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Perceived service quality, repeat use of healthcare services and inpatient satisfaction in emerging economy: Empirical evidences from India

Abstract

Purpose: The chief objective of the study is to understand that how different demographic variables and repeated availing of service from the same doctor or same hospital shapes the overall perception of healthcare service quality and satisfaction among inpatients admitted in private hospitals in an emerging economy.

Methodology: A self-administered, cross-sectional survey of inpatients using a questionnaire translated into Hindi and Gujarati. The data was collected from 702 inpatient from 18 private clinics located in three selected cities from Western India.

Findings The results indicate that experience with hospital administration, doctors, nursing staff, physical environment, hospital pharmacy and physical environment is significant predictor of inpatient satisfaction. Physical environment was found to be significantly associated with satisfaction only among female inpatient. It was also found that repeat availing of services either from the same hospital or doctor does not increases patient satisfaction. The feasibility, reliability and validity of the instrument that measures major technical and non-technical dimensions of quality of healthcare services were established in the context of a developing country.

Originality/Value: The study makes important contribution by empirically investigating the inpatient assessment of healthcare service quality based upon their demographic information

and repeated availing of services to understand how repeat visit shapes the service quality perception.

Keywords: Service quality, Inpatient satisfaction, developing countries, Repeat service availing.

Introduction

In the last decade, growths of healthcare facilities and services in both developed as well as developing nations have resulted into fierce competition among the private hospitals and nursing home. At the same time, in emerging nations, rise in level of education, improved income, irregular and unhealthy food consumption, increasing sophistication and awareness regarding health related issues has increased demand for specialized and quality of health care. This has made it essential for the health-care marketers and hospital administrators to understand the factor that drives the choice of a patient about where to go for their specific health-related issues (Berry & Bendapudi, 2007; Calhoun, Banaszak-Holl, Hearld, & Larson, 2006). In emerging economies such as India, private hospitals need to adopt and design patient-centric healthcare facilities that serve each and every patient according to his/her own unique need and health condition with sound operational and marketing solutions. Because of this, marketing and healthcare professionals are required to understand major dimensions that shape the perception about quality and satisfaction among patients that comes from different socio-economic strata of society.

Donabedian (1984) defined the multifaceted character of healthcare services and distinguished it as a set of technical, interpersonal and environmental component that overall determines the performance of a hospital. Consumers demand for quality services along with highly qualified and experienced doctors and well-trained nursing staff. The quality diagnostic and medical care in hospital by doctors and nurse are expected to be accompanied

with empathy, courtesy and communication (Fletcher et al., 1983). With this, patients also seek for hygienic atmosphere, quality infrastructure and courteous staff in the hospital (Sharma & Narang, 2011). In this context, Grönroos (2001) found two distinctive elements to service quality labelled as technical dimension that forms the core of medical services and functional dimensions that relates to how the medical service is being delivered. However, Gotlieb, Grewal, and Brown (1994) observed that patient satisfaction was a result of perceived service quality. Therefore, it is necessary that Healthcare Service Providers (HSPs) identify various dimensions that determine the patients' satisfaction that must be addressed to create a stronger positive perception about healthcare service quality in the mind of healthcare consumers (Choi, Lee, Kim, & Lee, 2005).

Although much of research has been done to measure healthcare service quality and patient satisfaction individually in various cultural settings (M. Badri, Dodeen, Al Khaili, & Abdulla, 2005; Gürdal, Çankaya, Önem, Dinçer, & Yılmaz, 2000), it has been found from an in-depth literature review that there is a clear lack of empirical research assessing an overall model that relates all the major technical and non-technical dimensions of perceived healthcare service quality with inpatient satisfaction (Badri, Attia, & Ustadi, 2008). Further, there are only a few studies done to understand the healthcare quality and satisfaction from the perception of the inpatient (Lin & Kelly, 1995; O'connor, Trinh, & Shewchuk, 2000) especially from the perspective of patients admitted in private hospitals in developing nation like India. To fill this void, one of the primary objective of the study is to empirically measure the major technical and functional dimensions that determine the healthcare quality and their relationship with inpatient satisfaction in private hospitals in developing nation like India.

Secondly, it has been identified by various researchers that the patients in the same hospital who may be suffering from similar diseases may have very different expectations from

service providers and may behave differently to the same treatment, care and service atmosphere because of their heterogeneity (Choi et al., 2005; Reidenbach & Sandifer-Smallwood, 1990). These differences in the service quality expectations is shaped by the change in the socio-cultural environment (Calnan, 1988) or differences in basic healthcare delivery system due to national or regional differences. Because of these differences, the service quality dimensions prioritization may differ from one group to another in the same cultural or national setting (Choi et al., 2005). Therefore, in addition to the primary objective of identifying healthcare service quality relationship with inpatient satisfaction in private hospital in India, the study majorly seeks to measure and compare this relationship among various subgroups of Indian inpatient on the basis of two important demographic variables, i.e. income and gender.

and other two variables to understand repeated availing of healthcare service, i.e. from the same doctor and from the same hospital. Therefore, overall, this research study is an attempt to not only understand the overall relationship between technical and non-technical factors with inpatient satisfaction in India but also to add to the domain of service quality-satisfaction relationship an understanding that how different demographic and repeated availing of service from same doctor and hospital shapes the overall perception of the patient towards service quality.

Review of Literature – Theoretical Framework and Key Constructs

Healthcare organisations are continually under pressure to improve their operational efficiency (Proctor, 2010) and private sector hospitals are especially required to be on their toes to understand the services and facilities needed by the patient and their performance on the same. Cheyne (1991) has opined that with increasing sophistication of consumers, quality care at affordable price is widely recognized as significant challenge to healthcare providers. In healthcare industry, the product is the interface between healthcare provider and patient. For example, in the outdoor patient's case, it's the moment the physician and patient meet to address the health related problem. This one encounter matters the most for patient satisfaction and is a prime determinant than anything else that precedes or follows this moment of truth (Aragon & Gesell, 2003). However, along with this, the overall ambience of the hospital including maintenance of health and hygiene, friendliness of the staff and availability of various facilities and services are also important and primary determinant of healthcare service quality. Therefore, it is necessary to manage service delivery as well as the nature of service itself to achieve overall higher patient satisfaction (Proctor, 2010).

Healthcare Service Quality

Donabedian (1988) has defined healthcare service quality as “that kind of care which is expected to maximize an inclusive measure of patient welfare, after one has taken account of the balance of expected gains and losses that attend the process of care in all its parts”. According to World Health Organization (2006), a health system should work to achieve six dimensions of quality in healthcare, namely, effective services based on results, efficient care for resource maximization, accessible treatment at the time of medical need, acceptable & patient-centred culture and environment, equitable services without differentiation, and safe process by minimizing risks and harm to the patients (World Health Organization, 2006). American Medical Association defines healthcare service quality as care, “which consistently

contributes to the improvement or maintenance of quality and/or duration of life” (Blumenthal, 1996).

In context of healthcare service quality, Zineldin (2006) has opined that quality of treatment and services are very important because of the nature of seriousness and possible negative consequences that may emerge due to compromise on any of the essential service quality dimensions. Healthcare quality measurement also helps medical professionals to understand and compare between different healthcare programs (S. S. Andaleeb, 2001), understand priorities of the patients in terms of various healthcare services and to relate it to patients’ satisfaction (Jackson, Chamberlin, & Kroenke, 2001).

However, the problem identified by many scholars is that the healthcare service quality is highly complex and multi-dimensional construct and therefore poses a challenge for researcher in terms of measurement (Silvestro, 2005). Fundamentally, there is a difference between the quality of care delivered to the patient known as observed quality of care and patients’ perception about the quality of care (Palmer & Simmons, 1995). Observed quality of care is identified as whether health care services adhere to the standards pre-defined for a specific disease and its resolution. On other hand, perceived quality of care relates to how patients perceive his treatment and delivery of treatment (Donabedian, 1988; Ross, Steward, & Sinacore, 1993). It has been increasingly found that patients measure the level of quality of medical care based upon various service delivery dimensions such as service provider’s empathy, healthcare facilities and empathy of support staff (Ettinger, 1998).

Ovretveit (1992) has done some pioneering work in this regard and distinguished professional *service quality* that includes various aspects of medical diagnosis and treatment from *client quality* which pertains to service delivery. There is also found to be a wide-spread use of SERVQUAL tool by Parasuraman, Zeithaml, and Berry (1985) to understand healthcare quality and scholars used it to measure healthcare quality in various national and cross-

cultural studies (Jabnoun & Chaker, 2003; Lim & Ting, 2012). Badri et al. (2008) proposed four major dimensions, viz. a) tangible aspects of delivery, b) empathy and personal attention, c) competence, knowledge, reliability and trust and d) professionalism and courtesy in UAE Context. On other hand, Suhonen, Välimäki, Katajisto, and Leino-Kilpi (2006) proposed overall individualized care quality model with eight dimensions. However, no previous study proposed and validated healthcare service quality measurement models for inpatient in context to emerging economies. To develop a valid, reliable and comprehensive model to measure the major technical and functional dimensions that determine healthcare service quality for inpatient in context of emerging economies, an in-depth literature review was conducted in the first stage. Extensive literature review produced 23 categories or dimensions for the measurement of inpatient healthcare service quality. In the second stage, these 23 dimensions were reviewed by three senior professors and two senior private hospitals executive independently that resulted into elimination of 7 dimensions and reclassification of remaining dimensions into 9 major categories. In the third stage, a pre-test among a panel of healthcare experts consisting of 6 doctors, 3 senior hospital administrators and 4 researchers working in healthcare resulted into identification five major dimensions to measure the inpatient healthcare service quality, viz. a) experience with doctor, b) physical environment, c) nursing staff, d) laboratory and x-ray technician services, e) hospital pharmacy, and f) experience with hospital administration and patient relationship officer.

Experiences with doctor is considered to be one the paramount important factor that determines perceived healthcare service quality. In the field of medical science, starting from general practitioners (GPs) to specialist physician to are the fundamental cornerstone that determines patients' well-being (Etgar & Fuchs, 2009). Prior studies have shown that advice and consultancy of the treatment affects the perceived quality of healthcare (O'connor et al., 2000; Sandoval, Brown, Sullivan, & Green, 2006). During patient-doctor interaction, various

factors like experience and accessibility to doctors, explanation provided and length of time spent by doctor (Otani, Kurz, Harris, & Byrne, 2005), involving patient into their treatment plan (Alaloola & Albedaiwi, 2008), empathy and communication of doctors (Andaleeb, 1998; Bowers, Swan, & Koehler, 1994), respect and dignity shown to patient (Tomes & Chee Peng Ng, 1995), physician's self-introduction to patient (Alaloola & Albedaiwi, 2008) are primary factors that shapes the perceived quality-satisfaction relationship during hospital stay. Following this discussion, as sufficient literature was not evident, it is hypothesized that:

H1: Experience with doctor is positively related to inpatient satisfaction.

Physical environment includes objects, facilities, infrastructure and conditions in the hospital that plays a key role in shaping inpatient's experience with hospital. Patient and visitors always expect a very high cleanliness (Webb, 2007). At the same time, healthcare equipment also determine the quality and efficiency with which service is delivered (Lam, 1997; Swan, Richardson, & Hutton, 2003). In one of the study conducted by Qatari and Haran (1999), it was found that healthcare centre building, facilities and frequency of its use were significantly associated with patient satisfaction. In a study conducted by Alaloola and Albedaiwi (2008), it was found that for inpatient, various facilities in the room like comfort, temperature, call system, cleanliness and courtesy of room cleaning staff is significantly associated with patient satisfaction. Therefore, it has been hypothesized that:

H2: Quality of physical environment is positively related to inpatient satisfaction.

Various studies have shown that along with experience that patient had with doctors, good *nursing and support staff* is one of the fundamental requirements for good healthcare service delivery. A good nursing and support staff influence the way patients' perceive their well-being, stay at hospital and recovery (Webb, 2007). If the staff does not provide required

information or do not behave empathetically or assist in pain relief, than it may result into negative perception or deterioration in patients' well-being. In one of the study conducted by Alaloola and Albedaiwi (2008), it was observed that the factors like nurses introducing themselves to the patients, providing patient a privacy and prompt answering of call button are important determinant of patient satisfaction. Based upon these discussion, in the model, it has been hypothesized that :

H3: Quality of nursing and support staff is positively related to inpatient satisfaction.

During their stay at hospital, for effective diagnostic and treatment, a patient may require to interact with *laboratory and x-ray technician*, wherein they may be judging the quality of services by assessing parameters like whether the service providers like phlebotomist or x-ray laboratory technician introduce himself/herself to the patient, explains procedure, draws blood quickly with minimum pain and treats them with respect and dignity (Alaloola & Albedaiwi, 2008). Therefore, it has been hypothesized that:

H4: Quality of laboratory and x-ray technician is positively related to inpatient satisfaction.

Pharmacy is one of the essential departments of any healthcare setting and many studies have shown that drug supply is very important for effective utilization of health service. Patients always expect that drugs are present for various diseases on the spot (Baltussen, Yé, Haddad, & Sauerborn, 2002), pharmacist are courteous who explains them how to use medication and dispense medication according to prescriptions (Alaloola & Albedaiwi, 2008). Based upon the literature review, it has been hypothesized that:

H5: Pharmacy is positively related to inpatient satisfaction.

From entering into a hospital till discharge, patients and their relatives frequently comes in contact with hospital administration and they expect that various key processes like admission and discharge are faster and error-free, patient relationship officer visit them regularly and help them to find the solution to their problem and emergency problems are handled with utmost efficiency (Braunsberger & Gates, 2002; Webb, 2007). Lack of these often results into frustration and conflict with the administrative staff. Therefore, it has been hypothesized that:

H6: Quality of hospital administration is positively related to inpatient satisfaction.

Patient Satisfaction

Patient satisfaction at the end of the day determines the competitiveness, existence and growth of any healthcare service provider and therefore is necessity condition for healthcare professional. Pascoe (1983) has defined patient satisfaction as “patients’ emotional reaction to salient aspects of the context, process and a result of their experience”. With increasing competition and demanding patients for healthcare services, healthcare service professionals find it very challenging to understand the patient priorities and satisfaction (Ovretveit, 1992). However, quite often it has been observed that healthcare service providers are often neglecting the satisfaction of their patients (Lim & Ting, 2012). In one of the study, Fraser, Encinosa, and Glied (2008) also found a direct link between lower than expected healthcare service delivery and resultant decrease in patient satisfaction. Because of this, healthcare providers at large are now conducting systematic research by using various measures to understand patient satisfaction (Qatari & Haran, 1999) and relating it with healthcare services quality. In this context, it has been observed that few researchers are using healthcare quality items as a measure of understanding patients’ satisfaction (for e.g., Jackson et al., 2001), on other hand, others have considered patient satisfaction as a single construct with five to seven

items measuring overall satisfaction (for e.g., Mazor, Clauser, Field, Yood, & Gurwitz, 2002).

There are few empirical research studies that established the relationship between quality of services with patient satisfaction. In one of the study Suhonen et al. (2006) have tried to establish relationship of nursing care, perceived autonomy of patient and healthcare quality of life with patient satisfaction. Badri, Attia, and Ustadi (2009) also tested a model linking healthcare quality which encompasses three variables, i.e. perceived quality of care, perceived quality of process and quality of communication with patient satisfaction. However, as described above, there is a clear void of overall model relating healthcare quality and patient satisfaction especially from the perspective patient admitted in private hospitals in developing country like India. Based upon an in-depth literature review and discussion above, a model (Figure I), which considers the relationship of healthcare service quality dimensions with inpatient satisfaction is proposed.

Figure I here

Moreover, as indicated earlier, due to socio-cultural setting and differences in delivery system across various nations/regions, service quality expectations of different healthcare consumer groups differs significantly from each other. In past studies, it was found that patient's service prioritization differ significantly across demographic variables such as age and gender (Choi et al., 2005; Williams & Calnan, 1991). It has been reported by Choi et al. (2005) that older people are generally more satisfied with healthcare services as compare to young people, while in terms of gender, both male and female felt satisfied from the same four service quality dimensions. However, none of the study have analysed the differences between the inpatients who have earlier received the services from the same hospital or from the same

doctor when assessing their satisfaction level. In one of the study conducted by Cho, Lee, Kim, Lee, and Choi (2004), it was found that among outpatient, there exist a varying relationship between healthcare service quality and satisfaction dependent on the frequency of visits, however, the same has not been studied from inpatient perspective. As the group who have earlier availed services from either the same hospital or same doctor and has been again hospitalized for either the same or difference disease may have very different perspective about quality of health care services and level of satisfaction than from those who is availing the service first time. Moreover, in the emerging economy like India, as the difference in income category or gender may also have an influence on patients' perception about quality of healthcare services and satisfaction. Therefore, these four variables were taken to measure the differences in relation to healthcare service quality and patient satisfaction.

Healthcare in India

Indian healthcare sector was valued at \$79 billion in 2012 is expected to reach \$100 billion by 2015 growing at a CAGR of 20% per year as the demand for specialized and quality healthcare facilities increases ("Health", Ministry of External affairs, Government of India, 2013). Increasing levels of pollution, frequent weather changes, stressful lifestyle ("Consumer Health in India, 2012" Euromonitor International), raising working class population, large number of urban migrants and ever changing seasonal infections & diseases has created a class of consumers who seek for high standard of services at competitive prices. This works as stimulus for the healthcare organizations to expand its operations vertically through diagnostic centers, primary care clinics, daycare nursing homes, specialty hospitals and super-specialty hospitals. This results in increase in competition among the private hospitals and nursing home. Moreover, globally recognized hospital and pharmaceutical companies are also entering India to benefit from a market of enormous size and potential.

Thus, healthcare sector in India is now undergoing a transition from service provider's dominance to service seekers preferences.

The private hospitals and nursing homes are expected to contribute about 80% of the total healthcare sector in India by 2025. In present time, private hospitals need to adopt and design patient-centric healthcare facilities that serve each and every patient according to his own unique need and health condition with sound operational and marketing solutions. For this, it is essential for a health-care marketer and hospital administrator to understand the factors that drives the choice of a patient about where to go for their specific health-related issues (Calhoun *et al.*, 2006). It means that healthcare marketers need to find out how people really choose a specific hospital above another, i.e. what they want, how they want and what they will sacrifice to get what they need. The set of benefits and services that patient's are seeking is one of the major area of healthcare marketing in India that is yet to be explored (Bhangale, 2011).

Methodology

The data reported in this paper were collected as part of a large study designed to test the relationship between service quality dimensions and inpatients' satisfaction with private hospitals in India. The study was conducted at 18 private sector hospitals in three cities of India, i.e. Rajkot, Surat and Ahmedabad. Prior to administering the survey, a pre-test was conducted among 33 inpatients and minor modifications were made. A total of 1080 inpatients were requested to fill-up self-administered questionnaire and the respondents were assured that their responses would be kept confidential. The questionnaire was circulated at hospital in inpatient department and patients were given as much time as needed to complete the questionnaire. Finally, 702 inpatients agreed to participate in the study and completed the questionnaire. In final sample, it was found that 52.8% respondents were male ($n = 371$) and

48.2% of the respondents were female ($n = 331$). In terms of age, it was found that about 12% respondents were in the age category less than 20 ($n=86$), about 45% ($n=315$) and 30% ($n=212$) respondents were in the age category 20-39 and 40-59 respectively, while 12.7% of the respondents were 60 years and above ($n=89$). In income category, it was observed that 23.5% ($n=165$) and 52.7% ($n=370$) of the respondent were earning less than Rs. 0.5 million and Rs. 0.5 to 1 million as annual family income respectively. On other hand, about 23.8% respondents ($n=167$) were earning more than Rs. 1 million as annual family income per annum.

In response to whether they have visited this hospital previously, it was found that almost 45.4% ($n=319$) of respondent have visited the hospital previously in which they were admitted at the time of survey while remaining respondents were admitted in this hospital first time. On the similar line, 44.9% ($n=315$) of the respondent have taken treatment from the same doctor previously under whose supervision they are admitted during survey while remaining were taking treatment from the doctor under supervision first time.

Measurement, reliability and validity of constructs

The survey questionnaire was divided into following sections: the first section comprised basic demographics of the sample; the second section included seven major dimensions for measurement of healthcare service quality and patients' satisfaction. To measure the six major dimensions of healthcare service quality, the scales were adopted from relevant research papers, viz. experience with doctor (Chahal, 2010; Choi et al., 2005) physical environment (Chahal, 2008), nursing staff (Bakar, Seval Akgün, & Al Assaf, 2008; Chahal, 2008), laboratory and x-ray technician services (Choi et al., 2005), hospital pharmacy (Bakar et al., 2008), experience with hospital administration (Chahal, 2008) and inpatient service satisfaction (Chahal, 2010; Otani et al., 2005) with due modification as per Indian context.

The answers were recorded on a five-point Likert-type scale, anchored by “strongly agree” (5) and “strongly disagree” (1) in which the rating (3) was for “neutral”.

The final questionnaire was translated into the native language Gujarati and Hindi for the convenience of the respondents by two language experts independently and was translated back into English language to check the consistency and rectify grammatical error and subsequent modifications were made as per requirement. Before performing further analysis, each construct was subject to reliability analysis and the coefficient alpha was computed to determine the internal consistency of the items. Most alpha values (.780 for experience with doctor, .841 for physical environment, .816 for nursing staff, .770 for laboratory and x-ray technical services, .724 for hospital pharmacy, .781 for experience with hospital administration and .809 for inpatient satisfaction) were found to meet the threshold limit (Hair, Black, Babin, Anderson, & Tatham, 1998; Nunnally, 1967).

Analysis and Results

In the first stage, in order to validate all the constructs for healthcare service quality under investigation, Confirmatory Factor Analysis (CFA) was performed by using the AMOS 16.0 software. As suggested by Thompson and Daniel (1996), CFA is most useful when the researcher tests *a priori* model, because more effective decisions can then be made about its viability. The maximum likelihood approach was used as it is regarded as the most appropriate approach for theory testing and development (Kline, 2015).

The results of the analysis confirmed that all items loaded significantly and substantially on their underlying constructs, thus providing evidence of convergent validity; for this reason all items were retained in the model. In order to assess the overall model fit without being affected by sample size, the fit indices which are less sensitive to sample size according to the literature were used; these indices included the goodness of fit index (GFI), the adjusted goodness of fit index (AGFI), the comparative fit index (CFI) and the root mean square error

of approximation (RMSEA) (Jöreskog & Sörbom, 1993; Kline, 2015). An assessment of the measurement model indicated an acceptable model fit ($\chi^2=1285.685$ with 477 degrees of freedom, CMIN/DF = 2.695, GFI = .910; AGFI = .863; CFI = .918; RMSEA = .044). To assess the convergent validity of the constructs, t-value of the factor loading were examined and as shown in Table-I and were found to be significant ($p < .01$) and higher than 10.00.

With this, for each construct the average extracted value was calculated and it was found to be higher than the recommended cut-off level of 0.5 as suggested (Bagozzi & Yi, 1988), this being another indication of convergent validity. In addition, an assessment of discriminant validity has been made by examined and for each factor all the pertaining items have high loadings (higher than 0.5) while all the other items have much lower loadings, so the existence of discriminant validity can be ascertained. Together the results of the above tests for reliability, convergent validity and discriminant validity provide evidence of internal and external validity of the scales used in this study.

Table I here

In the second stage, since no problem was observed in the measurement model, structural equation modeling was then employed to measure relationship between six constructs of healthcare service quality and inpatient satisfaction for total sample of 702 respondents using the AMOS through Maximum likelihood (ML) estimation. The major results (structural part of the model – statistically significant paths among constructs) are shown in Figure 2 below. The overall fit of the model is acceptable since all the measurement of fit are within the acceptable limit ($\chi^2 = 3931.428.161$, $df = 652$, $p = .001$; GFI = .90; AGFI = .872; CFI = .913; RMSEA = .049).

Table II here

From Figure II and Table II, it can be observed that the relationships hypothesized between doctor, nursing staff and hospital administration with inpatient satisfaction was significant at

p<.001 level, while those hypothesized between physical environment and hospital pharmacy with inpatient satisfaction was significant at p<.01 level. However, it was found that there is a very low but negative relationship between laboratory and x-ray services though the relationship is not statistically significant.

Figure II here

Further in *stage three*, as the structural model was found to achieve required fit as mentioned above, the functional relationship between the six dimensions of service quality and inpatient satisfaction was estimated for both gender group using multi-group analysis in AMOS. It was found that six service quality dimensions explained a significant amount of variance in inpatient satisfaction for both gender subgroups ($R^2 = .52$ for male and $R^2 = .50$ for female). Therefore, we might suggest that the model enjoys a reasonable fit. With this it was also observed that for both the gender group, standardized estimate from experience with doctors to inpatient satisfaction (.303 for male and .190 for female, $p < .001$), nursing staff (.328 for male and .125 for female, $p < .001$ and $p < .05$ respectively), hospital pharmacy (.130 for male and .112 for female, $p < .05$) and experience with hospital administration (.546 for male and .600 for female, $p < .001$) were found to be significant. However, physical environment was found to be significantly associated with satisfaction for female respondents (.48, $p < .001$), but for male respondent though it was positive, there was no significant association (.074). On other hand, it was found that laboratory and x-ray technician service were not significantly related with inpatient satisfaction for any gender group (.009 for male and .002 for female).

In *stage four*, the functional relationship between the six dimensions of service quality and inpatient satisfaction was estimated for three income groups using multi-group analysis. It was found that six service quality dimensions explained a significant amount of variance in inpatient satisfaction for all the three income categories ($R^2 = .52$ for less than Rs. 0.5

million, $R^2 = .489$ for Rs. 0.5 Million to Rs. 1 million, $R^2 = .632$ for Rs. 1 million and above) and model enjoyed a reasonable fit.

When standardized estimates were observed for the three income groups as shown in Table III, it was found that four factors that determine healthcare service quality, i.e. experience with doctors, nursing staff, hospital pharmacy and hospital administration were found to be significantly related with inpatient satisfaction for all the three income categories. However, it was observed that for physical environment, i.e. facilities and infrastructure, as income level of the patient increased from less than Rs. 0.5 million to Rs. 0.5 million and above, it was not significantly related with satisfaction

Table III here

In *stage five*, the relationship between the six dimensions of service quality and inpatient satisfaction was estimated separately for those patients who have visited the hospital previously in which they were admitted at the time of survey and for those who were admitted in the respective hospitals first time. From these analyses, it was found that six service quality dimensions explained a significant amount of variance in inpatient satisfaction for both the categories of patient ($R^2 = .53$ patient who visited hospital earlier and $R^2 = .51$ for those who are visiting hospital first time) and model enjoyed a reasonable fit.

Table IV here

With the help of standardized estimate from Table IV, it can be concluded that inpatient satisfaction is significantly related to five factors out of six that determines healthcare service quality, i.e. experience with doctors, nursing staff, hospital pharmacy, physical environment and hospital administration for both the categories of patients, i.e. those who visited hospital earlier and those who were visiting the hospital first time. In *stage five*, on the similar line as mentioned in stage four, the functional relationship between the six dimensions of service quality and inpatient satisfaction was estimated separately for those patient who have been

treated by the same doctor previously under whose supervision they are admitted and for those who were receiving treatment first time from the doctor at the time of survey. From these analyses, it was found that six service quality dimensions explained a significant amount of variance in inpatient satisfaction for both the categories of patient ($R^2 = .67$ for patient who were treated by the same doctor earlier and $R^2 = .53$ for those who were treated first time) and model enjoyed a reasonable fit.

Table V here

From Table V, it can be concluded that inpatient satisfaction is significantly related to five factors out of six that determines healthcare service quality, i.e. experience with doctors, nursing staff, hospital pharmacy, physical environment and hospital administration for both the categories of patients, i.e. those who were treated earlier by the same doctor and who were being treated first time.

Discussion and Conclusion

In developing economy like India where on one hand the sizable population require affordable yet quality healthcare and on other there is increase in competition with entry of both national and international private players in last two decades, measuring and managing patient's perception about quality of service and satisfaction results into positive word-of-mouth and higher referral for private hospitals. With this backdrop, the study was conducted to examine the relationship between healthcare service quality and inpatient satisfaction and to compare this relationship among various subgroups based upon income, gender and repeated availing of healthcare services from same doctor and same hospital.

The results of the study indicated that the six construct model to measure service quality and linking it with inpatient satisfaction is a robust model for private hospitals working in developing nations. The results are in line with the previous studies where a significant

relationship was established between perceived service quality of healthcare facilities and patient satisfaction (Wilson, 1997). From the results of total sample, it can be observed that experience with hospital administration, doctors, nursing staff, physical environment, hospital pharmacy and physical environment is significant predictor of inpatient satisfaction, while experience with laboratory and x-ray technician is not an important construct relating to inpatient satisfaction. Contrary to other studies (Bowers et al., 1994; Choi et al., 2005), the findings of this study suggest that both tangibles and intangibles are significant determinant of inpatient satisfaction. One of the reasons for this results could be that patient not only spend time with doctors and nurses during their stay at hospital, but they also actively participate in various processes starting from admission to treatment to discharge and therefore evaluate the service quality more holistically rather than only from treatment perspective .

In terms of gender, it was found that for both male and female inpatient, the key factors like experience with doctor, nurse, hospital administration and hospital pharmacy have significant influence on their satisfaction. However, physical environment was found to be significantly associated with satisfaction for female respondents but for male patient though it was positive, there was no significant association. This is because as suggested by path coefficients of individual items on the construct, female patients in Indian context are paying more attention to various dimensions of physical environment like cleanliness and hygiene as compare to their male counterpart. On other hand, when the relationships were compared across three income groups, one of the major finding was that as income increases to Rs. 0.5 million and above, the physical environment do not have any significant association with inpatient satisfaction. This could be because as income increases in developing economies like India, the patients would be opting for better and separate rooms with more amenities and quality services. However, the phenomenon warrants further research.

In multi-sample comparison stage, when the relationship between the six dimensions of service quality and inpatient satisfaction was estimated separately for those who visited hospital earlier and those who were visiting the hospital first time, it was found that there are no significant difference among both the categories of patient. The same holds true for the patient who visited doctor earlier and those who were visiting the doctor first time. This result suggests that it's not the repeat availing of services either from same hospital or doctor that shapes patient satisfaction, but the overall tangible and non-tangible factors at the time of hospitalization, i.e. moment of truth that determines patient satisfaction.

Thus, overall we can infer from the study that to increase inpatient satisfaction, healthcare service provider must not only strive to provide the best medical treatment to the inpatient but should also concentrate on providing conducive and well-maintained facilities and infrastructure that makes the stay of the patient comfortable (Leonardi, McGory, & Ko, 2007), improvising communication with the patient to remove their anxiety and fear, prompt and empathetic support from nursing staff for their well-being (Alaloola & Albedaiwi, 2008), availability of drugs with explanation (Baltussen et al., 2002) and maintaining medical and administrative process in such a manner that it becomes patient friendly (Otani & Harris, 2004).

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Table I: Sample characteristics

Variable		Frequency	%
Gender	Male	371	52.8
	Female	331	47.2
Age	Less than 20	86	12.3
	20-39	315	44.9
	40-59	212	30.2
	60 years and above	89	12.7
Income	Less than 0.5 million	165	23.5
	0.5 million to 1 million	370	52.7
	More than 1 million	167	23.8
Visit to hospital	Visited this hospital previously	319	45.4
	Not visited this hospital previously	383	54.6
Visit to doctor	Visited this doctor previously	315	44.9
	Not visited this doctor previously	387	55.1

Table II: Parameters of the measurement model

<i>Constant</i>	<i>Estimate</i>	<i>T</i>
<i>Experience with Doctors</i>		
The doctors helped me understand the post-discharge care	1	a
Doctors were available whenever I asked to meet him during my treatment	1.128	11.746
The doctors at the hospital are always willing to answer my questions	.98	10.914
Doctors gave me medical advice in a simple way and helped me understand the disease	.915	10.939
Doctors are very experienced and highly skilled	.885	11.994
Doctors were courteous while speaking with me & my family	.965	10.702
I was presented with choices when doctors were deciding about my medical treatment	1.011	10.324
Doctors took care of me as soon as I arrived on the ward	.954	10.752
<i>Physical Environment</i>		
The infrastructure is well maintained and secured	1	a
Facilities of A.C. and Ventilators makes the stay at the hospital comfortable	.847	13.321
The surgery and operation theatre are well maintained and properly equipped	.887	14.812
The hospital has a noise free environment	.99	13.929
The beds, pillows and mattresses are comfortable	.971	13.68
There are adequate number of bathrooms and toilets	1.096	13.766
The rooms at the hospital are always clean	1.101	14.801
<i>Nursing Staff</i>		
Nurses of the hospital are highly skilled and experienced	1	a
Nurses were polite and helpful in clarifying my doubts	1.339	10.834
The nurses always answered the call button	1.61	10.039
The nurses would assist me in eating and medications	1.698	10.845
Nurses would explain tests, treatments and procedures	1.514	11.972
The nurses at the hospital are culturally respectful	1.462	10.072
<i>Hospital Pharmacy</i>		
Required medicines are always available at the pharmacy	1	a
The pharmacy bills are error free and accurate	.85	13.508
The pharmacist helped me with the medicines by explaining the use and	.887	13.261

time of consumption.		
The Pharmacist has proper knowledge of the medicines	.668	12.553
<i>Laboratory and X-ray technical services</i>		
The technician did the test causing me minimal pain	1	a
I received my reports fast and without any errors	.859	12.885
The blood was drawn quickly by the technician	.786	11.816
The technician explained me the procedure of the tests	.602	10.594
<i>Experience with administration and patient relationship officer</i>		
The medical officer helped me find solutions of my problems	1	a
The Medical Officer made daily visits to my room and took interest in my recovery	.754	16.949
The administration helped me in understanding and co-coordinating with insurance information	.721	12.764
The administration answered all my questions and queries during treatment and discharge	.744	13.898
The executives helped me with the registration at the time of admission	.618	12.616
Note: a Indicates the initial parameter was set to 1.0 for model estimation purposes		

Table III: Regression weights for overall structural model

<i>Hypothesis</i>	<i>Relationship</i>	<i>Estimate</i>	<i>S.E.</i>	<i>C.R.</i>	<i>P</i>	<i>Supported</i>
H ₁	SAT <--- DOC	.277	.052	5.319	***	YES
H ₂	SAT <--- PE	.116	.037	3.139	.002	YES
H ₃	SAT <--- NUR	.361	.074	4.860	***	YES
H ₄	SAT <--- LAB	-.024	.061	-.403	.687	NO
H ₅	SAT <--- PHA	.100	.032	3.120	.002	YES
H ₆	SAT <--- ADMIN	.433	.046	9.368	***	YES

Table IV: Standardized estimate and significance for Income Category

	Less than Rs. 0.5 million		Rs. 0.5 million to Rs. 1 million		More than Rs. 1.0 million	
	St. Est.	P	St. Est.	P	St. Est.	P
Experience with doctors	.301	.01	.216	.001	.113	.05
Physical environment	.317	.001	.008	NS	.162	NS
Nursing staff	.233	.01	.103	.05	.377	.05
Laboratory and X-ray technician services	-.047	NS	-.006	NS	-.008	.NS
Hospital Pharmacy	.108	.05	.195	.001	.356	.01
Hospital Administration	.518	.001	.552	.001	.783	.001

Table V: Standardized estimate and significance for repeat visit of hospital

	Visited	Visiting
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	Hospital Previously		Hospital First Time	
	St. Est.	P	St. Est.	P
Experience with doctors	.307	.001	.121	.05
Physical environment	.123	.05	.087	.05
Nursing staff	.154	.05	.343	.001
Laboratory and X-ray technician services	-.020	NS	-.008	NS
Hospital Pharmacy	.115	.05	.197	.001
Hospital Administration	.598	.001	.552	.001

Table VI: Standardized estimate and significance for repeat visit of doctor

	Visited Doctor Previously		Visiting Doctor First Time	
	St. Est.	P	St. Est.	P
Experience with doctors	.279	.001	.186	.001
Physical environment	.161	.01	.087	.05
Nursing staff	.166	.05	.285	.001
Laboratory and X-ray technician services	-.035	NS	-.091	NS
Hospital Pharmacy	.269	.001	.139	.01
Hospital Administration	.161	.001	.485	.001

Figure I: Proposed model measuring relationship between Healthcare Service Quality and Inpatient Satisfaction

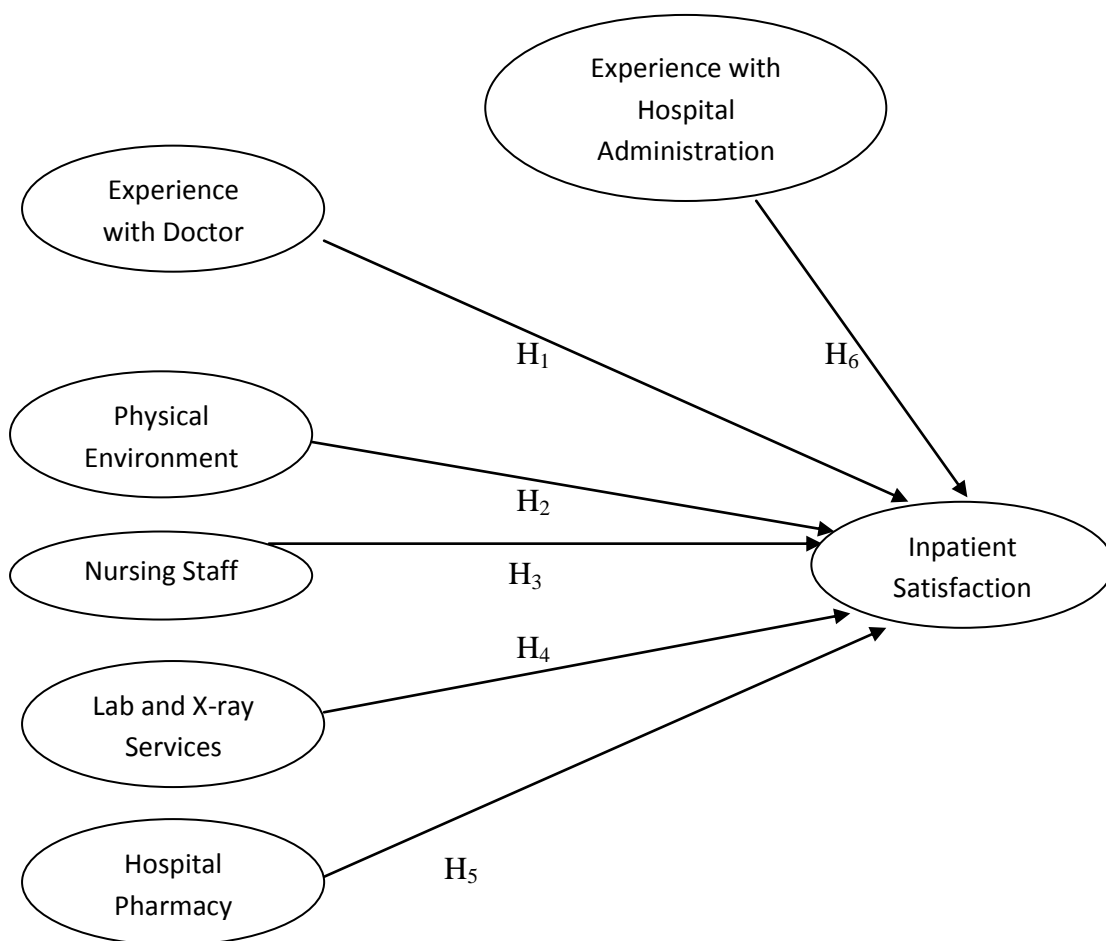
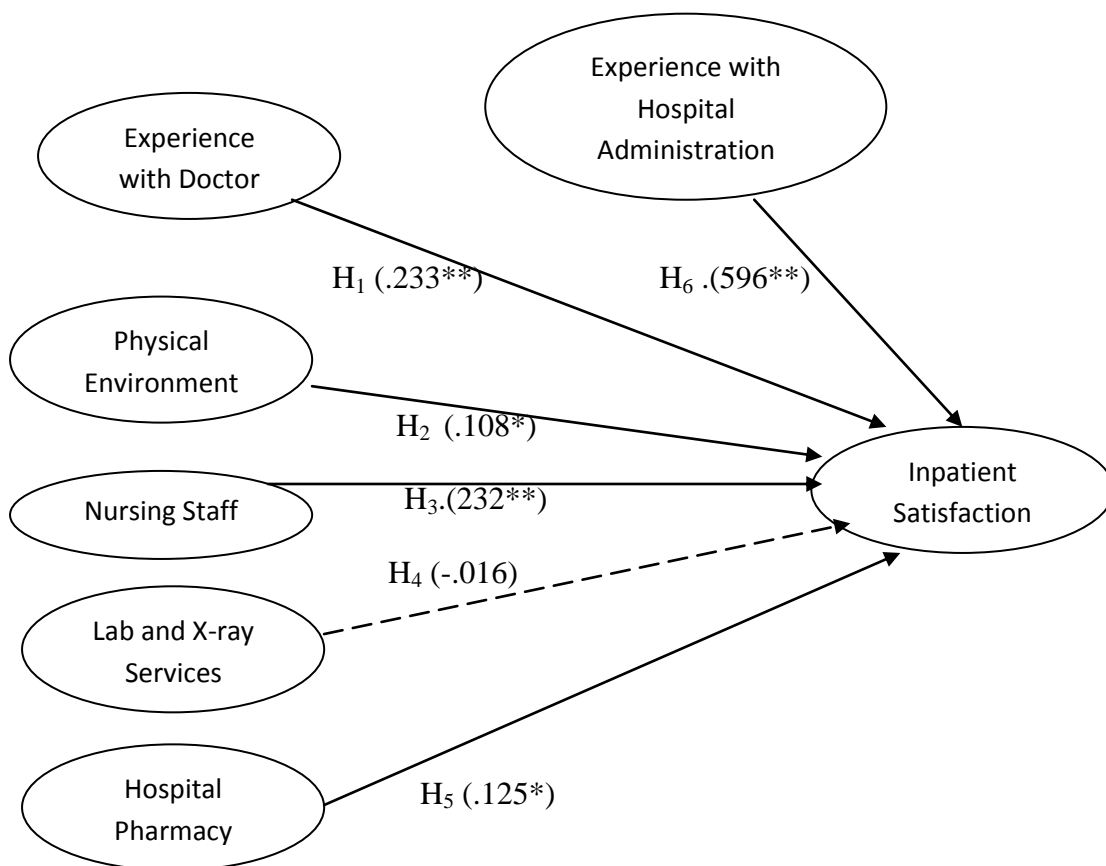


Figure II: Proposed model measuring relationship between Healthcare Service Quality and Inpatient Satisfaction



Note: ** denotes significant at $p < .001$, * denotes significant at $p < .01$, dotted line indicates non-significant path