Yayın Geliş Tarihi: 30.01.2019
Yayına Kabul Tarihi: 08.05.2019
Online Yayın Tarihi: 19.12.2019
http://dx.doi.org/10.16953/deusosbil.519872

Dokuz Eylül Üniversitesi
Sosyal Bilimler Enstitüsü Dergisi
Cilt: 21, Sayı: 4, Yıl: 2019, Sayfa: 1377-1410
ISSN: 1302-3284 E-ISSN: 1308-0911

Araştırma Makalesi

DEVELOPING AN INPATIENT PERCEIVED HEALTHCARE SERVICE QUALITY SCALE (IP-HSQS) [1]

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Abstract

Quality is a high priority topic in healthcare services. After the debates on the implementation of SERVQUAL- the most widely used generic scale to determine service quality, in the healthcare industry- recent studies on service quality focus on the development of industry and culture-specific scales. The first aim of this study is to develop a model for the conceptualization of healthcare service quality, and then develop a valid and reliable scale that can be used in measurement of the perceived healthcare service quality of inpatients in Turkish public hospitals through exploratory and confirmatory factor analyses. The study also recommends a method to be used in the model for the prioritization of dimensions. The devised scale was implemented on 268 patients in a public hospital in Eskisehir, Turkey. The output shows that the inpatients rank quality dimensions based on their priorities as staff quality, physical quality and process quality respectively. A 51-item scale has been recommended, as a result of the statistical analyses.

Keywords: *Service Quality, Healthcare Industry, Scale Development, Healthcare Service Quality, Service Quality Perceptions of Inpatient.*

Bu makale için önerilen kaynak gösterimi (APA 6. Sürüm):

Deniz, N. & Büyük, K. (2019). Developing an inpatient perceived healthcare service quality scale (IP-HSQS). *Dokuz Eylül Üniversitesi Sosyal Bilimler Enstitüsü Dergisi, 21* (4), 1377-1410.

[1] This study was reproduced from the PhD thesis called "A Scale Development Study for Perceived Service Quality Measurement in Healthcare Sector" written by Nurcan Deniz and advised by Köksal Büyük. This thesis was supported by TUBITAK (The Scientific and Technological Research Council of Turkey) - 2211 National PhD Scholarship Program. The authors are grateful to Eskisehir Public Hospitals Union General Secretariat for giving permission to implement proposed scale.

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YATAN HASTALARIN SAĞLIK HİZMET KALİTESİNE İLİŞKİN ALGISINI ÖLÇMEK İÇİN BİR ÖLÇEK GELİŞTİRME ÇALIŞMASI[2]

Öz

Kalite sağlık hizmetlerinde yüksek derecede öncelikli bir konudur. Hizmet kalitesi ölçümünde en çok kullanılan jenerik bir ölçek olan SERVQUAL'in uygulanması üzerine yapılan tartışmalar neticesinde, son çalışmalar endüstri ve kültüre özgü ölçekler geliştirilmesi yönündedir. Bu çalışmanın ilk amacı sağlık hizmet kalitesinin kavramsallaştırılması için bir model önermek, sonrasında da açıklayıcı ve doğrulayıcı faktör analizleri aracılığıyla Türkiye'de kamu hastanelerinde yatan hastaların sağlık hizmet kalitesine ilişkin algılarını ölçmede kullanılabilecek geçerli ve güvenilir bir ölçek geliştirmektir. Çalışma ayrıca modelde yer alan boyutların önceliklendirilmesi için de bir yöntem önermektedir. Önerilen ölçek Türkiye'de Eskişehir ilinde yer alan bir kamu hastanesinde yatan 268 hastaya uygulanmıştır. Çıktılar, yatan hastaların kalite boyutlarını öncelik sıralamasının personel kalitesi, fiziksel kalite ve süreç kalitesi şeklinde olduğunu göstermektedir. İstatistiksel analiz sonuçlarından hareketle 51 maddeden oluşan bir ölçek önerilmiştir.

Anahtar Kelimeler: *Hizmet Kalitesi, Sağlık Endüstrisi, Ölçek Geliştirme, Sağlık Hizmet Kalitesi, Yatan Hastaların Hizmet Kalitesi Algıları.*

INTRODUCTION

Healthcare industry is one of the fastest growing industries in the service sector, in tandem with the aging population, increased consumption, newly emerging treatment methods and technologies (Dagger et al., 2007:123). In this regard, the healthcare service industry is becoming increasingly competitive (Murti et al., 2013: 5499). Since the healthcare service industry is associated with a high degree of risk compared with other service industries, it is a very complicated issue and includes high variability (Rashid & Jusoff, 2009:471). However, the patients' perceptions on healthcare services are greatly undermined by healthcare service providers (Miranda, 2012: 387). Whereas the patients' feedback provides a useful foundation for the development of service quality (Senic & Marinkovic, 2013: 312) and service quality perceptions are positively related with patient satisfaction (Bakan et al., 2014).

SERVQUAL has been found to be the most widely used (49%) instrument to measure service quality quantitatively (Pai & Chary, 2013: 323). SERVQUAL's advantages are its proven validity and reliability, its ease of use, and its application of standardized analysis procedures (Rashid & Jusoff, 2009: 475). Yet, SERVQUAL, which has been introduced as a generic scale (developed from home-appliance repair firms, personal banking, long-distance telephone services and

[2] Bu çalışma Nurcan Deniz tarafından Köksal Büyük danışmanlığında yazılan "Sağlık Sektöründe Hizmet Kalite Algısının Ölçümüne Yönelik Ölçek Geliştirme Çalışması" adlı doktora tezinden türetilmiştir. Bu tez TÜBİTAK -2211 Ulusal Doktora Burs Programı tarafından desteklenmiştir. Yazarlar ayrıca Eskişehir Kamu Hastaneler Birliği Genel Sekreterliği'ne önerilen ölçeğin uygulama izni verdiği için teşekkür eder.

brokerage service industries data) (Teng, 2007: 476), faces problems in its implementation to specific industries, as it contains no industry-specific items (Carman 1990; Babakus & Boller 1992 as cited in Kayral, 2012). It has, however, been criticized for its purpose (Bennington & Cummane, 1998 as cited in İkiz, 2010); the conceptualization of the model underlying it (Mirvea, 2012: 390); the structure and number of its dimensions (Mirvea, 2012: 390) its weak convergent validity (Ladhari, 2008); the need to conduct two separate surveys to measure the gap between expectations and perceptions (Mirvea, 2012: 390); the need for statistical analyses to cover this gap (Lam, 2000); its ambiguous definition of the expectation construct (Ladhari, 2008; Lupo, 2013); its weighting of dimensions (Cronin and Taylor, 1994: 129); its failure to maintain its actuality (Ladhari, 2008: 65), and interactions with various cultures (Ayhan, 2009: 66). Grönroos (2007) proposes that the SERVQUAL scale, is being inappropriately used. When emphasizing the need for its reevaluation, based on the framework within which it will be used and the need to add new dimensions or remove the current ones, Grönroos (2007: 86) argues that new methods should be found to measure perceived quality (Grönroos, 2007).

Studies on healthcare services conducted using SERVQUAL (e.g. Babakus & Mangold 1992; Brown & Swartz 1989; Carman 1990; Headley & Miller 1993; Walbridge & Delene, 1993) generally suggest that the psychometric attributes of the scale were not systematically examined (Miranda, 2012). Lam (2000) has implemented SERVQUAL in healthcare services, demonstrating that these five dimensions were not verified in the context of hospital services. Teng (2007), too, maintains that, when conducted in the context of hospitals, service quality scales resulted in findings inconsistent with the literature. A literature review underlines the need for customized theories and conceptualizations in services, such as healthcare, banking and education (Chahal & Kumari, 2010). Murti et al. (2013) also suggest that they conducted a great majority of their studies in the context of developed countries and that service quality structures designed for a specific culture cannot be conducted, particularly in the context of another developing culture. Aagja & Garg (2010) argue that since the scales designed for healthcare service quality measurement are generally made in developed countries, they cannot be generalized to developing countries. As a result of the debate on the generalization of SERVQUAL to other industries, the focus of recent studies has shifted from SERVQUAL's adaptation to the development of industry-specific service quality scales (Ladhari, 2008). Pai and Chary (2013), as a result of their literature review, have called upon researchers to evaluate dimensions within the context of the healthcare industry and to develop new tools rather than adapting SERVQUAL in order to measure healthcare quality. Chahal & Kumari (2010) argue that measuring service quality is a very complicated process, so it needs to be industry-specific. PRIVHEALTHQUAL (Ramsaran-Fowdar, 2008), PubHosqual (Aagja & Garg, 2010) and HEALTHQUAL (Miranda, 2010) are scales that have been developed for the healthcare industry.

The Turkish Ministry of Health launched a nationwide healthcare quality review in 2005, to implement Service Quality Standards in public hospitals for the evaluation and improvement of the quality of healthcare services (Service Quality Standards Guidelines, 2011). Service Quality Standards, considered as the basis of the national quality system, composed of 354 standards and around 900 sub-components, as a result of an update in 2008 (Service Quality Standards, 2011). "Management Services" is the most important sub-dimension covered under "Corporate Service Dimension" in this guidelines which includes regulations regarding patient satisfaction surveys in article 57 and feedback from patients and their families in article 59 (Service Quality Standards Guidelines 2011).

Also, inpatient services have attributes distinct from those of the outpatient and emergency department services. These services include longer service time for patients and hospitals functioning as hospitality venues. There is a higher probability of service delays with extended service procedures. The relationship between the medical staff (other than the physicians) and patients is also intensifying (Yagci, 2006). The statistics published by the Turkish Ministry of Health put the hospitalization time in public hospitals at 4.32 days' average during the first half of 2016.

Within the scope of this study, a scale has been developed that can be used to measure service quality at the inpatient clinics of Turkish hospitals, by reviewing the approaches and practices towards the measurement of healthcare service quality both in Turkey and worldwide, and then the validity and reliability of the said scale has been examined at a public hospital. Also, service quality dimensions were ranked within themselves, through the prioritization model that has been developed. The second part of this paper is devoted to a literature review about service quality in healthcare. The third part is about the scale development process, while the fourth part collects the findings, followed by a conclusion consisting of analyses and recommendations.

LITERATURE REVIEW

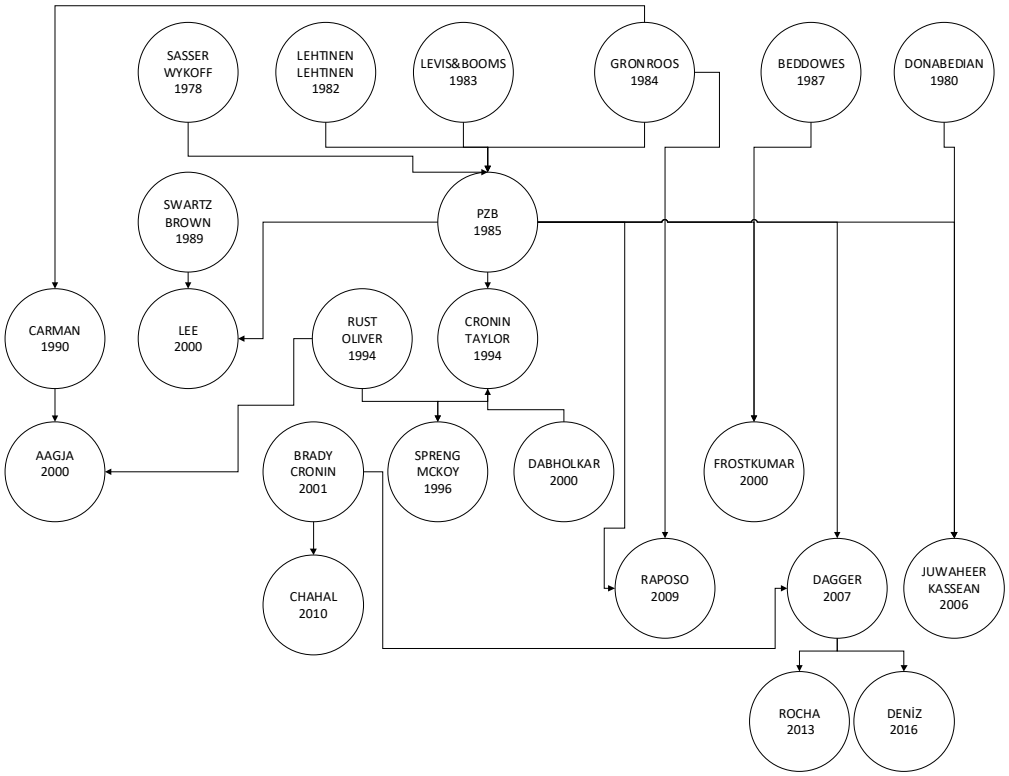
The perceived service quality model, which was suggested by Gronroos in 1982 and expressed to be the principal study in the literature on service quality, is based on the separation of technical/functional quality (Gronroos, 2001). The basis of the SERVQUAL scale is the Service Quality Gap Model suggested by Parasuraman, Zeithaml and Berry (1988). Rust and Oliver's (1994) Scandinavian model incorporated the service environment into the service quality measurement. Dabholkar et al. (1996) have proposed a multi-level model, based on three levels. Based on the view that very little effort was made to define and standardize sub-dimensions in quality measurement, Brady and Cronin (2001) proposed the service quality model, using a hierarchical approach.

The healthcare industry differs from production and other service industries, in that there is a great deal of information asymmetry between the service provider and the consumer (patient), payments are not being made directly, there are unique staff members such as doctors, the interaction between the patients and service providers is susceptible to damage, it is a regional industry rather than a global one, and there is a limited choice of doctors and treatment methods (Barzi, 2009). Donabedian (1980) defines healthcare service quality as "the application of medical science and technology in a manner that maximizes its benefit to health without correspondingly increasing the risk" (Mosadeghrad 2013). There again, Berry & Bendapudi (2007) established that although the healthcare service is one that people need, it is on that they generally do not want (Pai & Chary, 2013). Since the quality environment in the healthcare industry is younger and immature, compared with its counterparts in the production and other service sectors, healthcare quality requires unique approaches (Barzi, 2009).

As a result of study on 271 patients in Taiwan, Teng (2007) is said in the literature to be the first researcher to have developed a special service quality scale for hospitals, by developing a scale that, through 29 items under 6 factors, explaining %57.3 of the variance. Duggirala et al. (2008) designed an 86-question scale under 7 service quality dimensions in their study on 100 patients in India. By using the SERVQUAL scale to measure the service quality perceptions and expectations of patients in private hospitals, Ramsaran Fowdar (2008) introduced a new service quality survey, which was dubbed as PRIVHEALTHQUAL at the end of the study. Aagja and Garg (2010) developed the five-dimension PubHosqual scale to measure perceived service quality in Indian public hospitals, whereas Chahal & Kumari (2010) altered the sub-dimensions, under the main dimension of Brady and Cronin (2001)'s Hierarchical Service Quality Model, based on the claim that there were no appropriate tools for measuring service quality, satisfaction, loyalty and image in India, and recommended a new and more comprehensive model and service quality scale (HCSQ). Using the Sixth Gap for the first time in healthcare services, which was previously described by Lewis to be a result of the differences between the perceptions and expectations of customers and managers, Miranda (2010) investigated the usefulness of the HEALTHQUAL scale adapted from SERVQUAL when evaluating the healthcare service quality perceptions of patients and managers. As a result of their study on 80 patients in India, Agarval and Singh (2016) said that they had designed, a service quality scale for the pathology laboratory for the first time. The studies of Pai & Chary (2013), Akhade et al. (2013) and Murti et al. (2013) are other papers related to literature reviews on service quality in healthcare. Healthcare service quality perceptions also vary by country. There are also various studies, conducted by Raposo et al. (2009) in Portugal, Miranda (2010, 2012) in Spain, Aagja & Garg (2010) in India, Kashif et al. (2016) in Malaysia, Shabbir & Malik (2016) in Pakistan, and Lee (2016) in South Korea. A review of recent studies in Turkey (Turan and Bozaykıt-Bud, 2016) shows that SERVQUAL is being still used, rather than developing a scale particular to Turkey. The study of Bakan et al.

(2014) differs from the others, in that it uses the dimension structure proposed by Duggirala (2008). Studies on healthcare service quality are shown in Figure 1 to illustrate the relationships between service quality models.

Figure 1: Healthcare Service Quality Model Network



A literature review on healthcare service quality concluded that there were no universally recognized dimensions (Pai & Chary, 2013). Grönroos (1982) described two dimensions; namely, the technical and functional quality in the first conceptualization of service quality, whereas the most current version of SERVQUAL defined five dimensions: tangibles, reliability, responsiveness, assurance and empathy. Table 1 lists the dimensions from various literature studies. A review of the dimensions in this table concludes that dimensions, such as tangibles, facilities, and physical environment, can be grouped under physical quality; dimensions, such as personal relations, healthcare staff members, other staff members, interaction, staff, responsiveness, competence, reliability, nurse care, and empathy can be grouped under staff quality; while, dimensions such as punctuality, effectiveness, admission procedures, discharge procedures, management, efficiency, equality, safety, patient focus, process quality and technical, medical service, output, access, drug quality management, healthcare, and safety measures, can be grouped under process quality.

Table 1: Healthcare Service Quality Dimensions

PHYSICAL	STAFF	PROCESS	Dimensions	Donabedian (1980)	Lee et al. (2000)	Dagger, Sweeney and Johnson (2007)	Teng(2007)	Duggirala, Rajendran and Anantharaman (2008)	Bazri (2009)	Raposo et al. (2009)	Chahal and Kumari (2010)	Aagja and Garg (2010)	Murti, Deshpande and Sristava (2013)	Polsa et al. (2013)	Senic and Marinkovic (2013)	Lee (2016)
*			Technical			√										
*			Infrastructure					√								
*			Tangibles		√		√						√	√	√	√
	*		Reliability		√		√						√	√		
	*		Responsiveness		√		√						√	√		
	*		Competence		√		√						√	√		
	*		Empathy		√		√						√	√		√
*			Environment			√										
		*	Access													
		*	Punctuality								√				√	
	*		Personal relations			√									√	
*			Facilities							√						
	*		Medical Staff Members													
	*		Other Staff Members													
		*	Effectiveness						√							√
		*	Management			√		√								
	*		Staff					√		√						
		*	Medical Service		√			√				√				
	*		Nurse Care							√						
	*		Healthcare							√						
*			Physical								√					
	*		Interaction								√					
		*	Output	√							√					
		*	Safety						√							√
		*	Patient Focus						√							
		*	Efficiency						√							
		*	Equality						√							
		*	Structure	√												
		*	Process	√												
		*	Admission Procedures									√				
		*	Discharge Procedures									√	√			
		*	Safety Measures					√					√			
	*		Professionalism		√											
	*		Social Responsibility					√				√				
		*	Experience					√								
		*	Degree of Recovery													√
			Total Dimensions	3	7	4	5	7	5	4	3	4	8	5	3	5

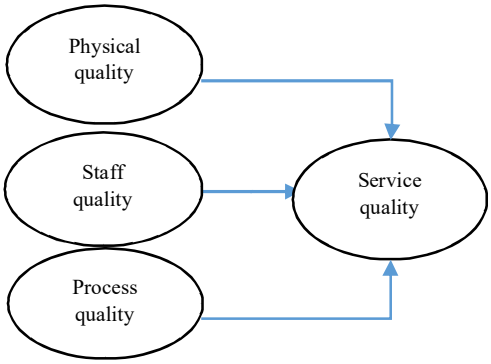
Scale Development Study

This study is a scale development study to measure the service quality perceptions of inpatients and based on the eight-step Scale Development Process outlined by DeVellis (2003).

Identification of the structure

The study asks the question "*What are the factors affecting the service quality perceptions of inpatients*?" It is modeled hierarchically and in this regard, it shares similarities with the study of Senic and Marinkovic (2013). The independent variables in this model (Figure 2) are physical quality, staff quality and process quality; whereas, the service quality is the dependent variable in the model.

Figure 2: Research Model



Generation of the item pool

Since there was sufficient theoretical knowledge in the field, the deduction method (Hinkin, 1995) was used to generate the item pool, using the items based on past studies. Following the creation of the initial item pool, the items in this pool were refined through personal interviews with doctors and patients (Ladhari, 2008) and using expert opinions (Voon, 2014). The questions in the pool were grouped by pre-survey questions, survey questions, and post-survey questions.

Pre-Survey Questions

Specific questions were asked to identify the patient before the introduction to service quality perception. As a result of their literature review, Pai and Chary (2013) reported that there is not any study comparing service quality among hospital departments. The patients were therefore first asked for their "*Department*". "*Hospital stay type*," "*Room Type*" and the "*Number of Patients in the Room*" were some of the other questions encountered in studies conducted in Turkey. Yasa (2012), Tokay (2000), Gronroos (2007), and Lee et al. (2013) also established that the measurements were made after treatment in a majority of the studies, neglecting the experience of patients before and during treatment, when pain levels are greatest.

Pai and Chary (2013) also reported that, in their literature review, they came across no comparisons of the quality perceptions of short and long-term patients in any study. So, the patients were asked "*How many days have you been in the hospital*?" Hair et al. (2008) and Gronroos (2007) also reported the distinction between customers/regular customers for the first time with regard to service quality. Senic & Marinkovic (2013) included the number of admissions in their scale. The question "*Is this your first time in this hospital*?" is aimed at measuring the patients' level of experience. It was observed that the patients were hospitalized for surgery or tests/treatment. "*The reason for hospitalization*" was also queried in this regard.

Survey Questions

All expressions in the scale (*it is stated in the Appendices* and *items removed after factor analysis are written in italics*) are positively written according to Miranda (2012)'s conclusion about positive and negative expressions together can cause confusion. The last question of the survey was phrased as an open-ended question.

Post-Survey Questions

Demographic questions were left to the end of the survey, to make responders free according to the suggestions of Hair et al. (2008). As well as age (Öziç, 2007), information was sought on sex and education level (Pai & Chary, 2013) through these questions. Furthermore, the patients' reasons for choosing the hospital were broadened (affordability, proximity to home, timeliness and technology) in the light of the proposals of Grönroos (2007). The question "*Do you have pain now*?" directed by Teng (2007) as well as the questions "*Did you hear any bad stories about this hospital*?" and "*Did you hear any good stories about this hospital*?" were included, to measure the effects of image, in keeping with the thinking of Gronroos (2007). There is also a question about the presence of companions. The questions that were directed for the first time in the literature were Grönroos (2007)'s question "*How do you feel now*?" based on the service quality perceptions of individuals could change by their moods (*angry, happy, depressive, excited, frightened, upset, normal*) and again the question "*Do you like interacting with others?*" was based on Grönroos's (2007) argument that service receivers could be active or passive in their communication during the rendering of services, thus expectations of the relationship could be different.

Identification of the method of measurement

Based on the assumption that the patients will make the best assessment (Leebov & Scott, 1994), the scale was applied to patients who received healthcare services. Macur (2013) also state that patient is in the heart of definition of quality in health care and patients' views and opinions give insight to quality assessment that are not evaluated by medical staff and often seem to be more important. Just as in SERVPERF (Cronin and Taylor 1992), only the perceived service quality was measured in this study, in consideration of the healthcare status of inpatients.

DeVellis (2003) generally used Likert-type scales to measure ideas, beliefs and attitudes, which are easy for the responders. A 5-item Likert scale was adopted, based on the fact that the 5-item Likert-scale has been used in most of the previous studies in Turkey (Taskiran Mohammad, 2007; Ozic, 2007; Yasa, 2012; Eldem, 2009 and Kayral, 2012). Karatepe and Avcı (2002) have demonstrated that the 7-item Likert scale causes difficulties in understanding and replying, on the part of Turkish responders (Kayral, 2012), and Lam (1997) has demonstrated 5-item Likert scales reduce the frustration levels of responders, increasing response rates and response quality (Pai & Chary, 2013). The Likert scale was applied via VAS (Visual Analogy Scale) scale, particularly to facilitate its use on elderly people (Vavra, 1999).

Development of the expert-reviewed initial item pool

A draft of the initial survey questions was prepared for the pilot survey, in line with the opinions of doctors, academics and patients, to ensure the face and content validity of expressions in the item pool.

Deciding on the items to be included in the scale

This step is called as structuring of the scale. Designing a survey form as short, comprehensible and concise as possible is the purpose of this step. The pilot survey was conducted and tested using one-to-one interviews on 20 patients, who were receiving treatment as of 12.12.2015 at the Department of Physical Therapy and Thoracic Surgery of a public hospital and were able to respond to the survey. Unclear questions were identified and necessary adjustments (6 questions were removed; 13 questions were added) were made, and the scale expressions were finalized, taking into consideration the suggestions and criticisms of the responders.

Testing the developed scale on a sample group

The scale was tested in a 618-bed public hospital in Eskisehir city in Turkey, where the authors live. The subject hospital is one of the pilot hospitals in the Service Quality Standards study of the Turkish Ministry of Health. It is considered that the inpatients responding to the survey correctly understood and replied the measurement tool. The survey was conducted in all departments, except for inpatients in the intensive care and psychiatry departments. Medical vocational high school students, who were undertaking their practical training at the hospital, conducted the scale using the face-to-face survey method. Before conducting the scale, the students were informed about the issues of which they should be aware.

During the sample selection stage of the study, the survey was conducted on all patients who could respond to the survey (patients in good health and psychological condition to respond to the survey and patients for whom there was no risk of infection) from among the 461 patients who were hospitalized as of 12.01.2016. Therefore, the purposive sampling method, which is widely used (e.g.

Senic & Marinkovic, 2013; Aagja & Garg, 2010) in the marketing literature, was preferred.

As a result, the scale was applied to 268 patients in 14 departments (Table 2). A comparison of the sample of the scale development and scale validity studies in the field of service quality showed that a sample of 200 (Parasuraman et al., 1988), 277 (Sureshchander et al., 2002), 227 (Dabholkar et al., 1996), 115 (Bahia and Nantel, 2000), 225 (Yağcı, 2006), and 201 (Aagja & Garg, 2010) were of a similar nature.

Table 2. Distribution of Conducted Surveys by Departments

Name of Department	Number of Surveys Conducted
Radiation Oncology	19
Thoracic Diseases	24
Internal Diseases A	20
Medical Oncology	5
Hematology	5
Medical Oncology-Hematology	14
Cardiology	18
Internal Diseases B	21
Orthopedics	18
CVS (Cardio-Vascular Surgery)	10
Neurology	25
Urology	21
Brain Surgery	22
Infection	8
General Surgery	20
Orthopedics 2-ENT (Ear, Nose and Throat)	9
ENT	9
TOTAL	268

Evaluation of items

A more detailed explanation of exploratory and confirmatory factor analyses performed for the "validity" and "reliability" analyses of the scale can be found in the statistical analysis section.

Optimization of sample length

A survey should ask only essential questions. The survey form that was finally recommended for use, as a result of the analyses performed in the first seven steps, is attached to this paper.

Prioritization Model

Within the scope of this study, the dual comparison of Buyukozkan et al. (2011), which prevents repetitions, and the weight determination methods of Gulmez (2005) for each of the significance levels, were studied together and a method that was visually easy to implement and ensured that the results were obtained with the least number of comparisons, was developed. The algorithm of the method, valid for 3 dimensions, includes the following steps. The purpose of the first step is to increase the probability of completing the process through two comparisons.

Algorithm:

Step 1: Comparison of the dimensions except the dimension which is taught to be the most important dimension.

Step 2: Comparison of the dimension considered to be more important in the first step with the dimension which is taught to be the most important dimension.

Step 3: If the assumption is verified in the second step about the most important dimension STOP since the other dimensions are sorted in themselves in the preceding question, ELSE go to Step 4.

Step 4: Comparison of the dimension which is taught to be the most important dimension with the dimension identified to be less important in the first step comparison. STOP.

In the first step of the implementation of the algorithm, the staff dimension has been considered to be the most important dimension based on literature (e.g. Raposo et al., 2009; Senic & Marinkovic, 2013; Miranda 2010; Kumaraswamy, 2012). According to the 258 responses (10 inpatient did not answered the left prioritization question), 178 inpatient reached the ranking through two comparison. On the other hand 80 inpatient reached the ranking through three comparison. This result is a good indicator of practicability of the algorithm along with a 22.96% decrease in the number of comparisons. In the end of the algorithm, the dimensions are ranked in 3 different orders (first, second and third) in six different combinations. In this study we made an assumption about the importance of the dimension orders in ranking that ranking first is twice as important as being ranking second. In the same logic, ranking second is twice as important as ranking third. As a result of this model, the most important dimension was found to be the staff dimension at 47.12%. The second most important dimension was found as process dimension at 31.78% and the physical dimension, as the third most important dimension, at 21.09%.

Statistical Analyses
Selection of statistical tests

Exploratory Factor Analysis (EFA) was performed to identify the factors within the scope of this study, and Confirmatory Factor Analysis (CFA) was performed to confirm the model. Statistical analyses are conducted with SPSS 21.0 and AMOS 21.0 software.

Data preparation for analysis

Also known as data screening, to initially determine that the data were error-free, all the subject values were examined at this stage, in order to understand whether or not they corresponded to category codes (Tabachnick & Fidell, 2011) and 19 erroneous data entries were identified. The surveys were reviewed again and the correct values were identified and erroneous data corrected. Surveys with more than 5 missing questions were identified and 8 surveys were excluded from the analysis. A small amount of missing data, corresponding to about five per mille of the 107 missing data, were identified. Little's MCAR test results (p=0,00) also show that the missing data are random. Therefore, median values were assigned instead of the missing data for compliance with the Likert scale (Gaskin, 2016). Furthermore, 7 surveys with zero standard deviation values, in other words, surveys with the same replies to all questions, were identified and excluded from the analysis, in order to determine the no-response replies.

Providing assumptions

There need to provide some assumptions before the factor analyses. The first assumption is about the sample adequacy. Kaiser-Meyer-Olkin (KMO) test is the most frequent test to obtain whether the sample is enough or not. The higher KMO values show that one variable can be predicted according to the other variable (Tabachnick and Fidell, 2011). Obtaining the KMO value of the 72 questions to be subjected to Factor Analysis at 0.882 indicate that the sample is adequate. The second assumption is about normality. Tabachnik and Fidell (2011) defines multivariate normality as all variables and their linear combinations are normally distributed. Barlett's Test of Sphericity is the frequently used test and the values smaller than 0.05 shows an consistency with multivariate normality (Kumaraswamy, 2012). The p=0.000 value, obtained as a result of the Barlett Test, showed that the data were from the multivariate normal distribution. In addition to Barlett Test, it is advised to examine anti-image correlation matrix. The diagonal values of items (MSA) higher than 0.5 are advised to include in factor analysis (Yalçın İncik et al., 2015). It was found that all the values in the anti-image correlation matrix were in the range of [0.674-0.948]. Multicollinearity is the third assumption need to be analyzed. Tabachnick and Fidell (2011) advise to use Variance Inflation Factor (VIF) to detect the multicollinearity. Since the VIF values calculated for the data under this study were in the range of [1.708-4.923] and as they were lower than 10

(Duggirala et al., 2008; Murti et al., 2013), it was concluded that there were no multi-collinearity problems.

Results of descriptive analysis

Due to high number of questions, the data are summarized in Tables 3.a and 3.b. From an initial general examination of the mean values and variances of the quality assessment of the patients, they were observed to contain high values and low variability. Making the same conclusion, Teng (2007) reported that this was because the patients found it difficult to compromise among service quality components in the healthcare industry. A review of the lowest and highest values in the Table shows that each question was given 1 (excluding questions 31 and 60) and 5 values at least once. It was found that the mean values of questions 21, 70 and 63 were the lowest. Thus, it can be assumed that there is a problem in service quality perceptions regarding the parking lot, companions and the cafeteria. The sample that replied to the survey was seen to be more often married and older individuals with lower education levels.

Table 3.a. Descriptive Statistics about the Questions in the Scale

Range of Mean	Number	Percentage	Range of Mean	Number	Percentage
(4.5-4.64]	18	25.00	**(1,125-1,514]**	12	16.67
(4.0-4.5]	49	68.06	**(0,75-1,125]**	51	70.83
(3.5-4.0]	3	4.17	**[0,647-0,75]**	9	12.50
[3.02-3.5]	2	2.78			0
TOTAL	72	100	**TOTAL**	72	100

Table 3.b. Demographic Statistics about the Questions in the Scale

Demographic Variable	Frequency	Percentage
Gender		
Female	120	49.8
Male	121	50.2
Age		
18-30	4	1.58
31-40	12	4.74
41-50	23	9.09
51-60	56	22.13
61-70	57	22.53
71-80	22	8.70
81-90	12	4.74
Marital Status		
Single	22	9.2
Married	189	79.4
Widowed	22	9.2
Divorced	5	2.1
Education		
No Schooling	19	7.8
Primary School	137	56.1
Secondary School	40	16.4
High School	37	15.2
University	11	4.5

Preliminary reliability of measurement

Internal consistency reliability is usually measured using the Cronbach's alpha coefficient (DeVellis, 2003) and 0.70 (Hair et al., 2003) is considered as the critical value. This study examined the alpha values when an item was deleted, similar to that used by Aagja and Garg (2010) and Teng (2007), to eliminate unreliable questions during the scale purification phase of the scale development process. Also, negative coefficients show the inappropriateness of the order of the questions, using the split-half method (Eldem 2009) and split-half coefficients higher than 0.6 are indicate the consistency of the scale (Ozdamar, 2004).

The Cronbach'a alpha threshold values of each dimension are determined as 0.893 (physical), 0.928 (staff) and 0.832 (process) respectively. All values higher than 0.70, show the internal consistency (Hair et al., 2003). According to the item-total statistics of 23 items in physical dimension, only the Cronbach's alpha if item deleted value of item 21 (0.897) is determined bigger than the physical dimension's threshold Cronbach's alpha value of 0.893. As a result, item 21 (parking) was removed and the physical dimension's Cronbach's alpha value is increased to 0.897 with 22 items. Also, use of the split-half reliability analysis yielded the alpha values 0.843 and 0.809. Because the values are higher than 0.6, there is a consistency. It can be concluded that the order of the questions is appropriate according to all item-total correlation matrix coefficients are positive.

In the staff dimension with the threshold value of 0.928, Cronbach's alpha value if item is deleted are question 9 (being informed about patient rights), 10 (being informed about the procedure during hospitalization) and 43 (sufficient number of nurses) 0.932, 0.928 and 0.928 respectively. These three items are removed one-by-one and the Cronbach's Alpha value of the 30-question scale was found to be 0.934. Alpha values of 0.878 and 0.878 (higher than 0.6) were found as a result of the reliability analysis conducted using the split-half method. It can be concluded that the order of the questions is appropriate according to all item-total correlation matrix coefficients are positive.

In terms of the process dimension, when the Cronbach's alpha value (0.839) was larger than the Cronbach's alpha value (0.832), the third question about the patients' choice of doctors was excluded from the analysis, and the Cronbach's alpha value of the 15-question dimension was found to be 0.839. Alpha values of 0.744 and 0.764 (higher than 0.6) were found as a result of the reliability analysis conducted using the split-half method. It can be concluded that the order of the questions is appropriate according to all item-total correlation matrix coefficients are positive.

Cronbach's alpha value of the first scale, consisting of 67 questions, was found to be 0.957 in terms of overall service quality. As no negative values were found in the part-whole correlation matrix for all dimensions, which showed the appropriateness of the order of questions.

Exploratory factor analyses (EFA)

EFA was carried out on the first 72 questions, except for those questions relating to demographics. Questions 73 and 74, concerning behavioral intention; questions 75 and 82 seeking yes/no answers; questions 82.a and 82.b regarding the reason for choice; open-ended questions 76, 77 and 83 and questions 78, 79 and 80, regarding the complaints procedure, were only answered by 11 people.

As the aim was to gather information about the nature of factors and since an equal interval scale was used in other similar studies in the literature (Senic & Marinkovic, 2013; Dagger et al., 2007; Chahal & Kumari, 2010; Miranda, 2010), the "principal component analysis" factorization technique was chosen, in line with the recommendations of Tabachnick & Fidell (2011). An eigenvalue of more than 1 was used when determining the number of factors. The number of factors was considered together with the theoretical information. With regards to the removal of items, the questions were eliminated first based on the criteria of overlapping (having a factor load bigger than 0.32 on more than one factor where the difference between the said load values is less than 0.10) and then based on the criteria of having factor loads under 0.45 (Tabachnick & Fidell, 2011). The recommendation of Tabachnick & Fidell, 2007) was that initially an oblique rotation technique promax should be used to examine the values in the correlation matrix and that oblique rotation should be used if the factor correlation is 0.32 and above. Tabachnick & Fidell (2011) also recommend that the varimax rotation method should be adopted when the principal component analysis is used.

EFA for the Physical Dimension

Six dimensions were found with eigenvalues over one, as a result of the analysis performed without adopting the rotation method, for the physical dimension. Questions 20, 28, 15 and 19, respectively, which were loaded on more than one dimension, excluded from the analysis using the varimax rotation technique at each step of the analysis. As a result, a structure was obtained explaining 63.622% of the variance (Table 4.a) with 18 questions and 5 factors. A review of common factor variances found no values less than 0.20, so no items were removed from the scale.

Table 4.a: Common Factor Variance as a result of Physical Dimension EFA

	Component						
	1	**2**	**3**	**4**	**5**	**Common factor variance (h^2)**	**Sub-dimension**
Question25	.861	.106	.068	.097	.130	0.783	Food
Question24	.824	.225	.038	.156	.102	0.765	
Question22	.816	.146	.161	.142	.044	0.735	
Question26	.755	.080	.139	.140	.149	0.637	
Question23	.731	.101	.156	.040	.189	0.607	
Question12	.210	.817	.194	.215	.166	0.823	Cleanliness
Question13	.151	.811	.023	.104	.184	0.726	
Question11	.201	.752	.311	.185	.072	0.743	
Question63	.228	-.023	.704	-.015	.154	0.572	Facility-1
Question16	.166	.261	.620	.162	.128	0.523	
Question66	-.019	.015	.601	.274	.052	0.439	
Question70	.099	.283	.587	.056	.029	0.439	
Question5	.068	.143	.078	.812	.204	0.732	Facility-2
Question4	.211	.099	.132	.799	.074	0.715	
Question62	.133	.157	.163	.496	.073	0.320	
Question17	.235	.086	.268	.179	.710	0.671	Ergonomics
Question18	.249	.032	.095	.219	.703	0.614	
Question14	.046	.347	.026	.016	.697	0.609	

EFA for the Staff Dimension

Seven dimensions were found when EFA was performed without rotation on the 30 questions under the Staff Dimension. Questions 50, 45, 36, 52, 57, 51, 39, 41, 46, 55, respectively, were removed from the analysis, as they were overlapped on more than one factor. Twenty questions were gathered under 4 factors accounting for 57.246% of the variance (Table 4.b). No items were removed from the scale, as the review of common factor variances yielded no values of less than 0.20.

Table 4.b: Common Factor Variance as a result of Staff Dimension EFA

	Component					
	1	**2**	**3**	**4**	**Common factor variance (h^2)**	**Sub-dimension**
Question37	.784	.237	.176	.074	0.707	First (Providing information-relationship-attitude-sparing time, level of information-accessibility)
Question35	.779	.224	.109	.175	0.699	
Question42	.720	.068	.143	.081	0.551	
Question33	.586	.315	-.054	.147	0.467	
Question48	.576	.133	.134	.460	0.579	
Question61	.559	.097	.247	.224	0.433	
Question38	.550	.247	.278	-.144	0.462	
Question53	.541	.027	.247	.336	0.467	
Question31	.132	.813	.173	.213	0.753	Second (Providing information-relationship)
Question30	.055	.801	.124	.249	0.722	
Question32	.277	.769	.097	.038	0.679	
Question29	.219	.747	.197	.093	0.653	
Question34	.280	.667	.229	.139	0.595	
Question56	.251	.148	.723	.177	0.639	Third (Level of information-reliability)
Question58	.194	.180	.679	.172	0.562	
Question44	.136	.114	.643	-.007	0.445	
Question7	.064	.308	.536	.362	0.517	
Question40	.090	.133	.013	.737	0.570	Fourth (Attitude-level of information-providing information)
Question59	.203	.144	.222	.575	0.442	
Question47	.216	.337	.229	.544	0.508	

EFA for the Process Dimension

Four dimensions were found with eigenvalues over one, as a result of the analysis performed without adopting the rotation method for the process dimension. However, the number of dimensions was reduced to three after the removal of items 64 and 8, respectively, due to overlapping. An investigation of the items in terms of sub-dimensions revealed that the visitor sub-dimension combined with the hospitalization process. Visitor sub-dimension became fourth dimension after forcing the number to 4 dimensions. As a result, 13 questions and 4 dimensions (Table 4.c) explained 61.543% of the variance. A review of common factor variances showed that no items were removed from the scale because there were no values lower than 0.20. Table 4.c shows the dimension structure of the process dimension.

Table 4.c: Common Factor Variance as a result of Process Dimension EFA

	Component					
	1	**2**	**3**	**4**	**Common factor variance (h^2)**	**Sub-dimension**
Question60	.760	.021	.162	.053	0.608	Hospitalization process *Post-hospitalization
Question49	.696	.152	.132	.113	0.538	
Question67	.647	-.003	-.061	.346	0.543	
Question69	.647	.084	.313	.068	0.528	
Question54	.632	.300	.232	-.079	0.549	
Question68	.611	.103	.174	.372	0.553	
Question2	.091	.876	.055	-.025	0.780	Pre-hospitalization
Question1	.043	.843	.115	.059	0.730	
Question6	.272	.592	-.040	.319	0.528	
Question71	.145	.047	.800	.157	0.688	Hospitalization
Question72	.311	.076	.737	.090	0.654	
Question27	.080	.053	.048	.818	0.681	Visitor
Question65	.227	.135	.328	.666	0.622	

An overview of the factors obtained as a result of the EFA shows that the factors contained in the relevant literature within the conceptual framework regarding service quality in healthcare are significantly covered. Scherer et al. (1988) states that a variance explained between 40-60% would be sufficient in social sciences (Tabachnick and Fidell, 2011). A review of literature on service quality in healthcare shows that Yagci (2006) found an explanation rate of 74.507%, and Miranda (2010), who found 4-factor results, an explanation rate of 71.5%. While Senic and Marinkovic (2013) found a variance rate of 64.68% explained by 3 factors, it is seen that Kumaraswamy (2012) explains 72.56% of the variance by 3 factors. In another study that found 4 factors, Dagger et al. (2007) found the rate of 79.8% while Lam (2000) found a rate as low as 61.34% using 6 factors.

Confirmatory factor analysis (CFA)

Bollen and Long (1993) reported that the CFA performance process is essentially made up of five stages (Lam 2000): (1) model specification (2) identification, (3) estimation, (4) model fit and (5) where necessary, re-specification. In this regard, the conceptual framework regarding service quality in healthcare and the EFA results, based on this framework, were initially utilized during the specification of the model. Maximum Likelihood method is used in identification stage.

CFA for the Physical Dimension

The designs for the path diagram and measurement model were based on the factor structure found as a result of EFA. Following initial CFA, questions 62 (0.45) and 66 (0.57) weighing under 0.60 (Aagja and Garg, 2010) were respectively removed from the scale, resulting in the fit values shown in Table 5.

CFA for the Staff Dimension

Following initial CFA, all regression coefficients were found to be greater than 0.6 (Aagja and Garg, 2010). Since the fit indices were not within acceptable

limits (Ergin, 2010), questions 34 and 47 were removed, since the standard residual values were greater than 2.58. Also, a covariance was added between questions 29 and 32, which have the highest modification index values (Gaskin, 2016).

CFA for the Process Dimension

Following initial CFA, all regression coefficients were found to be greater than 0.6 (Aagja and Garg, 2010). Since the fit indices were not within acceptable limits (Ergin, 2010), item 6 was removed as the standard residual value was greater than 2.58. Also, a covariance was added between questions 67 and 68, which had the highest modification index values (Gaskin, 2016).

Table 5: Interpretation of the Fit Index Values on Dimensions as a result of the CFA

Fit Index	Optimal Fit Range*	Acceptable Fit Range*	Physical	Result	Staff	Result	Process	Result
Chi-square/sd	0-2	2-3	1,481	Satisfactory	1,969	Satisfactory	1,828	Satisfactory
RMSEA	0-0,05	0,05-0,08	0,044	Satisfactory	0,062	Acceptable	0,057	Acceptable
GFI	0,95-1,00	0,9-0,95	0,936	Acceptable	0,905	Acceptable	0,949	Acceptable
CFI	0,97-1,00	0,95-0,97	0,973	Satisfactory	0,928	*	0,950	Acceptable
AGFI	0,9-1,00	0,85-0,9	0,907	Satisfactory	0,873	Acceptable	0,916	Satisfactory
AIC	Lower than AIC for the compared model		Lower	Satisfactory	Lower	Satisfactory	Lower	Satisfactory
CAIC	Lower than CAIC for the compared model		Lower	Satisfactory	Lower	Satisfactory	Lower	Satisfactory
ECVI	Lower than ECVI for the compared model		Lower	Satisfactory	Lower	Satisfactory	Lower	Satisfactory
Factor Loads	0.6	0.5	>0.82	Satisfactory	>0.62	Satisfactory	>0.61	Satisfactory

*(Ergin, 2010)

A review of the fitness values of the model given in Table 5 shows that all fit indices were within safe and acceptable limits. Some low values were observed only in the CFI value under the staff dimension. However, since the covariance recommended in modification indices were not under the same factors, no increase could be made in the CFI value by drawing a covariance. Duggirala et al. (2008) also state that CFI values greater than 0.90 were sufficient for factor validity. It was found to be 0.887 in the study of Aagja & Garg (2010), at 0.84 in the study of Chahal & Kumari (2010) and 0.92 in the Senic & Marinkovic (2013) study. In light of these findings, it was concluded that the factors under the staff dimension exhibited a good model fit and that the path diagram was statistically meaningful.

Table 6: CFA Factor Loads

	Physical			**Staff**			**Process**	
Dimension	**Item**	**Factor Load**	**Dimension**	**Item**	**Factor Load**	**Dimension**	**Item**	**Factor Load**
Food	22	1.00	**First**	33	0.92	**Hospitalization**	69	1.00
	23	0.95		35	1.23		68	0.73
	24	1.08		37	1.03		67	0.69
	25	1.10		38	0.77		60	0.99
	26	0.92		42	0.91		54	0.95
Cleanliness	13	0.85		48	0.85		49	0.90
	12	1.07		53	0.86	**Pre-hospitalization**	2	1.0
	11	1.00		61	1.00		1	1.07
Facility-1	70	0.99	**Second**	29	0.97	**Hospitalization**	65	1.00
	63	0.82		30	1.13		27	0.62
	16	1.00		31	0.99	**Companion**	72	1.00
Facility-2	5	1.02		32	1.00		71	1.00
	4	1.00	**Third**	7	0.88			
Ergonomy	18	1.09		44	0.91			
	17	1.13		56	1.02			
	14	1.00		58	1.00			
			Fourth	40	0.61			
				59	1.00			

Final reliability of the measure

Composite reliability values as well as the Cronbach's alpha value were reviewed for the reliability test (Chahal & Kumari, 2010; Senic & Marinkovic, 2013). Except for the low values in facility_1 and ergonomics factors covered under the physical dimension; third and fourth factors covered under the staff dimension; pre-hospitalization and companion process factors covered under the process dimension, composite reliability values were shown to be greater than 0.7, as recommended by Nunnally (1978).

Table 7: Composite Reliability and Explained Average Variance Values

Dimension	Factor	Composite Reliability	AVE
Physical	food	0,89	0.63
	cleanliness	0.86	0.68
	facility_1	0.58	0.32
	facility_2	0.75	0.60
	ergonomy	0.66	0.40
Staff	per_1	0.86	0.43
	per_2	0.80	0.61
	per_3	0.71	0.38
	per_4	0.60	0.33
Process	post_hospitalization	0.80	0.41
	hospitalization	0.76	0.62
	pre_hospitalization	0.60	0.45
	companion	0.54	0.36

Validity of the measure

Identification of the service quality structures, based on the literature and pilot studies, are indicators that face validity has been established (Murti et al., 2013). The content validity of the scale was established through a comprehensive conceptual and experimental literature review in order to generate an item pool (Schwab, 1980), interview with academics and experts (Duggirala et al., 2008; Chahal & Kumari, 2010), and feedback from doctors and patients. Satisfactory level of fit indices and factor weights, found as a result of the CFA, are indicators of construct validity. In terms of the assessment of the convergent validity, which means the existence of a significant correlation between a measure measuring a structure and other measures measuring the same structure, a single question (question 81) measuring overall service quality was added into the scale, in line with the recommendation of Aagja & Garg (2010); and after the questions were reduced to a single question, through weighing by regression coefficients, their relationship with the overall perception was examined and a statistically significant correlation was found ($p<0.01$), which is an indicator of convergent validity. Also, the factor loads are greater than 0.6 according to CFA results (Aagja and Garg, 2010). As can also be seen in Table 8, the average value of the correlations of each factor with other factors (ASV) being lower than average variance extracted (AVE) is another indicator of the convergent validity (Sony 2016). The AVE calculated and extracted for each factor shown in Table 8 in line with the recommendation of Fornell and Larcker (1981) being higher than the square of the maximum correlation (MSV) of that factor with other factors is an indicator of the discriminant validity (Pai and Chary, 2013; Dagger et al., 2007; Teng, 2007; Senic and Marinkovic, 2013; Chahal & Kumari, 2010). The degree of the correlation between the total scale score was based on the sum of all factor scores within the scope of this study and the degree of correlation between a single question and perception in question 81 was found to be 0.587. This value, being between 0.3 and 0.6, is an indicator of simultaneous validity (Teng, 2007).

Table 8: Discriminant and Convergent Validity Assessment

Physical	**food**	**cleanliness**	**fac_1**	**fac_2**	**ergo**	**AVE**	**MSV**	**ASV**
food	**0.79**					0.63	0.11	0.08
cleanliness	0.46	**0.82**				0.68	0.16	0.10
facility_1	0.52	0.61	**0.57**			0.32	0.16	0.10
facility_2	0.40	0.47	0.51	**0.77**		0.60	0.10	0.07
ergonomics	0.55	0.53	0.64	0.53	**0.64**	0.40	0.16	0.08
Staff	**first**	**second**	**third**	**fourth**		**OAV**	**MSV**	**ASV**
first	**0.66**					0.43	0.04	0.04
second	0.50	**0.78**				0.61	0.04	0.04
third	0.65	0.58	**0.62**			0.38	0.04	0.04
fourth	0.61	0.53	0.67	**0.58**		0.33	0.04	0.04
Process	**Post hosp.**	**Hosp.**	**Pre-hosp.**	**Comp.**		**OAV**	**MSV**	**ASV**
post hospitalization	**0.64**					0.41	0.08	0.05
hospitalization	0.33	**0.78**				0.62	0.08	0.05
pre_hospitalization	0.57	0.25	**0.67**			0.45	0.03	0.03
companion	0.74	0.63	0.26	**0.60**		0.36	0.08	0.06

OTHER ANALYSES

Quality of Findings and Behavioral Intent Analysis

In question 73, the patients' willingness to recommend the hospital to others was tested with the Net Promoter Score (Pollack & Alexandrov, 2013) question, and their degree of approval of the statement "*I will complain about the hospital to other people*." was investigated in question 74. A large majority of the patients (64.9%) said they would recommend the hospital to others, while the rate of patients who said they would certainly complain about the hospital to others stood at 12.1%. Another action regarding behavioral intention is the preference of the hospital again. In this respect, the question 82, asked, "*Would you chose the hospital again*?" The patients who said they would choose the hospital again (96.7%) were asked about their reasons. As a result, while the rate of patients who chose the hospital because of the obligation was 38.2%, the rate of patients who said they chose the hospital for its high quality services was 93.1%.

Qualitative Analysis of the Open-Ended Question

While question 83, "*Is there anything you want to add to improve the quality of services offered by the hospital*?" was directed as an open-ended question, only 55 of the 268 surveys (20.52%) were returned. The researcher and the doctor conducted text analysis independently, to establish reliability and validity. A comparison of the analysis results gave a reliability rate of 89% after dividing the

sum of difference values to the total number of complaints/recommendations. It can be seen that the highest number of complaints/recommendations concerned about companions. Parking lots, rooms and staff behavior are other topics of interest. Also, the responses given to the open-ended questions were comparatively analyzed with the corresponding replies in the scale and a consistency of 67% was found.

CONCLUSION

With a rapidly growing economy in Turkey, the share of the service sector is rapidly increasing. This study designed a 51-question, multidimensional, valid and reliable scale, based on a hierarchical and conceptual framework, to evaluate the service quality perceptions of inpatients in the healthcare industry, which has a significant place in the service industry, thereby contributing to the relevant literature. In this study, healthcare service quality was modeled as a hierarchical structure with the main dimensions being physical, staff and process quality. As a result of the conducted factor analyses, the sub-dimensions under the physical quality dimension were found to be food, cleanliness, facility-1, facility-2 and ergonomics. The sub-dimensions under the process quality dimension were pre-hospitalization, hospitalization, post-hospitalization and companions. The only problem with the sub-dimensions was that some items regarding the post-hospitalization process were associated with the hospitalization process. Furthermore, the sub-dimensions under the staff quality dimension were not fully discriminated. Based on the results of the prioritization model designed for the study, the order of importance of the dimensions was staff, physical and process, respectively. One other finding of the study was that service quality influences behaviors after purchase.

At a confidence level of 95%, significant differences were found between the "*departments where the patients were admitted, the patients' hearing good stories about the hospital and the patients' preference for the hospital*" in terms of their service quality perceptions. When the confidence level is reduced to 90%, the differences are also significant in terms of the variables of "*city, pain, sensation, number of patients and hearing bad things about the hospital*." Including "*the patients' sensations when responding to the survey*" in the scale is a new item that could be used in healthcare service quality scales. This is because, at a confidence level of 90%, it was found that sensations have a significant effect on perceived quality. The seven different situations relating to sensation is open to development, through an interdisciplinary study.

The scale recommended in this study is more comprehensive than the SERVQUAL and SQS surveys currently used in Turkey for service quality measurement in the healthcare industry. First of all, as the scale introduced as a result of this study is a scale unique to the healthcare industry, the physical dimension is included in detail, but is not included in SERVQUAL, a generic scale. Items about the process dimension, which are included only indirectly and with few questions in

the SERVQUAL, are addressed under a separate dimension in the scale recommended by this study, due to its importance. Although this causes the number of questions to increase, asking about only the perceived situation (51 items) instead of asking the same questions in the form of expected and perceived situations twice in SERVQUAL (22*2=44 items) makes the survey lengths similar. Also, one other reason for such an increase is that, while a single type of staff was projected in SERVQUAL, the designed scale specifically addresses the doctors and nurses separately. Another advantage of the recommended scale, compared with SERVQUAL, is the recommended prioritization model. Easily applied, particularly in elderly patients, owing to its visual support and dual comparison feature, the prioritization model allows for obtaining more precise and reliable results than the distribution of 100 points in SERVQUAL. On the other hand, the Service Quality Standards survey is simpler and does not allow for an analysis on prioritization. The Ministry of Health is also encouraging hospitals to develop the survey. In this regard, the detailed scale recommended to measure the service quality perceptions of patients in the healthcare industry could address this need. This study also differs from other studies in that the scale was conducted in each hospital department.

To implement the scale in only one public hospital is the limitation of this study. The trouble in getting permission from Ministry of Health and face-to-face implementation difficulties are the main reasons of this situation. The scale is implemented in 17 departments to charge the diversity.

Recommendations

In the next phase of this study, by adding the price dimension the scale can be conducted in private hospitals too, and the results can be compared. Due to the length of the survey form, there is a probability of the participants being unable to reply enthusiastically the questions in the final part of the form. Six different survey forms can be designed and applied by asking each of the questions in the three scale dimensions as the first, second and third question in order to test the order of the questions (Ozkara, 2015:84). This study only investigated the perceptions of patients. In future studies, designing a scale that can be evaluated simultaneously with the patient's companion, serving doctor and nurses, could be useful in revealing the different perspectives of different stakeholders for the same service. A possible problem, which could be encountered at this point, is the difficulty of conducting it. In consideration of the useful information that could be obtained as a result of the analysis of the replies to the open-ended question, it is anticipated that in future studies interviewing patients and using the critical incident technique will also prove useful. In the study by Lupo (2016), for which he designed a framework based on fuzzy logic to measure service quality in healthcare industry, the SERVQUAL and AHP approaches were used. In future studies, original scales using designs other than the SERVQUAL could also be combined with multivariable decision-making techniques, such as TOPSIS and ELECTRE, as well as AHP. A review of recent studies reveals that scales were also developed for specific departments. The scale

recommended by Agarwal and Singh (2016), for a pathology department in India, is an example of this. Future studies may develop specific sub-scales for other sub-departments of hospitals.

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APPENDIX 1: Inpatient Service Quality Assessment Scale

Department: ……

Hospital entrance type:

- Emergency
- Outpatient clinic
- Private outpatient consultation
- From other hospital

Type of room: Normal /Private

Number of patients in your room: 1 / 2 / 3 / 4 / 5 / 6 / more

How many days have you been in the hospital? ….

Is this your first time in this hospital? Yes / No

The reason for hospitalization: Operation / Treatment

Please answer questions with degree of agreement.

1: Strongly disagree 

2: Disagree 

3: Undecided 

4: Agree 

5: Strongly agree 

1. I didn't experience any problems about making appointment.
2. I didn't experience any problems about transportation to hospital.
3. *I preferred my physician.*
4. Information signs are sufficient in the hospital.
5. I could find anywhere.
6. *I didn't experience any problems during examination.*
7. I think, I got the right diagnosis.
8. *I didn't experience any problems in entrance procedure.*
9. *I was informed about patient rights.*
10. *I was informed about operations during time in hospital.*
11. Generally, I found hospital clean.
12. Generally, I found my room clean.
13. I found bed sheet clean.
14. I found my room temperature appropriate.
15. *There isn't any noise pollution.*
16. Air condition is sufficient.
17. Lightening is sufficient.
18. My bed is comfortable.
19. *Room facilities (refrigerator, television etc.) are working.*
20. *Room facilities are new.*

21. *Parking garage is sufficient.*
22. Generally, meals are good.
23. Meals are warm.
24. Meals are delicious.
25. Meal variety is sufficient.
26. Meals are satisfactory.
27. Meals are distributed timely.
28. *Meals are hygienic.*
29. Physicians gave me satisfactory information about my illness and treatment.
30. Physicians gave me opportunity to ask question.
31. Physicians answered my questions.
32. Physicians spared enough time for me.
33. Nurses gave me information about operations (temperature/tension monitoring, bloodletting, administering drugs)
34. *My relation with doctors was close.*
35. My relation with nurses was close.
36. *Physicians behaved polite and respectful for me.*
37. Nurses behaved polite and respectful for me.
38. Staff responsible for clean-up behaved polite and respectful for me.
39. *Staff responsible for meal distribution behaved polite and respectful for me.*
40. Personal privacy measures (closing door during examination, folding screens) was sufficient.
41. *Physician visits are sufficient.*
42. Nurse visits are sufficient.
43. *Nurse quantity is sufficient.*
44. I got the same service in different nurse's post.
45. *I trust my doctor.*
46. *I trust this hospital.*
47. *I think that physician's knowledge is satisfactory.*
48. I think that nurse's knowledge is satisfactory.
49. There is a harmony between physician and nurses.
50. *Physicians understand my requests quickly.*
51. *Nurses understand my requests quickly.*
52. *I can access my doctor easily in urgent cases.*
53. I can access nurses easily in urgent cases.
54. There is sufficient cooperation between hospital units.
55. *I didn't experience any problems during transportation in hospital (MR, surgery, X-ray)*
56. Hospital staff's clothes were clean and smart.
57. *Hospital staffs were helpful.*
58. I got the service best at the first time (blood vessel bursting etc.)
59. I was informed about service receiving time before (physician and nurse visiting period, MR taking hour etc.)
60. I got the services at the pre-determined time.

61. There is nondiscrimination between patients.
62. *I feel safe myself at night*.
63. I am satisfied about cafeteria services.
64. I didn't wait during operations.
65. I didn't experience any problems about the other patients.
66. I didn't experience any problems about religious worship.
67. I feel that my health is the top priority issue.
68. I think I got the right treatment.
69. I feel myself better since my first day in the hospital.
70. The room is suitable for companions.
71. Visiting hours is suitable.
72. I don't have any complaint about visitors.
73. I will advise this hospital for other people.
74. I will make complain about this hospital for other people.
75. Did you make any complaints to authorized staff during your stay in the hospital?
- *Yes (Go to Question 76)*
- *No (Go to Question 82)*

76. To whom did you make your complaint? ….
77. Subject of complain: …..
78. I accessed to authorized staff easily.
79. Staff showed concerned for me.
80. *My problem was solved*.
81. Generally, I found service quality sufficient.
82. Would you choose the hospital again?
- Yes (Go to Question 82.a. and 82.b)
- No (Go to Question 83)

82.a. I don't have any other choice.
82.b. I got high quality service.

83. Is there anything you want to add to improve the quality of services offered by the hospital?

Sex: Woman /Man
Age: ….
Marital Status: Single /Married/ Divorced
Educational Background

- I didn't go to school.
- I am graduated from elementary school.
- I am graduated from secondary school.
- I am graduated from high school.
- I am graduated from university.

Social security type;

- None
- SSK (Social Security Institution of Turkey for workers)
- Bag-Kur (Social Security Institution of Turkey for job providers)

- o Emekli Sandigi (Social Security Institution of Turkey for public servant)
- o Private Health Insurance

Where do you live? Eskisehir / Other city in Turkey

Did you prefer this hospital?

- o Yes
- o No

If you didn't prefer, the reason is

- o Ambulance brought me.
- o Another hospital sent me.
- o I can't afford another hospital.

If you prefer, the reason is; (multiple choice is possible)

- o Affordability
- o Proximity to my house
- o Time suitability
- o Technology
- o Physician
- o Advice
- o Working relatives

How do you feel yourself now?

- o Angry
- o Happy
- o Depressive
- o Excited
- o Afraid
- o Sad
- o Normal

Do you have companion with you?

- o Yes
- o No

Do you have pain now?

- o Yes
- o No

Do you like establishing relation?

- o Yes
- o No

Did you hear bad stories about this hospital?

- o Yes
- o No

Did you hear good stories about this hospital?

- o Yes
- o No