Determinants of Patient Satisfaction with Hospital Service Quality in the Context of Iranian Health Care Market

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This research aims to investigate the structural relationships between inpatient satisfaction and service quality dimensions. To that end, a multidimensional model was developed and empirically validated. Exploratory factor analysis, confirmatory factor analysis, and structural equation modelling were applied to specify the relationships between service quality dimensions and satisfaction. Results indicated that the general causal relationship between service quality and inpatient satisfaction was well supported in the Iranian health care delivery system. The research identified twenty-two items driving four primary dimensions which were positively related to patient satisfaction. The primary dimensions were interpersonal relationship, administrative processes, amenities, and physician care.

Keywords: Patient Satisfaction, Service Quality, Health Service, SEM analysis

1. Introduction

Patient satisfaction plays a key role in health care delivery system. Research indicate that patient satisfaction is associated with appointment keeping, behavioral intentions to comply with recommended treatment and medication use (Williams, 1994). In addition to its positive impact on patients' behavioral intentions and loyalty (Dagger et al., 2007; Mohamed and Azizan, 2015; Shabbir et al., 2016) health service performance can be improved by monitoring patient satisfaction (Andaleeb, 2001; Naidu, 2009). Several recent studies have shown that patient satisfaction is significantly influenced by perceived service quality (Lee et al., 2000; Choi et al., 2005; Dagger et al., 2007; Mohamed and Azizan, 2015; Johnson and Russell, 2015; Swain and Kar, 2018).

Therefore, in order to understand factors affecting patient satisfaction, researchers have probed various service quality dimensions that shape the patient's perception of service quality (Dagger et al., 2007; Naidu, 2009). Furthermore, to implement patient-oriented quality assessment measures, it would be essential for health care providers to understand what dimensions of service quality most satisfy patients (Clemes, et al., 2001; Zineldin, 2006). However, when customer is the patient, the constructs and

theory underlying satisfaction are not particularly simple (Berry and Bendapudi, 2007; Hekman et al., 2010), and validity of patient satisfaction measures have been called into question (Gill and White, 2009).

It is commonly accepted that the patient socio-cultural, health status, and geographic location are associated with satisfaction (Tucker, 2002; Batbaatar et al., 2017). Thus, it comes as no surprise that the dimensions of healthcare service quality may vary based on patient priorities in different nations and healthcare delivery contexts. During recent years, in many developing countries there has been heightened interest in investigating dimensions of service quality that significantly influence satisfaction from patients' viewpoint (Kim et al., 2017; Mohamed and Azizan, 2015; Shabbir et al., 2016; Zineldin et al., 2011; Aagja and garg, 2010). Yet, a few studies have conducted addressing this issue in the context of Iranian health care market. (Zarei et al., 2014; Zarei, 2015; Ziapour et al., 2016; Ravangard et al., 2017).

In this study we investigated that what dimensions of healthcare service quality are significantly related to satisfaction based on Iranian inpatient preferences. The model was validated by using confirmatory factor analysis (CFA) and the hypothesis were tested by taking advantage of structural equation modeling methods (SEM). This study highlights the importance of service quality-satisfaction relationship in the healthcare sector and provides implications to managers and practitioners working in the field.

2. Literature Review and Theoretical Framework

2.1 Service Quality Perception

Perceived service quality has been generally defined as a consumer's judgment regarding the overall excellence or superiority of the service (Parasuraman et al., 1988; Zeithaml, 1988). This judgment is often depicted as a consumer's comparison between expectations of service and actual service perceptions (Gronroos, 1984; Parasuraman et al., 1985). Gronroos (1984) based on consumers' comparison of perceived and expected service in evaluating service quality, developed a model in which he suggests that perceived service quality might be divided into two sets: functional quality (how the service is provided) and technical quality (what is provided).

Parasuraman et al. (1985) proposed SERVQUAL model and its five dimensions based on the gap between expected and perceived service. Although this approach has been widely applied and accredited, but it has attracted considerable criticism. Several researchers suggested that when the objective is to measure service quality perceptions, the measurement of service perceptions (performance-based measures) conducted better than measuring discrepancy between expectations and perceptions (Dabholkar, et al., 2000; Babakus and Boller, 1992; Cronin and Taylor, 1992; Brady and Cronin, 2001). In addition, cultural values affect service quality perceptions and expectations and consumers in different cultures have dissimilar interpretations of SERVQUAL dimensions (Karami et al., 2016). Furthermore, using SERVQUAL scale in the context of health care services has yielded mix results (Clemes et al., 2001; Dagger et al., 2007). For example, Wisniewski and Wisniewski (2005) supported 5-factor SERVQUAL as a useful instrument for assessing service quality in a hospital colposcopy clinic, Butt and de Run (2010) using SERVQUAL instrument indicated that the original 5-factor structure is valid for measuring service quality in the private healthcare sector. Herstein and Gamliel (2006) suggested private branding as an

additional sixth dimension of the SERVQUAL model, Ramsaran-Fowdar (2008) identified 7 factors in a study on private hospitals when using the original SERVQUAL scale, and Karassavidou et al. (2009) revealed a three-dimension SERVQUAL construct for measuring quality in Greek hospitals. Also, Meesala and Paul (2018) found that only two dimensions of the SERVQUAL (reliability and responsiveness) significantly impact patients' satisfaction in a populous developing country. Thus, many researchers have tested other instruments or developed their own scale to conceptualize and measure perceived service quality in the healthcare setting.

2.2 Patient Satisfaction and Service Quality Perception

In the context of service delivery, satisfaction has been conceptualized as a consumers' positive affective response resulting from an evaluation about the quality of the services provided. (Oliver, 1980; Spreng and MacKoy, 1996; Westbrook and Oliver, 1991). This concept implies that satisfaction is an emotional reaction to a service experience which occurs as a consequence of an evaluation process. This evaluation process of service quality is an essential aspect of customer satisfaction (Ryu et al., 2008). Several researchers have suggested and empirically supported that perceived service quality is an antecedent of customer satisfaction. This casual order is obtained through the findings of Woodside et al. (1989), Cronin and Taylor (1992), Oliver (1993), Spreng and MacKoy (1996), Lee et al. (2000) and Brady and Robertson, (2001). Swain and Kar (2018) proposed that hospital service quality is an antecedent of patient satisfaction based on extensive review of existing literature on hospital service quality, patient satisfaction and behavioral intention.

Therefore, we expected that patient satisfaction as a construct could be operationalized by determining perceived service quality dimensions. In recent years, important efforts have been done to understand how medical service quality is perceived by patients. Human disease is inherently complex and there is not a best course of treatment. The risks and benefits of each treatment option for an individual patient are unknown (Nembhard, Alexander, Hoff, & Ramanujam, 2009). Thus, hospital patients are likely to be keen for any "clues" and evidence of the hospital's competence and caring while evaluating the service quality during and after use (Berry et al., 2006). Donabedian (1992), believed that health care quality consisted of three primary elements: technical task, interpersonal exchange and the amenities of care. According to this view the quality of technical care is defined not by what is done, but by what is accomplished in line with patient preferences, and the quality of interpersonal care is defined as the interaction between the service provider and consumer based on consumer's needs and expectation. Also, the amenities of care as the third element of health care quality is described as the circumstances under which the task is performed and the exchange occurs. As previously mentioned, past studies have developed their own scale to determine health care service quality dimensions which have significant influence on patient satisfaction. For example, Reidenbach and Sandifer-Smallwood (1990) conducted a factor analysis and extracted patient confidence, business competence, treatment quality, support services, physical appearance, waiting time and empathy as service quality dimensions which positively and strongly correlated with patient satisfaction. It is proved that various dimensions have different priorities depending on patients' preferences in different countries, culture and medical settings. We studied articles that investigated health care service quality factors which impact on satisfaction. A summaries of service quality

dimensions influencing patient satisfaction from selected previous studies in different countries are presented in table 1.

Table 1 *Summaries of hospital service quality dimensions*

Study	Country settings	Service quality dimensions
Andaleeb (2001)	Bangladesh	responsiveness, assurance, communication, discipline, and baksheesh
Choi et al. (2005)	South Korea	physician concern, staff concern, Convenience of the care process, and tangibles.
Zineldin (2006)	Egypt and Jordan	quality of object (technical quality), quality of processes (functional quality), quality of infrastructure, quality of interaction, and quality of atmosphere.
Dagger et al. (2007)	Australia	interpersonal quality, technical quality, environment quality, and administrative quality.
Elleuch (2008)	Japan	process characteristics (patient-provider interaction) and physical attributes (settings and appearance).
Badri and Attia (2008)	UAE	quality of care, process and administration, and information.
Duggirala et al. (2008)	India	infrastructure, personnel quality, process of clinical care, administrative procedures, safety indicators, overall experience of medical care received, and social responsibility.
Aagja and Garg (2010)	India	admission, medical service, overall service, discharge process, and social responsibility.
Amin and Nasharuddin (2013)	Malaysia	admission, medical service, overall Service, discharge, and social responsibility.
Zarei et al. (2014)	Iran	perceived value, quality of process, and quality of interaction.
Mohamed and Azizan (2015)	Malaysia	infrastructure, interaction, administrative procedure, medical care, and nursing care.
Shabbir et al. (2016)	Pakistan	physician care, operational activities, and physical maintenance.
Kim et al. (2017)	South Korea	treatment effectiveness (physician performance and quality of service procedures), and facilities and environment.

A comparison of the health care service quality dimensions identified by researchers indicates that although they include some similarities but the number and nature of dimensions and sub-dimensions might vary across country settings and cultural differences.

2.3 Iranian Health Care Delivery System

Healthcare delivery system in Iran is categorized into the public-governmental sector, the private sector, and nongovernmental organizations (NGOs). The public-governmental sector is the main provider of primary health care services and provides a considerable part of secondary and tertiary health services across the country. The private sector mainly focuses on secondary and tertiary health care in urban areas. In addition, there are many nongovernmental organizations (NGOs) mainly active in special fields like children with cancer, breast cancer, diabetes, thalassemia, and so on. The Ministry of Health and Medical Education delegates its implementation to medical universities across the country. There is at least one medical university in every province which is responsible for planning, monitoring, training and supervision of teaching hospitals. As an important point, Article 29 of the Constitution of the Islamic Republic of Iran emphasizes that every Iranian has the right to enjoy the highest attainable level of health (Mehrdad, 2009).

3. Methodology

3.1 Sample and Setting

The study was conducted at a teaching hospital with 121 beds located in Hamadan, Iran. The survey was conducted on a sample of 260 recently discharged patients who received inpatient medical services at the hospital. In this study, we used a convenience sample which is a commonly used method in marketing research (Senic´ and Marinkovic´, 2013). The patients were assured that their answers would be retained confidential. From this random sampling, 13 questionnaires were returned incomplete and a total of 247 questionnaires were used for the final data analysis. A summary of the respondent’s demographic characteristics is provided in Table 2.

Table 2 Demographic characteristics

Demographic variable		Frequency (n)	Percentage (%)
Gender	Female	101	40.9%
	Male	146	59.1%
Age	≤29	4	1.6%
	30 – 49	36	14.6%
	50 – 69	133	53.8%
	70 – 89	74	30%
	high school	178	72.1%
Education	undergraduate degree	60	24.3%
	postgraduate degree	9	3.6%

The final sample consisted of 146 males and 101 females. Respondents’ average age was 58.7 years (SD = 15.2). Most of them had a high school degree (72.1 percent),

some had an undergraduate degree (24.3 percent), and others had a postgraduate degree (3.6 percent).

3.2 Scale Development

In order to develop a scale to measure the perceived service quality by Iranian healthcare consumers, we began by exploring frequently cited dimensions and sub-dimensions of service quality in the marketing literature, as summarized in the previous section. Because of the differences in country setting and culture, measurement items of service quality translated and developed precisely. Then, by investigating VOC hospital's documentations, we compared dimensions and sub-dimensions identified from the literature with patients' needs, requirements and preferences so as to understand how Iranian inpatient viewed health care services. Through this process, 22 items were developed based on the results of the VOC documentation and by modifying the service quality items obtained from the literature. All 22 items used a five-point Likert scale (scores 1-5).

The second construct, patient satisfaction, was operationalized using two global items. The global satisfaction items were "how satisfied were you with the treatment you received in the hospital?" and "how satisfied were you with your decision to use the hospital?" and a five-point Likert-type scale was used to capture the patients' overall feelings of satisfaction toward the hospital ranging from 1 (VERY UNSATISFIED) to 5 (VERY SATISFIED) (Cronin and Taylor, 1992; Bendall-Lyon and Powers, 2004; Elleuch, 2008).

3.3 Data Analysis

The analysis of the survey data was performed in three steps. The first step was to determine the hospital's service quality dimensions and the items applicable to every dimension by carrying out exploratory factor analysis (principal component analysis and varimax rotation methods). To evaluate the suitability of the data for factor analysis the Kaiser-Meyer-Olkin (KMO) test and the Bartlett's Test of Sphericity (BTS) were used. The criterion for the number of factors extracted was determined by eigenvalues. The factors having eigenvalues of 1 or more were extracted for further inspection. The items of each factor were considered practically significant only if they had a factor loading of higher than ± 0.5 and cross-loading of less than 0.4 relevant to the other factors (Hair et al., 2019).

In the second step, the validity of the measurement model was tested using confirmatory factor analysis (CFA). As one of the primary objectives of CFA, construct validity was performed through convergent and discriminant validities so as to determine to what extent variables measure theoretical latent constructs. The relative amount of convergent validity among item measures was estimated through factor loadings, average variance extracted (AVE), and construct reliability (CR). Discriminant validity was confirmed by the fact that the AVE of each dimension should be greater than the squared correlation between that dimension and the other dimensions. Also, the presence of cross-loadings indicates a discriminant validity problem. In the third step, after completing the CFA, causal structure validity of hypothesized relationships between latent variables (constructs) was tested using structural equation modeling (SEM). All of the statistical analyses were conducted using IBM SPSS 19 and LISREL 8.80 applications.

4. Results

4.1 Exploratory Factor Analysis (EFA)

The results from BTS were statistically significant ($p\text{-value} < 0.001$), and KMO measure of sampling adequacy value (0.892) showed that the data was well suited for factor analysis. EFA revealed four main dimensions for service quality, which explained 72.6 percent of the total variance. Considering the sample size of 247, the factor loadings of ± 0.5 or greater are deemed both practically and statistically significant (Hair et al., 2019). All factor loadings were higher than 0.5, which was greater than the recommended level. The results of EFA are presented in Table 3.

Table 3 Exploratory Factor Analysis Results

Dimensions / items	Mean	Loading	Eigenvalue	Explained variance	Cronbach's α
1. Interpersonal relationship			7.6	34.7	0.963
Q11: physicians treat with respect and dignity	4.05	0.863			
Q12: physicians treat patient politely	3.92	0.888			
Q13: nurses' empathy and individual attention	3.93	0.915			
Q14: friendly and courteous nurses	3.92	0.940			
Q15: nurses respond immediately	3.87	0.874			
Q16: helpful staff	3.89	0.894			
2. Administrative processes			3.5	16.2	0.948
Q17: quick and easy admission	3.95	0.823			
Q18: waiting time for surgery	4.00	0.879			
Q19: waiting time for medication	3.97	0.880			
Q20: waiting time for medical tests	3.92	0.860			
Q21: waiting time for physicians' appointment	3.95	0.864			
Q22: quick and easy discharge	3.97	0.908			
3. Amenities			3.1	14.4	0.845
Q1: neat and clean environment	3.61	0.617			
Q2: ambient condition	3.67	0.772			
Q3: calm and quiet environment	3.64	0.753			
Q4: up-to-date equipment	3.96	0.786			
Q5: tasty meals, adapted to patients' nutritious needs	3.67	0.776			
Q6: clean toilets	3.26	0.594			
Q7: clarity of signs and directions	3.93	0.702			
4. Physician care			1.5	7.2	0.859
Q8: knowledgeable and competent physicians	4.43	0.836			
Q9: complete and careful attention to the patient's words	4.35	0.794			
Q10: good describing of the recommended treatment plan to the patient	4.60	0.845			

The dimensions were labelled based on the contents of their item measures. Dimension 1 included six items, which explained 34.7 percent of the total variance, labelled “Interpersonal relationship”; Dimension 2 included six items, which explained 16.2 percent of the total variance, labelled “Administrative processes”; Dimension 3 included seven items, which explained 14.4 percent of the total variance, labelled “Amenities”; Dimension 4 included three items, which explained 7.2 percent of the total variance, labelled “Physician care”. Internal consistency was assessed by Cronbach’s alphas and composite reliability scores. All Cronbach’s alphas coefficients and composite reliability values are higher than 0.70.

4.2 Reliability and Validity

In the second step, confirmatory factor analysis (CFA) was subsequently conducted for the observed variables (22 items) and the latent variables (service quality dimensions) to confirm validity of pre-specified measurement model. Convergent validity was assessed through three stages (see table 4). First, all factor loadings were higher than 0.5, thereby indicating that they converge on their pre-specified dimensions. Second, the AVE measures ranged from 0.44 to 0.96. The highest AVE belonged to the “interpersonal relationship” dimension, and the lowest represented the “amenities”. All AVE values exceeded 0.50 except for one case that were below 50 percent, showing that almost the majority of the variance is explained by the dimensions. Third, the composite reliabilities were higher than 0.70, indicating a high level of internal consistency (Hair et al., 2019).

To examine discriminant validity, the squares of the correlations among the dimensions were lower than the corresponding AVE values (see table 4). In addition, there were not any presence of cross-loadings higher than 0.4 among items. These results provide good evidence of discriminant validity. Therefore, the results of CFA suggested that the measurement model for inpatient perception of service quality was satisfactory.

Table 4 Measurement Validation

Dimensions	AVE	CR	Interpersonal relationship	Administrative operation	Amenities	Physician care
Interpersonal relationship	0.8112	0.963	0.81			
Administrative processes	0.7578	0.9491	0.10	0.75		
Amenities	0.4447	0.84	0.02	0.04	0.44	
Physician care	0.6851	0.812	0.20	0.20	0.04	0.68

4.2 Hypothesis Testing

In the third stage of analysis, SEM was used to examine the relationships between four dimensions of service quality and patient satisfaction. The following hypotheses were developed:

- Hypothesis1: The quality of interpersonal relationship is positively related to patient satisfaction.
- Hypothesis 2: The quality of administrative processes is positively related to patient satisfaction.
- Hypothesis 3: The quality of amenities is positively related to patient satisfaction.
- Hypothesis 4: The quality of physician care is positively related to patient satisfaction.

H1 postulates a positive relationship between Interpersonal relationship and patient satisfaction, which was supported ($\bar{Y} = 0.52$; $t=10.98$; $p = 0.000$). H2 which proposed that administrative process has a positive impact on patient satisfaction, was also supported ($\bar{Y} = 0.46$; $t = 9.99$; $p = 0.000$). Hospital amenities was positively associated with patient satisfaction, supporting H3 ($\bar{Y} = 0.33$; $t = 8.27$; $p = 0.000$). Finally, physician care was found to positively associated with patient satisfaction, providing support for H4 ($\bar{Y} = 0.23$; $t=5.14$; $p = 0.000$). Table 5 provides a summary of the hypotheses and results.

Table 5 Summary of Hypotheses and Results

Hypothesis				Effect	t-value	Supported
H1:	Interpersonal relationship	→	Patient Satisfaction	0.52	10.98	Yes
H2:	Administrative processes	→	Patient Satisfaction	0.46	9.99	Yes
H3:	Amenities	→	Patient Satisfaction	0.33	8.27	Yes
H4:	Physician care	→	Patient Satisfaction	0.23	5.14	Yes

Figure 1 shows the results of the estimated structural model.

Figure 1 Results of the Estimated Model

The results of structural equation modeling (SEM) indicated that the four-factor model represented a good fit to the data: chi-square = 494.67; degrees of freedom = 242; SRMR = 0.052; $p = 0.00$; CFI=0.97; TLI = 0.97; NFI = 0.95; RMSEA = 0.065.

5. Discussion and Implications

This study contributes to the literature by exploring the patient satisfaction drivers in the context of public hospital service in Iran, a developing country. To that end, we develop a model to explain the relationship between perceived service quality and patient satisfaction. Our results proved that there is a robust relationship between service quality dimensions and satisfaction for Iranian inpatients. The model encompasses four dimensions: interpersonal relationship, administrative processes, amenities, and physician care. Results of EFA showed that 72.6 percent of the total variation in patient satisfaction was explained by the four-dimension structure, which was higher than the recommended level (Hair et al, 2019). Also, the four-dimensional structure confirmed by construct validity based on confirmatory factor analysis. Therefore, the findings suggested the four primary dimensions as important determinants of the patient satisfaction. Considering the explained variance, “interpersonal relationship” was the most important dimension of service quality from the patients’ perspective and have the greatest impact on the satisfaction. This result is in line with the previous studies conducted on service quality and patient satisfaction. Donabedian (1992) argued that patient satisfaction was greatly influenced by the properties of the interpersonal exchange. Choi et al. (2005) suggested that staff concern influence patient satisfaction the most, Badri and Attia (2008) highlighted the humanity side of the health care service, and Zarei et al. (2014) indicated the importance of the interpersonal relationship as an antecedent of patient satisfaction in the context of private hospitals in Iran. In fact, our findings confirm the concept that patients are more satisfied when they perceive care providers and support staff treat them with courtesy, take their problems seriously and respect their patient preferences (Vogus and McClelland, 2016).

“Administrative processes” was the second important dimension influencing the satisfaction according to the results of this study. In line with this finding, Duggirala et al. (2008) indicated that there is a positive and significant relationship among administration procedure and patient satisfaction, and Mohamed and Azizan (2015) proved that administration procedure influence service quality perception and patient satisfaction. Also, Zineldin et al. (2011) argued that “processes” is an element of service quality which is one of determinants of patient satisfaction.

“Hospital amenities” took the next rank based on the explained variance and impact on the satisfaction. Inpatients stay in hospital for an extended time and are likely to be in pain and under great stress, therefore hospital amenities are important to them as clue to perception of service quality (Berry et al., 2006). This dimension has been highlighted in several previous research settings with different label, such as “tangibles” (Choi et al., 2005), “environment quality” (Dagger et al., 2007), “infrastructure” (Duggirala et al., 2008; Zineldin et al., 2011; Mohamed and Azizan, 2015), and “facilities and environment” (Kim et al., 2017)

“Physician care” was the fourth dimension influencing the satisfaction. This finding is consistent with the several previous empirical studies which have proved the impact of physician care on patient satisfaction. Shabbir and Malik (2016) proposed that

physician care was significantly related with patient satisfaction, and Kim et al (2017) suggested that the performance of physicians is an important factor in patient satisfaction.

6. Managerial Implications

Monitoring patient satisfaction is controversial and important issue for managers because it is inconceivable providing good medical care without patient satisfaction. Having satisfied patients are viewed as indispensable indicator of sustainable health care service quality improvement (Cleary and McNeil, 1988; Tam, 2007). Results of this study can help hospital managers to understand significant determinants of patient satisfaction in order to identify the areas of service delivery in need of improvement. This understanding of patient's priorities can prevent from wasting resources.

Our study emphasizes the vital importance of the employees' interaction with patients. This would mean hospital managers must become more aware of the importance of the employees-patient relationship as a critical asset in achieving patient satisfaction. The crucial role of employees is a great opportunity, if they are trained and motivated to provide patient-oriented and compassionate service. However, serving acutely ill people in long hours work shifts with little downtime is exceedingly stressful and interaction with patient is difficult under this working condition (Berry and Bendapudi, 2007). Thus, hospital managers should implement strategies that focus on strengthening employees' communication skills, as well as improving their working conditions in order to reduce burnout among doctors and nurses.

In addition, our findings suggested the importance of optimizing administrative processes in an effort to reduce time of processes. Therefore, hospital managers should continuously restructure conventional administrative processes in order to optimize time and resources.

7. Limitations and Future Research

As with any study, this study has several limitations that can be useful for future research in the field. The study sample was selected from available respondents to the research team and the sample size was relatively small. Future studies using systematic random sampling method would improve the generalizability of the findings. As it discussed earlier, satisfaction is an affective reaction resulting from patients' evaluation regarding the quality of care. Thus, perceived service quality as a cognitive construct and satisfaction as an affective construct depend on individuals' thoughts, beliefs and emotions. Consequently, to explore specific dimensions and sub-dimensions of service quality that affect satisfaction, using qualitative methods like interviews and group discussions along with the quantitative methods may better reflect the patients' perspective. As argued in this study, interpersonal relationship between employees and patients is the most crucial factor affecting patient satisfaction. Future research should investigate strategies which can improve the quality of employees' interaction with patient in the context of hospitals.

8. References

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