20	0.709				
P21	0.686				
P22	0.669				
Eigen value	11.8	1.47	1.21	0.85	0.78
% of Variance	53.62	6.67	5.48	3.86	3.55

Ethics

The present study was approved to accomplish by the managing director of the "private hospital", dated on January 14, 2014 in the city of Hermosillo, Sonora, México. In the same manner, the academic results generated from this work and information confidentiality were assured.

Results

Patient's Characteristics

From the application of the Servqual method, the main discoveries are presented in the 22 statements from the two questionnaires adapted to the private hospital, to study the differences between perceptions and expectations.

In table 5, demographic information of patients that received a service in the emergency unit during the period of questionnaire's application is shown. Gender, age range, occupation and academic studies, enhance that the average age was 42 years.

The first finding, shown below, is the weigh that respondents gave to each one of the five-quality service dimensions of the service delivered in the emergency care unit, which is presented in Table 6.

Table 6 displays that the general result of the service delivered in the emergency care unit of the private hospital was 6.61, which is equivalent to 87.87% in Likert scale's 0-100 satisfaction percentage range. It can be deduced that the service delivered is strongly satisfactory according to patient's perception.

Table 5

Patients Demographic Information

Gender	Frequency		Percentage
Male	159		41.4 %
Female	225		58.6 %
Age range (years)		Frequency	Percentage
< = 30		82	21.4
31-40		116	30.3
41-50		87	22.7
51-60		49	12.8
> = 60		49	12.8
Academic Studies		Frequency	Percentage
Primary and Secondary School		61	16.1
High School		114	30.1
Academic Degree		180	47.5
Graduate (MD; Ph.D.)		24	6.3
Occupation			
Status		Frequency	Percentage
Student		35	9.1
Employee		173	45.1
Employer		47	12.2
Retired		40	10.2
Household		78	20.3
Unemployed		7	1.8
N/A		4	1.0

Table 6

Patient Perception Service Quality Dimensions Average of the Hospital'S Emergency Care Unit (Perceptions)

	Tangible	Reliability	Responsiveness	Assurance	Empathy
Average	6.60	6.66	6.63	6.67	6.68
General average = 6.61 = 87.87 % (Strongly satisfied)					

Then, when using Servqual scale the behavior of the average perceptions range can be analyzed, taking into consideration that clients expect to receive a strongly satisfactory service, which is equivalent to seven points or 100% in Likert's scale; however, in Figure 2, a different expected behavior can be observed when analyzing the limits of quality gaps in what the patient expects to receive (expectations) and what receives (perceptions) in an emergency care unit. In that manner, it is assumed that an acceptable perception level in all the dimensions or quality attributes is associated with the service offered in the hospital's emergency care unit.

In reference to expectations raised by city inhabitants that in some occasion were attended in the emergency care unit at some time, they are detailed in Table 7, which indicates a general expectation of a private hospital emergency service in Hermosillo, Sonora of 6.10, equal to 81.09%, meaning, according to points scale used, that patients of the emergency care unit are somewhat satisfied with the quality of the service received.

Figure 2 shows the gaps among expectations created by Hermosillo, Sonora inhabitants have received attention in an emergency care unit in a private hospital and the perceptions of patients that were attended in the emergency care unit in the private hospital; denoting the difference between what patients expect to get from

hospital service and what has received. It can be inferred that expectations are higher than perceptions or the service received by the private hospital subject of this study.

Table 7

Five Service Quality Dimensions Average for Emergency Services in a Private Hospital (Expectations)

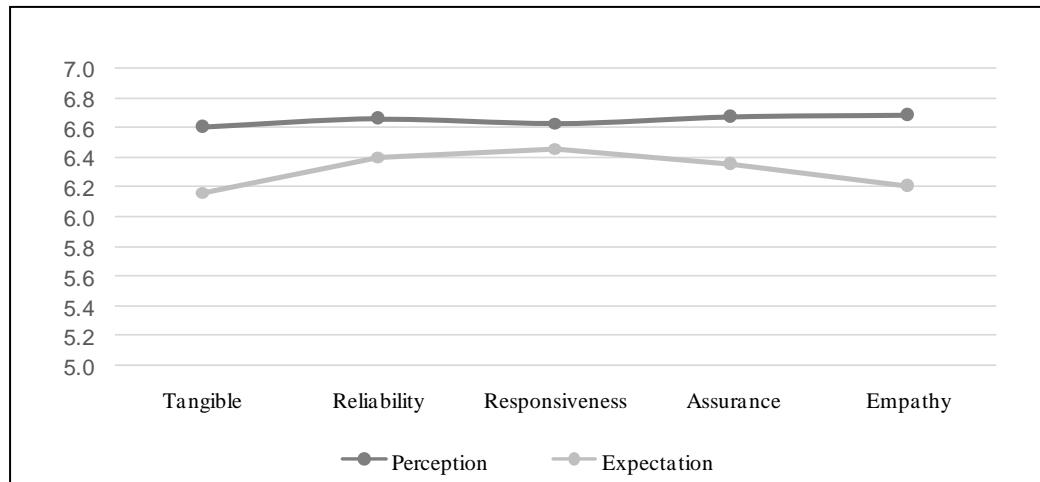|	Tangible	Reliability	Responsiveness	Assurance	Empathy
Average	6.16	6.40	6.46	6.35	6.20
General Average = 6.10 = 81.09 % (Somewhat satisfied)					

Figure 2. Quality gaps in dimensions of quality assessed, for hospital services in the area of the emergency care unit (expectations-perceptions).

Analyzing Figure 2 can be observed that the narrowest dimension between the expectations formulated and the perception of the service received, is the responsibility and responsiveness, followed by the reliability dimension, a little wider the assurance and tangible, to conclude with the lowest or the widest gap, which is the empathy dimension. It seems like patients appreciate and value the empathy that the private hospital offers at the moment of access to the emergency care unit for their treatment, conjugated with the area tangibles and the assurance that private hospitals in Hermosillo offer to their patients and relatives.

Once the gaps between service expectations and perceptions for each one of the dimensions and the service quality level perceived were obtained, the calculation of the service quality index (SQI) was carried, to compare each dimension and the items that integrate it, by using the following formula:

$$SQI = Perceptions - Expectations \tag{4}$$

The same manner, the global SQI was calculated, using the formula mentioned before, including Servqual five dimensions division. Results are shown in Table 8.

Table 8

Global Service Quality Index for the Private Hospital

	Tangible	Reliability	Responsiveness	Assurance	Empathy
Perception	6.60	6.66	6.63	6.67	6.68
Expectations	6.16	6.40	6.46	6.35	6.20
Difference	0.44	0.26	0.17	0.32	0.48
General SQI	1.670				

For the patients of the private hospital, as shown in Table 9, according to Servqual punctuations and the results higher than 0 in the SQI = 1.670, it can be inferred that there is an extraordinary quality service. Doing dimensions apportion, in all of them, patients received a better service than the one expected in the emergency care unit. Same as Table 9, it can be analyzed that the dimension farthest to zero is empathy, followed closely by tangible, which means that patients are very satisfied by the empathy offered by medical and administration personnel at the moment of caring them in the emergency unit.

Analyzing Pearson's coefficient (r), which is a parameter's correlation coefficient that measures the strength and direction of the linear relationship between two variables, is shown in Table 9.

Table 9

Pearson's Coefficient (r) Interpretation.

r	$<$	0.20	a		$=$	Slight relationship
r	de	0.20	a	0.40	$=$	Low correlation, definite
r	de	0.40	a	0.70	$=$	Moderate correlation
r	de	0.70	a	0.90	$=$	High correlation
r	de	0.90	a	1.00	$=$	Very high correlation

Note. Source: From Guilford (1954).

From what was exposed previously, another important result is the correlation among the variables for each totalized dimension, which can be observed in Table 10. It shows Pearson's Correlation Test results of significance level 0.01 (bilateral) which indicates a high correlation among the dimensions that integrate patient's perception of service quality in the emergency care unit of the private hospital.

Table 10

Pearson's Correlation Test

Dimensions		Tangible	Reliability	Responsiveness	Assurance	Empathy
Tangible	Pearson's correlation	1	0.635	0.595	0.679	**0.777**
	Bilateral significance		0.000	0.000	0.000	0.000
Reliability	Pearson's correlation	0.635	1	0.608	**0.823**	0.745
	Bilateral significance	0.000		0.000	0.000	0.000
Responsiveness	Pearson's correlation	0.595	0.608	1	0.680	**0.699**
	Bilateral significance	0.000	0.000		0.000	0.000
Assurance	Pearson's correlation	0.679	**0.823**	0.680	1	0.813
	Bilateral significance	0.000	0.000	0.000		0.000
Empathy	Pearson's correlation	0.777	0.745	0.699	**0.813**	1
	Bilateral significance	0.000	0.000	0.000	0.000	

The perception questionnaire's application showed an overall satisfaction of 92.65% from patients who were hospitalized in the emergency unit of the private hospital, as is shown in Table 11 and Figure 3, while the expectations questionnaire delivered a global satisfaction of 80.38% in the service quality of the emergency care unit; in this regard, doing an analysis between the two satisfaction percentage obtained, points out a higher index in the perception of quality received than patients' expectations. Descriptive statistics are displayed in Table 12.

Previous results were assessed with chi-squared test and Spearman's correlation as is shown in Tables 13 and 14 respectively, disclosing an asymptotically significant interpretation of a *p*-value; $p \leqslant 0.001$, which

reveals a very strong presumption against null hypothesis or case failure to accept the alternative assumptions hypothesis.
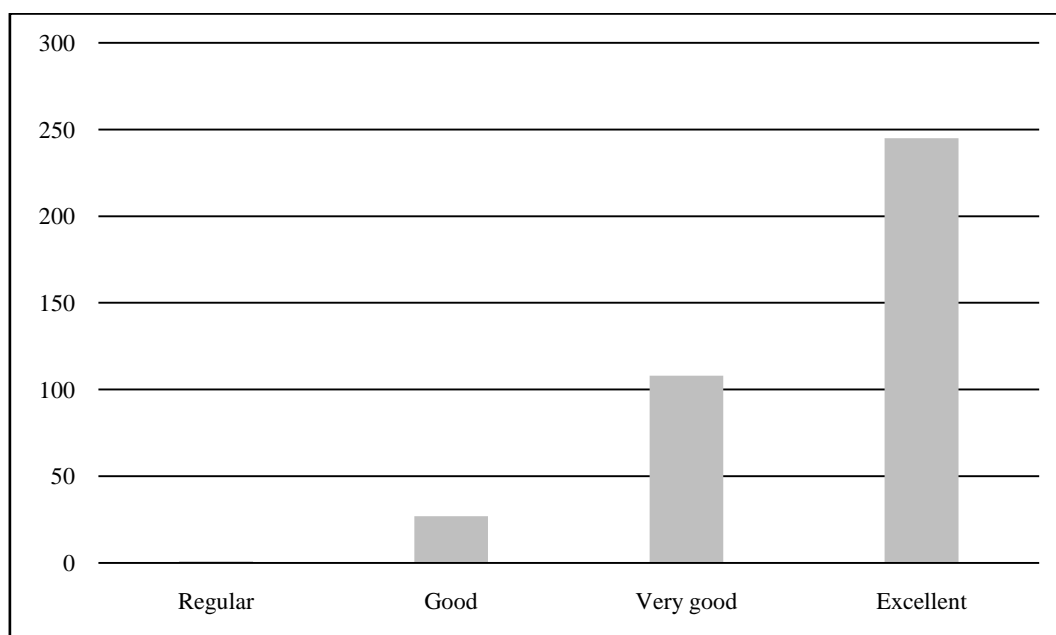

Figure 3. Service overall evaluation of the private hospital's emergency unit.

Table 11

Evaluation of the Overall Satisfaction of the Patients in the Private Hospital

		Frequency	Percentage	Valid percentage	Accumulated percentage
Valid	Regular	1	0.26	0.3	0.3
	Good	27	7.03	7.10	7.30
	Very good	108	28.13	28.30	35.70
	Excellent	245	63.80	64.30	100.00
	Total	381	99.22	100.00	
Lost	*N/A*	3	0.78		
Total		384	100.00		

Table 12

Descriptive Statistic for Patient'S Overall Satisfaction

		Tangible	Reliability	Responsiveness	Assurance	Empathy
N	Valid	384	384	384	384	384
	Lost	0	0	0	0	0
Mean		2.47	2.43	2.40	2.44	2.38
Median		3.00	3.00	3.00	3.00	3.00
Mode		3	3	3	3	3
Standard Dev.		0.736	0.833	0.821	0.815	0.782
Variance		0.542	0.694	0.674	0.664	0.611
Range		2	2	2	2	2
Minimum		1	1	1	1	1
Maximum		3	3	3	3	3

Table 13

Chi-square Test

	Value	*gl*	Asymptotic significance (bilateral)
Pearson's Chi-square	379.204	6	0.000
Likelihood reason	336.619	6	0.000
Linear-by-linear association	325.519	1	0.000
N of valid cases	381		

Table 14

Spearman's Correlation Test

		Value	Asymptotic Standard error	Approximate *T*	Approximate Significance*
Confidence Interval	Pearson's *R*	0.434	0.025	20.020	0.000
Ordinal Variables	Spearman's Correlation	0.441	0.024	20.425	0.000
N of valid cases		381			

Note. * means $P < 0.001$.

Conclusions

This article is compatible with the literature of Bitner (1990), Bolton and Drew (1991), Parasuraman et al. (1988), Oliver (1993), and Rust and Oliver (1994). It emphasizes the distinction between quality perception and patient's satisfaction as a client of the private hospital. According to this investigation results, Servqual adapted version became appropriate to evaluate the quality service of the emergency care unit in the private hospital of Hermosillo, Sonora, and sharing the conclusion of Lin et al. (2004) who stated that Servqual can be applied in ambulatory patients and, that assurance and empathy are located in the highest rank in patient's priorities. However, the biggest quality gap in this study was responsibility.

In regard to the relation that exists between each dimension evaluated, it can be concluded that each one of them is determinant; as well as the gaps presented between the perceptions and expectations evaluated, to establish the satisfaction level of the service delivered and how it influences the decision to go in for a private hospital, specifically, the hospital subject of this study, where the 92.65% of the surveyed patients showed a high satisfaction level of the service delivered.

The results showed that Servqual is a valid, reliable, and flexible tool to monitor and measure service quality in private hospitals in Hermosillo, Sonora and allows administrators or management personnel to identify the opportunity areas that require an improvement from patient's perspective. Results could be used in a planning process to enhance the quality in private hospitals. The same way, the study has a series of important implications for administrators or emergency service responsible. First, an important effort has to be done in keeping or in its case, to improve the quality in the service offered in the emergency care unit, and in this way to increase patient's satisfaction and confidence, thus to maximize the recommendation to friends and relatives.

Improvement in quality perception through the development in efficiency and effectiveness when providing the service by reducing the time the patient has to wait to be attended, enhancing the attention order system according to patient's condition, improving the pharmacy service and the manner patients and relatives are treated by service personnel, providing assurance, responsibility and empathy, and showing a real concern about the welfare of patients in the emergency care unit.

     To conclude the study, main limitations have been done. Even though all the scales are based on contrasted theoretical development, some of them, used to measure the different Servqual model variables could have been extended, including more indicators. Therefore, a possible future line of investigation will be to amplify the dimensions scale, especially to measure responsibility and responsiveness, which were the most significant gaps in the study.

     On the other way, since the study was centered in the emergency care unit, it is not possible to generalize the results to other hospital contexts. In future investigations, the study should be extended to other contexts of the emergency service, making a distinction between patients admitted and patients released as well as comparing patient's perception to emergency unit employees.

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