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THE EFFECTS OF PERCEIVED SERVICE QUALITY ON PATIENT SATISFACTION AT A PUBLIC HOSPITAL IN STATE OF PAHANG, MALAYSIA

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ABSTRACT

This study focuses on the effects of perceived service quality on patient satisfaction in a public hospital. Data was collected from 109 respondents that experienced the hospital service. Using a PLS-SEM tool, the hypothesized effects among the constructs were tested empirically. No statistically significant relationships were found between perceived service quality construct and (i) the hospital infrastructure constructs and it did not support the hypothesis H1 (beta= 0.000 and t-value= 0.004, $\rho > 0.05$*) (ii) interaction with care providers construct and it did not support the hypothesis H2 (beta= -0.045 and t-value= 0.443,* $\rho > 0.05$*). However, the results indicate that the path coefficients were significant between perceived service quality construct and (iii) patients' perception of administrative procedure construct and it supported the hypothesis H3 (beta= 0.317, t-value= 3.026,* $\rho < 0.01$*), (iv) patients' perception of medical care construct and it supported the hypothesis H4 (beta= 0.182, t-value= 2.150,* $\rho < 0.05$*) and (v) patients' perception of nursing care construct and it supported the hypothesis H5 (beta= 0.481, t-value= 5.190,* $\rho < 0.01$ *). The constructs were considered the key factors that influence the perceived service quality in the current study. The path coefficient from perceived service quality to patient satisfaction was very significant and it supported the hypothesis H6 (beta= 0.816, t-value= 19.460,* $\rho < 0.01$*). The antecedents of service quality demonstrated considerable power in explaining variance in perceived service quality. The infrastructure, interaction, administrative, medical care, and nursing care constructs explained 69.7% (*R^2 *= 0.697) of the variance in perceived service quality and overall the model explained 66.6% (*R^2 *=0.666) of the variance in patient satisfaction. Therefore, it can be concluded that the model is suitable in determining the health care service quality.*

Keywords: Health care service, Perceived service quality, Patient satisfaction

INTRODUCTION

The hospital is an organization that provides a service. It is a complex service organization and according to Rose, Uli, Abdul, and Ng (2004) it is "a true people-based service industry". The service involves a high degree of intangibility, inseparability of production and consumption, highly interaction between customer and service provider, and is taking place at the same time (Grönroos, 1998; Reeves & Bednar, 1994; Parasuraman et al. 1985). In order to receive the service, a patient has to be present in the service process and the successful delivery of health care service requires a patient's cooperation both during and after the

encounter. Therefore, the hospital service quality is viewed as a very important factor that has an effect on patient satisfaction (Dagger, Sweeney & Johnson, 2007).

This study was to evaluate the perceived service quality effects on patient satisfaction. In an effort to understand the relationship between health care service qualities constructs, specific question about the relationship of the service quality antecedents, the perceived service quality, and the patient satisfaction has to be answered. The current study was addressing the following main question to interpret the constructs. What were the effects of service quality antecedents to the perceived service quality and consequently to the patient satisfaction with the health care service?

Although much research has been conducted in health care service quality, however less attention has been paid to examine the effect of service quality antecedents in relation to perceived service quality and patient satisfaction. Therefore, further empirical research was conducted to confirm the relationships between service quality antecedents and perceived service quality, and the effect of perceived service quality on patient satisfaction.

LITERATURE REVIEW

The literature shows the service quality is complex processes and difficult to evaluate. It is because high-involvement relationships and some services are high in credence qualities, making customer evaluations complex and difficult. In the literature, it is generally accepted view that there might be no universal quality construct that is applicable to all service contexts. By referring to the situation, the integrated and hierarchical model has been modified to be able to use in different context and settings (e.g., model by Dabholkar *et al.* 1996, Dabholkar *et al*., 2000, Brady & Cronin, 2001, Zineldin, 2006, and Dagger *et al*., 2007). Thus, a comprehensive framework combining various aspects of existing frameworks and models appears possible. Therefore, in the context of health care service quality, a number of new dimensions of service quality have emerged.

The current study based on models developed by Dabholkar *et al.* (2000) and incorporating many of relevant constructs and items of service quality identified in literature, which are appropriate in the health care context. Dabholkar *et al.* (2000) proposed that constructs relevant to service quality are, in fact, better conceived as its antecedents rather than the individual dimensions. The model concept reflects the complexity and multidimensionality of the service quality scale in the healthcare sector. The model based on established relationships among service quality and patient satisfaction. However, in the context of health care, service quality may influence by many factors. As such, the need to understand the factors are very important, among them is the service quality antecedents.

Service Quality Antecedents

In the literature, factors contributing to service quality in health care service are complex and there is no consensus among researchers. SERVQUAL scales developed by Parasuraman et al. (1988) have offered significant advances to the understanding and measurement of perceived service quality. Perceived health service quality has been studied widely in the healthcare service sector and researchers have listed a range of antecedents that contribute to perceived service quality (Andaleeb, 1998; Hasin *et al*., 2001; Zineldin, 2006; Duggirala *et al*., 2008).

The most widely recognized framework for the healthcare service quality has been developed by Donabedian (2005). The framework consists of structure, process, and outcome dimensions. The structure which comprises of the attributes of the facilities, equipment, personnel, and organization where care is provided; process which include activities that take

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place between care providers and the patients who receive care; and the outcome which is the ultimate health conditions resulting from services provided (Donabedian, 2005). Studies have shown that of the three categories of quality assessment, the process quality/functional quality is the most directly and most relevant in healthcare service context (Choi *et al*., 2004). Therefore, the process quality or functional quality delivered by doctors, nurses and other healthcare service providers are an important factor in evaluating healthcare service quality.

After reviewing the available literature on the healthcare service quality, it is noted that antecedent of service quality consists of technical quality and functional quality components. The technical quality mostly refers to the quality of medical care and nursing care provided; it refers to the basic technical accuracy and procedures, which is defined based on the technical accuracy of the diagnosis and medical procedures or compliance with professional specifications (Lam, 1997). The technical quality also refers to the efficiency of the staff as they go perform their routine; which includes clinical and medical skills, familiarity with the administration of drugs, nursing skills, and laboratory technicians' competence in carrying out tests on blood samples (Tomes & Ng, 1995). Functional quality is the process of care provided; it refers to the way in which the services delivered to customers. Patients often rely on functional aspects such as infrastructure, interaction, and administrative construct rather than technical aspects when assessing the quality of healthcare service. According to Lam (1997) patients base their evaluation of health care service quality on the quality of interpersonal factors and the environmental factors, which the medical professional has been regarded as less important.

Hence, the following paragraphs briefly discuss the antecedents of healthcare service quality which include technical and functional quality. The antecedents are infrastructure, interaction; administrative, medical care and nursing care which are related to perceived service quality construct and then to patient satisfaction construct.

Infrastructure

The concept of infrastructure is an indirect measure quality of care. Infrastructure includes the tangible features of a service delivery, which is related to equipment, furniture, physical appearance of the hospital, facilities, availability of resources, and environment. It is also referred to as manmade organization's physical facility or services capes, which include exterior attributes such as parking, the signage, and the landscape, and interior attributes such as design, layout, and equipment (Zeithaml *et al*., 2009; Sureshchandar *et al*., 2002). Since the infrastructure is a concept that is quite stable and has a significant relationship with quality of care, therefore, it can affect the performance of the health care system, that is, it affects patient perception toward healthcare service quality delivered.

Interaction

Health care services are intangible and often require patient involvement in the treatment process. This situation contributes to intimate interactions and extensive communications between patient and care providers. Thus, in health care service the interaction between patients and care providers is very important (Andaleeb, 1998; Hasin *et al*. 2001; Hausman, 2004; Zineldin, 2006). In this study, interaction is defined as patients' dealings with doctors and nurses during their stay in the hospitals. Andaleeb (1998) based on a sample of 130 respondents developed and tested five-factor model of hospital service quality which has three of the five dimensions, "competence of staff", "and demeanor of staff" and "communication" to represent interaction constructs. The research found that two of the dimensions, perceived competence of the hospital staff and their demeanor have strong impact on service quality and patient satisfaction. The interactions between patients and care

providers have an effect on the patient's perception of quality of care (Cunningham *et al.* 2006). This idea is supported by Van Dam *et al.* (2003), in the systematic review, they establish that patient's interaction with care providers affect their perception on service quality and patient outcome.

Administrative

Administrative service assists the production of a core service at the same time adding value to a customer's use of the service (Baalbaki *et al.*, 2008). Administrative procedure in hospital includes the processes of admission, stay and discharge of patients, clinical appointments, and waiting time for consultation. The ease of these administrative procedures is important in ensuring patient satisfaction with the hospital service quality (Atinga *et al.*, 2011). According to Aagja and Garg (2010) patients in public hospitals relate the admission process to the perceived service quality.

Medical Care

This is the core service or primary service or technical quality of hospital service. Although medical care has the highest priority with patients, the evaluation of medical care is generally not understood by the majority of them. Therefore, researchers have resorted to measuring medical care by proxy. Thus, the medical care dimension is also known by different terms: including doctor composite (Andaleeb, 2008), clinical quality (Marley, Collier, & Goldstein, 2004); skill and ability (Baldwin & Sohal, 2003); physician concern (Choi *et al.*, 2004, 2005); and technical quality (Dagger *et al.*, 2007; Rose *et al.*, 2004). Medical care explains "what" service the patient receives from the doctor (Marley *et al.*, 2004). Andaleeb (2008) study the healthcare service quality delivered to children in Bangladesh and establish that doctor composite (medical care) is one of the healthcare service quality construct which has a significant and strong impact on patient satisfaction.

Nursing Care

The hospital workforce is composed of many disciplines, but typically nurses make up the majority of employees in the settings. In this respect, the nurse is a primary care provider and spent more time with patients as compared to other care providers (Tafreshi *et al.*, 2007). Accordingly, major service delivers in a hospital is nursing care. Thus, nursing care is experienced and considered by patients as one of the factors influencing overall care quality delivered in hospital (Wagner & Bear, 2009; Laschinger *et al.*, 2005; Yellen, Davis, & Ricard, 2002). Dagger *et al.* (2007) confirmed that the nursing care is strongly and significantly related to service quality.

Relationship between Service Quality and Patient Satisfaction

The relationship between satisfaction and service quality has attracted great attention in the literature. In the marketing literature several studies showed that perceived service quality and service satisfaction have a mixed relationship. Often, the nature of the service quality and satisfaction link is seen as linear, indicating that the level of higher service quality leads to higher levels of satisfaction (Pollack, 2008). A number of studies have confirmed that service quality is an antecedent to customer satisfaction (Cronin & Taylor, 1992; Dabholkar *et al.*, 2000; Brady & Robertson 2001; and Dagger & Sweeney, 2006). According to Dabholkar *et al.* (2000) and Choi *et al.* (2004) customer satisfaction and service quality are two distinct but related constructs. Dabholkar *et al.* (2000) recommended that customer satisfaction and perceived service quality should be measured separately in order to understand how customers evaluate service quality.

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Customer satisfaction in marketing concept has been applied in healthcare sector in order to serve the patient in a more efficient and effective way (Kay, 2007). Satisfaction with health care is related to concepts of health care quality. According to Donabedian (2005) patient satisfaction has become an important outcome of healthcare service quality and is not only an important component of quality of care, but also a key contributor to the definition of quality from the perspective of patient expectations. The patient's perception of service quality is believed to positively affect patient satisfaction, indicated that patient satisfaction is a key outcome of care (Andaleeb, 2001). Therefore, exist a strong linked between healthcare service quality and patient satisfaction.

In the health care literature, several studies have established the relationship between quality of hospital services and patient satisfaction. The relationships have been investigated by many researchers (e.g., Badri *et al*. 2009; Scotti *et al*., 2007; Sohail, 2003; Phillips, 1996). A study conducted by Gotlieb *et al*. (1994) on 232 discharge patients found that perceived service quality positively affects patient satisfaction. This finding was supported by Tucker and Adams (2001), in a study of patient satisfaction at public hospitals; they confirmed that the service quality has a positive relationship with patient satisfaction. Accordingly, Badri et al. (2009) analyzed the relationship between healthcare service quality and patient satisfaction using structural equation modeling among patients at United Arab Emirates public hospitals and found that the perceived service quality is positively related to patient satisfaction. This causal relationship between service quality and patient satisfaction is supported by many empirical studies (e.g., Alrubaiee & Alkaa'ida, 2011; Dagger *et al*., 2007; Scotti, Harmon, & Behson, 2007; Choi et al., 2005; Merkourisa, Papathanassogloub, & Lemonidoub 2004). Thus, there is a strong link between perceived service quality and patient satisfaction in health care service.

THEORETICAL FRAMEWORK

Based on the literature review and discussions presented above, the following theoretical framework for health care service quality was developed. Figure 1 shows the service quality antecedents, namely, infrastructure, interaction, administrative, medical care and nursing care, perceived service quality, and patient satisfaction constructs. All the constructs have been briefly explained in the above section.

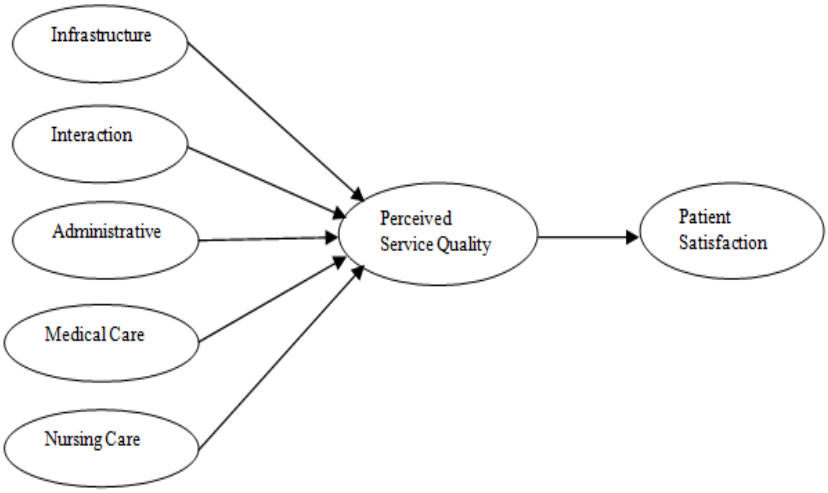

Figure 1. Conceptual Framework

Sources: adapted from Dabholkar et al. (2000).

HYPOTHESES

Prior discussion has led to a brief examination of the existing literature and the resultant research gaps led to the development of the hypotheses in this research. The six hypotheses are:

H1: Infrastructure is positively related to perceived service quality.

H2: Interaction is positively related to perceived service quality.

H3: Administrative is positively related to perceived service quality.

H4: Medical care is positively related to perceived service quality.

H5: Nursing care is positively related to perceived service quality.

H6: Perceived service quality is positively related to patient satisfaction.

METHODOLOGY

Instrument

Basically, all indicators or items were adapted from previously validated scales and were modified to measure the specific constructs in this study. The constructs' items (indicators) in the questionnaire were direct, simple and short sentences to fit the patients as the respondents in this study. The questionnaires were designed based on a multiple indicator measurement scale adapted from the past researchers namely Duggirala, Rajendran and Anantharaman (2008), Andaleeb and Millet (2010), Dagger and Sweeney (2007), Dagger, Sweeney and Johnson (2007), and Arasli, Ekiz and Katircioglu (2008). Most of the indicators re-worded to fit the healthcare service quality being studied. To establish support for face validity a panel of experts reviewed the constructs and the initial set of measure items. Based on their suggestions a few of the items were rephrased but no item was deleted. This study adapted a 5-point Likert-type scale to assess the model. All constructs were reflective since the items reflect the meaning of the constructs. Reflective indicators mean they measure the same underlying phenomenon (Chin, 1998). To test the research model, the questionnaire has 43 indicators that form the exogenous and endogenous constructs. The indicators grouped under 7 latent constructs (see Figure 1).

Sample

The unit of analysis in this study is an individual who had experienced being hospitalized. The population for this study comprised of residents of Kuantan town who had admitted into Kuantan general hospital in the past 12 months. Discharged patients are suitable to be the respondents in healthcare service quality study because being admitted into hospital represents salient experience and it is not easily forgotten (Andaleeb, 2008; Andaleeb, 2000). In the absence of reliable lists, purposive convenience sampling methods were used. The general rule for the minimum number of respondents or sample size is ten-to-one ratio of the number of independent (exogenous) variables to be tested as suggested by Hair *et al*. (1998). Since there are 6 independent (exogenous) variables in this study, a minimum sample size of 60 respondents would be appropriate.

The survey questionnaire was distributed to the potential respondents during working day by the researcher. The time allocated for the respondents to answer the questionnaire was between 10 to 20 minutes. The potential respondents were first filtered by asking them a few questions which regards to their experience being admitted into the hospital before they were given the set of the survey questionnaire. Confidentiality was ensured as the subjects were not required to state their names or other particulars on the survey form. A total of 109

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useable samples was collected. Therefore, the response achieved was considered adequate for the study. Table 1 shows the profile of the respondents

Table 1. Respondents' Profile

Demographic Variable	*Categories*	*Frequency (N = 109)*	*Percentage (%)*
Gender	Male	32	29.4
	Female	77	70.6
Age	18 to 25	28	25.7
	26 to 35	51	46.8
	36 to 45	23	21.1
	46 to 55	2	1.8
	56 and above	5	4.6
Ethnic Background	Malay	104	95.4
	Chinese	1	0.9
	Indian	3	2.8
	Other	1	0.9
Marital Status	Single	33	30.3
	Married	76	69.7
Educational Level	Primary	2	1.8
	SPM/MCE	14	12.8
	STPM/HSC	1	0.9
	Diploma	10	9.2
	Graduate	63	57.8
	Post Graduate	19	17.9

Results and Data Analysis

The current study used smartPLS (Ringle, Wende & Will, 2005) partial least square structural equation modelling (PLS-SEM) tool to evaluate the manner in which the constructs presented in Figure 1 might relate to each other. The PLS-SEM technique is a statistical method that has been developed for the analysis of latent variable structural models involving multiple constructs with multiple indicators. PLS-SEMs have a number of potential strengths, including the ability for the testing of the psychometric properties of the scales used to

measure a variable, as well as the strength and the direction of relationships among the variables (Akter *et al*., 2011).

The PLS-SEM consisted of two sets of testing equations: First, the assessment of measurement model, and the second, the assessment of the structural model (Hair, Ringle & Sarstedt, 2011). The measurement model which is the process of calculating the item reliability and validity; and the structural model which is the method of determining the appropriate nature of the relationships (paths) between the measures and constructs (Hair *et al*. 1998). The estimated path coefficients indicate the sign and the power of the relationships while loadings indicate the strength of the measures (Hair *et al*., 2011). The confirmatory factor analysis was first conducted to assess the measurement model; then, the structural relationships were examined (Anderson & Gerbing 1988; Hair *et al*. 1998).

Measurement Model

The two main criteria used for testing the measurement model are reliability or internal consistency and validity. The reliability of a research instrument concerns the extent to which the instrument produces consistent results in repeated measurements, whereas validity is the degree to which a test of how well an instrument that is developed measures and what is supposed to measure (Sekaran & Bougie, 2010). To validate our measurement model, two basic approaches to validity were assessed: convergent validity, and discriminant validity.

Reliability Analysis

To analyze the reliability/internal consistency of the items, we used the Cronbach's alpha coefficient and composite reliability (CR) value. Table 2 shows all Cronbach's alpha values are above 0.6 cutoff values as suggested by Nunnally and Berstein (1994). Another way to determine internal consistency is by looking at composite reliability values. The composite reliability (CR) values also ranged from 0.876 to 0.944 (Table 2). According to Fornell and Larcker (1981) a composite reliability value of 0.70 or greater is considered acceptable. As such we concluded that the measurement model were reliable.

Convergent Validity

When multiple items are used to measure an individual construct, the item (indicator) convergent validity should be one of the main concerns to the researcher. The measurement model was tested for convergent validity which is the extent to which multiple items to measure the same concept are in agreement (MacKinnon, 2008).

Anderson and Gerbing (1988) stated that convergent validity is established if all factor loadings for the items measuring the same construct are statistically significant. According to Hair *et al*. (1998) convergent validity could be accessed through factor loadings, composite reliability and the average variance extracted. The results of the measurement model (Table 2) show that the loadings for all items exceeded the recommended value of 0.5 (Hair *et al*. 1998). Composite reliability (CR) values ranged from 0.876 to 0.944 which exceeded the recommended value of 0.7 (Hair *et al*. 1998).

All values of the average variance extracted (AVE) which measures the variance captured by the indicators relative to measurement error were greater than 0.50 to indicate acceptability of the constructs (Fornell & Larcker, 1981; Henseler, Ringle, & Sinkovics, 2009). The table indicates that these indicators satisfied the convergent validity of the constructs.

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Table 2. Results of Measurement Model

Construct	*Items*	*Loading*	*t-value*	R^2	*Cronbachs Alpha*	CR^1	AVE^2
Infrastructure Interaction	INF1	0.621	6.718		0.837	0.876	0.505
	INF2	0.637	9.882				
	INF3	0.693	9.922				
	INF4	0.697	9.514				
	INF5	0.735	15.892				
	INF6	0.762	14.237				
	INF7	0.813	21.632				
	INT1	0.761	13.212		0.932	0.944	0.677
	INT2	0.825	26.678				
	INT3	0.793	16.679				
	INT4	0.822	21.237				
	INT5	0.890	33.653				
	INT6	0.826	14.864				
	INT7	0.864	35.619				
	INT8	0.792	18.895				
Administrative	AMD1	0.759	16.076		0.898	0.921	0.664
	AMD2	0.760	14.158				
	AMD3	0.700	8.485				
	AMD4	0.897	41.343				
	AMD5	0.844	31.478				
	AMD6	0.907	48.416				
Medical Care	MC1	0.829	21.947		0.901	0.922	0.628
	MC2	0.729	11.734				
	MC3	0.783	17.111				
	MC4	0.818	18.065				
	MC5	0.820	19.063				
	MC6	0.768	19.495				
	MC7	0.795	13.393				
Nursing Care	NC1	0.781	17.247		0.875	0.909	0.666
	NC2	0.774	17.196				
	NC4	0.872	26.019				
	NC5	0.837	23.513				
	NC6	0.813	21.317				
Perceived Service Quality	PSQ1	0.920	51.917	0.697	0.901	0.931	0.772
	PSQ2	0.884	32.893				
	PSQ3	0.905	43.697				
	PSQ4	0.802	12.014				
Patient Satisfaction	PS1	0.854	37.330	0.666	0.905	0.929	0.724
	PS2	0.805	13.722				
	PS3	0.890	32.268				
	PS4	0.856	24.685				
	PS5	0.847	20.890				

Note:

1. Composite reliability (CR)= (square of the summation of the factor loading)/{(square of the summation of the factor loading) + (square of the summation of the error variances)}
2. Average variance extracted (AVE) = (summation of the square of the factor loadings)/{(summation of the square of the factor loadings) + (summation of the error variances)}

Table 2 also shows that the items of the constructs (the Infrastructure, the Interaction, the Administrative, the Medical Care, the Nursing Care, the Perceived Service Quality and the Patient Satisfaction) were all valid measures of their respective constructs based on their loadings values (standardized estimates) and statistical significance (Chow & Chan 2008). All t-values greater than 2.33, thus, all measures were significant at the level of 0.001.

Discriminant Validity

Next we validated the discriminant validity of our instrument. The discriminant validity represents the extent to which measures of a given construct differ from measures of other constructs in the same model (MacKinnon, 2008). In a PLS context, the most important criteria for adequate discriminant validity is that a construct should share more variance with its items than it is should share with other constructs in a given model (Hulland, 1999). It was assessed by examining the correlations between the measures of potentially overlapping constructs. Items should load more strongly on their own constructs in the model, and the square root of the average variance extracted for each construct is greater than the levels of correlations involving the construct (Fornell & Larcker, 1981). As shown in Table 3, the square root of the average variance extracted for each construct is greater than the items on off-diagonal in their corresponding row and column, thus, indicating the adequate discriminant validity. The inter-construct correlations also show that each construct shares larger variance with its own measures than with other measures. In sum, the measurement model demonstrated adequate convergent validity and discriminant validity.

Table 3. Discriminant validity of constructs

	1	*2*	*3*	*4*	*5*	*6*	*7*
1 INF	*0.711*						
2 INT	0.552	*0.823*					
3 AMD	0.573	0.624	*0.815*				
4 MC	0.508	0.768	0.608	*0.792*			
5 NC	0.607	0.721	0.707	0.604	*0.816*		
6 PSQ	0.541	0.639	0.740	0.630	0.782	*0.879*	
7 PS	0.586	0.691	0.666	0.686	0.691	0.816	*0.851*

Diagonals (in bold) represent the square root of the average variance extracted while the other entries represent correlations.

Hypotheses Testing

The hypothesis testing was carried out by examining the path coefficients (beta) between latent constructs and their significance. To test the significance of the path coefficients the

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bootstrapping technique was utilized with a re-sampling of 500 (e.g., Bradley *et al*., 2012). The R^2 value of endogenous latent construct illustrates the predictive relevance of the model. Table 4 presents the results and hypothesis testing. The findings support the hypotheses H3, H4, H5 and H8 (t-values range from 2.150 to 19.460); however hypotheses H1 and H2 were not supported. The R^2 value of Perceived Service Quality construct was 0.697 suggesting that 69.7% of the variance in Perceived Service Quality was explained by the Infrastructure, the Interaction, the Administrative, the Medical Care, the Nursing Care constructs (see, Table 2). The R^2 value of Patient Satisfaction construct was 0.666 suggesting that 66.6% of the variance in Patient Satisfaction was explained by Perceived Service Quality (see, Table 2). Thus, the R^2 of the endogenous constructs in this model were considered significant at 0.01level (Hair *et al*., 1998).

Table 4. Path coefficients and hypothesis testing

Hyp	*Relationship*	*Beta*	*t-value*	*Supported*
H1	Infrastructure→Perceived Service Quality	0.000	0.004, $\rho > 0.05$	No
H2	Interaction → Perceived Service Quality	-0.045	0.443, $\rho > 0.05$	No
H3	Administrative → Perceived Service Quality	0.317	3.026, $\rho < 0.01$	Yes
H4	Medical Care → Perceived Service Quality	0.182	2.150, $\rho < 0.05$	Yes
H5	Nursing Care → Perceived Service Quality	0.481	5.190, $\rho < 0.01$	Yes
H6	Perceived Service Quality → Patient Satisfaction	0.816	19.460, $\rho < 0.01$	Yes

DISCUSSION AND CONCLUSION

The main objective of this study is to investigate the relationship between the antecedents of service quality, perceived service quality (PSQ) and patient satisfaction (PS). Patient satisfaction is distinguished as being the ultimate endogenous construct of the research model. We tried to compose a conceptual model that would better predict and explain perceived service quality and patient satisfaction in a health care context. The model was evaluated based on data collected from 109 respondents. Our model seemed to have better power to explain the respondents/patient's attitude toward perceived service quality and patient satisfaction in the health care context. The perceived service quality and patient satisfaction accounted for 69.7 and 66.6 percent of the variance explain respectively.

Infrastructure to Perceived Service Quality (H1)

The infrastructure construct focuses on appearance, food and physical facilities available in the ward; it is also referred to tangible dimension. Previous studies of health care service quality found that infrastructure influences perceived service quality (e.g., Duggirala, Rajendran, and Anantharaman, 2008). Our findings were different. The infrastructure was not significantly influences the perceived service quality (H1). The results can be explained by the fact that most of the respondents were university graduates (84.9%, see Table 1) that, due to their knowledge and intellectual capacities, they can easily adapt to the situation and could endure with the facilities provided. Thus, linking the infrastructure construct to the patient's evaluation of the perceived service quality in this setting was not supported theoretically.

Interaction to Perceived Service Quality (H2)

Interaction refers to the relationship between care providers (doctors and nurses) with patients during their hospitalization. In this study, we found that the interaction construct was not significantly related to perceived service quality (H2). However, the interaction construct was found to be significantly influenced perceived service quality in a number of studies (e.g., Andaleeb, 1998; Cunningham *et al*. 2006; Van Dam *et al*., 2003). The findings could be explained that doctors and nurses in the hospital were busy they could not attend to the individual patient. However, more plausible explanation could be that during the patient's hospitalization, daily care was provided by several doctors and nurses. The opportunity for the patient and the care provider to develop into service relationship and to maximize the interaction for the evaluation of service quality was limited. Thus, relating the patient and the care provider in this study did not provide an adequate test of the theoretical relationship between the interaction and the perceived service quality constructs.

Administrative and Perceived Service Quality (H3)

The administrative procedure in this study refers to the processes of admission, clinic appointments, and waiting time for consultation. In this study, the hypothesis stated that administrative is positively related to perceived service quality. Hypothesis testing demonstrated a very strong relationship between administrative and perceived service quality (Table 3). The finding regarding to the relationship between the administrative with perceived service quality is consistent with findings of previous studies examining the relationship between administrative procedure and service quality (Atinga *et al*., 2011; Aagja & Garg, 2010).

Medical Care and Perceived Service Quality (H4)

This is the technical quality construct of hospital service that the patient receives from the doctor. The hypothesis 4 stated that the medical care is positively related to perceived service quality. The hypothesis was supported. The results of the hypothesis testing indicated that the magnitude of the relationship between medical care and perceived service quality was weak with little significance (Table 3). Previous studies examination the same relationship found that strong and very significance relation between the constructs (Andaleeb, 2008; Rose *et al*., 2004). The results can be explained by the fact that doctors are very busy with many patients under their care. Thus, they spend very little consultation time with individual patients. As such, it was very difficult for the patient to evaluate the care provided by the doctor. Therefore, linking the patient and doctor did provide little significance of the theoretical relationship between the medical care and the perceived service quality constructs.

Nursing Care and Perceived Service Quality (H5)

The nurse is considered as a primary care provider that spent more time with patients during their hospitalization and nursing care is one of the technical quality construct of health care service. The hypothesis 5 stated that the nursing care is positively related to perceived service quality. Hypothesis testing in this study showed a very strong relationship between nursing care and perceived service quality (Table 3). Previous studies examining the nursing care in relation to perceived service quality supported the finding (Wagner & Bear, 2009; Laschinger *et al*., 2005; Yellen, Davis, & Ricard, 2002; Dagger *et al*., 2007). The results could be explained that nurses available almost 24 hours in the ward. Thus, the patients getting familiar with their routine and they could evaluate nursing care more precise. Therefore, relating patient and nurse in hospital service did provide very strong theoretical relationships between the nursing care and the perceived service quality constructs.

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Perceived Service Quality and Patient Satisfaction (H6)

The relationship between satisfaction and service quality has been studied by many researchers in various disciplines including health care service quality. This positive relationship between service quality and patient satisfaction is supported by many empirical studies (e.g., Alrubaiee & Alkaa'ida, 2011; Dagger *et al*., 2007; Scotti, Harmon, & Behson, 2007; Choi *et al*., 2005; Merkourisa, Papathanassogloub, & Lemonidoub, 2004). Hypothesis 6 in the current study stated that perceived service quality is positively related to patient satisfaction. Table 3 shows a very strong relationship between perceived service quality and patient satisfaction. Thus, it could be explained that perceived service quality and patient satisfaction in this study did provide very strong theoretical relationships between the constructs.

Our final conclusion was that the infrastructure and interaction constructs were not very important in determining the perceived service quality from the respondent's perspective. It was also apparent from the higher item loading values (Table 2) that the respondents perceived the two constructs were being delivered effectively. The results demonstrate that administrative, medical care and nursing care were the most influential factor and related to perceived service quality. Taking into consideration the significance levels of the path coefficients between perceived service quality and patient satisfaction, this study confirmed that they are two distinct constructs. Therefore, hospital leaders should place more emphasis on these constructs. Such insights can help the leaders when making decisions concerning the hospital future and patients' welfare.

Due to the various sizes of hospitals exist and they also have different facilities, equipment and the number of health care man powers. Thus, this study may only be generalized in a limited way to other hospitals. Hence, it is recommended that every hospital carries out a similar study so that a model with a greater conformity can be produced for purposes of theoretical, planning and further improving hospital service quality.

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