

An Assessment of the Service Quality Expectations and Perceptions of the Patients Towards Healthcare Services in Uttar Pradesh

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Abstract

"The aim of this paper is to test the dimensionality of the modified SERVQUAL instrument in the Uttar Pradesh healthcare services, to assess the service quality provided in public hospitals in Lucknow city and to identify the service quality dimensions that play important role on patient perception. For this purpose modified 'SERVQUAL' instrument was used to measure the patient's perception about service quality delivered by these hospitals. The patient's perceptions of the public hospitals were identified by 35 items and captured in six dimensions by conducting exploratory factor analyses. This research study reveals patient's perceptions identified as: aesthetic, professionalism/skill/competence, promptness attention, caring staff, medicine availability, accessibility and affordability. Appropriate statistical analyses such as frequencies, descriptive, factor analysis, paired t-test, multiple regression analysis were used according to respective objectives and descriptors. However, the results indicate that there is significant gap between patient's expectations and their perceptions of the actual healthcare service delivery by public hospitals. The antecedents of service quality demonstrated considerable power in explaining variance in perceived service quality. The aesthetic, professionalism/skill/competence, promptness attention, caring staff, medicine availability, accessibility and affordability constructs explained 33.1% of the variance in perceived service quality of patient satisfaction. Therefore, it can be concluded that the model is suitable in determining the healthcare service quality."

Key Words

Public Hospitals, Healthcare Service, Perceived Service Quality, Patient Satisfaction

INTRODUCTION

Public health services play an important role to deliver the medical services utilization to the Indian people. The Constitution of India charges every state with raising the level of nutrition and the standard of living of its people and the improvement of public healthcare services as among its primary duties (National Health Policy of India, 1983). Since India is a developing country where a large section of population is below poverty line, health and hygiene are not up to the mark. Many developing countries including India, the excessive emphasis on service coverage and inputs in the provision of health services has ignored the needs of the patients for whom these health services exist (Rao *et al.*, 2006). The current study focused on patient perception of public healthcare services in the state of Uttar Pradesh (India). The population of Uttar Pradesh being more than 200 million, according to Census of India, (2011), given rapid population growth, the government of Uttar Pradesh is facing the daunting task providing healthcare for every resident of Uttar Pradesh. Roberto Zaghera (World Bank Country Director for India, 2012) describes inadequate health systems affect the poor most, and, it is estimated that 8 percent of households in Uttar Pradesh fell below the poverty line. However, Gronroos, (1984) describes healthcare services can be divided into two components: technical quality and functional quality. Technical quality refers to technical analysis, medical diagnoses and procedures, while functional quality refers to the manner in which the healthcare service is delivered to the patients (Lam, 1997). In other words, technical quality is about what the patients get, functional quality is about how they get it. Most of the patients do not have the technical information to evaluate the medical diagnosis and technical procedures, although technical quality has high priority with patients (Ware and Snyder 1975). Because most of patients lack the required knowledge for evaluating the technical quality of the healthcare services, their evaluation of quality is based on the medical care process (McIver, 1993; Newcome, 1997). Technical quality falls short of being a truly useful measure for describing how patients evaluate the quality of a medical service encounter (Bowers *et al.*, 1994). The service quality approach, which focuses on functional quality perceived by patients, has been widely used to evaluate the health services, (Buttle, 1996; Dursun and Cerci, 2004). Few studies conducted on patient perceptions of healthcare services in India. Patient perceptions of public healthcare services are very important to know the patient satisfaction. Most of the studies have attempted to measure patient perceptions of healthcare quality based on service quality model, the validity and reliability of these scales are not known. Studies have also shown that public healthcare utilization in India is very pathetic, for this reason,

patient perceptions of health services are very important part of quality measurement in public healthcare. These scales are questionable to the Indian context because these scales are applicable in other developed countries. The main objective of this study is to develop an instrument to assessing patient perceptions of healthcare services for public hospitals in the state of Uttar Pradesh (India) and to test the validity and reliability of the modified SERVQUAL scale.

SERVICE QUALITY IN THE HEALTHCARE INDUSTRY

In Indian context, there is a dearth of an independent model of service quality for healthcare services; researcher extensively studied existing and modified SERVQUAL instruments. Many instruments have been developed to measure patients' perceptions and expectations, but SERVQUAL scale developed by Parasuraman *et al.* (1988) is the most widely used tool (Sohail, 2003). The SERVQUAL scale has been applied by several researchers in healthcare services to assess patient perceptions of service quality in different countries successfully (Anderson, 1995; Lam, 1997; Sewell, 1997; Angelopoulou *et al.*, 1998; Alasad and Ahmed, 2003; Mostafa, 2005; Dean, 1999; Wong, 2002; Boshaff and Gray, 2004; Zaim *et al.*, 2010; Butt & Run, 2010; Irfan & Ijaz, 2011, Lis, Rodeghier, & Gupta, 2011, Nekoei-Monghadam, and Amiresmaili, 2011, Brahmbahtt, Baser, & Joshi, 2011; Suki, Lian, & Suki, 2011; Norazah, Jennifer, & Norbayah, 2011; Ahmed & Samreen, 2011; Zarei, *et al.*, 2012, AI-Hawary, 2012; Haque *et al.*, 2012; Norazah, *et al.*, 2011; Ramez, 2012;). Babakus and Mangold (1992) found that SERVQUAL scale is a reliable and valid model in the healthcare service environment. Anderson (1995) studied that SERVQUAL instrument to measure the quality of healthcare service offered by a public university health clinic, results revealed that assurance dimension was weak dimension among the five dimensions of service quality model. Lam (1997) examined the validity, reliability and predictive validity of SERVQUAL model and assessed quality of healthcare services in Hong Kong; his results showed that service quality model is reliable and valid instrument for assess quality of healthcare services. In the same direction, Sewell (1997) conducted research on NHS patients & his results found that the most important quality dimension was reliability followed by assurance, empathy and responsiveness and tangibility was least important. According to Angelopoulos *et al.* (1998) employed quality of service in Greece hospitals and they found that patients in public hospitals were satisfied about the competence of physicians and nurses. In other study, Baker, Akgun and Assaf (2008) employed SERVQUAL scale to assess patients' attitudes toward healthcare service in Turkey; his results revealed that patient perception towards responsiveness and reliability dimensions get the lowest expected scores of all

dimensions. In another study, Wong (2002) indicated that three dimensions—responsiveness, assurance and empathy were more important factors than other two dimensions least affecting overall service quality. Kilbourne et.al. (2004) proved that SERVQUAL is capable of capturing quality indicators in a multi-dimensional way, namely, tangibles, responsiveness, reliability and empathy as well as overall service quality. Study conducted by Zaim *et al.* (2010) in Turkey hospitals and they confirmed that tangibility, reliability, courtesy and empathy are significant for customer satisfaction, while responsiveness and assurance were not. The other study by Brahmabhatt, Baser, & Joshi (2011), found that patients' perceptions did not exceed their expectations, as the patients were dissatisfied with the level of healthcare services rendered by 5 private hospitals from Ahmedabad and Gandhi Nagar cities of Gujarat state. Norazah, *et al.* (2011) studied patients' perceptions and expectations in a private healthcare setting in the Klang Valley Region of Malaysia and their results revealed that the patients' perceptions were poor with the waiting time and hospital response. Ramez (2012) found that patients' perception was high on reliability dimension low on the assurance dimension. Abu-Kharmeh (2012), identified responsiveness, assurance, tangibles, empathy, and reliability were ranked in order of importance respectively for healthcare service quality.

Although many researchers used SERVQUAL instrument successfully for measuring the quality of healthcare services, yet some researchers criticized its conceptual and operational aspects. Haywood- Farmer and Stuart (1988) concluded that SERVQUAL was inappropriate for measuring the quality of healthcare service since it excluded the dimensions for care service, service customization and knowledge of the professional, in this direction, Vandamme and Leunis (1993) suggested that SERVQUAL may not be generalized to hospital services or healthcare services due to the uniqueness of the services offered and further Sohail (2003), concluded his research on service quality measurement in hospitals of Malaysia, did not confirm any of the five generic dimensions of SERVQUAL model. Large number of studies have been conducted on healthcare services and there are substantial proofs that in the multi-service healthcare the dimensions identified are quite different than those used for SERVQUAL model and are yet to be uncovered i.e. many researchers suggested that modified SERVQUAL model by considering more dimensions and latent constructs which are reliable and valid. Reidenback and Sondifer-Smallwood (1990) employed a modified SERVQUAL approach to understand the relationship among patients' perceptions of inpatient, outpatient and emergency room services and their overall perceptions of service quality satisfaction with their care and willingness to recommend the hospital's services to others. Seven dimensions were identified and differential impacts of these dimensions were found in the three

hospital settings. "Patient confidence" was found to affect patient satisfaction in all three settings in addition to influencing perceptions of service quality in both the inpatient and the outpatient settings. According to Bowers *et al.* (1994) identified two additional quality dimensions, namely, "caring" and "patient outcomes" to the five generic quality dimensions of SERVQUAL. The findings of the study pointed out that empathy, responsiveness; reliability, communication, and caring were strongly correlated with overall patient satisfaction. Both the researchers, Cronin and Taylor (1994) suggested SERVPERF model as a modification of SERVQUAL model. SERVPERF is one dimensional model that focuses on five gaps based on perception. Johnston (1995) developed eighteen quality dimensions, namely, cleanliness, aesthetics, comfort, functionality, reliability, responsiveness, flexibility, communication, integrity, commitment, security, competence, courtesy, friendliness, attentiveness, care access and availability. Gabbott and Hogg (1995) identified "caring" as a dimension, but they decided not to accept it as a separate dimension since it was already covered by the five SERVQUAL dimensions. Anderson (1995) used the SERVQUAL instrument to assess the quality of service offered by a public university health clinic. The findings revealed that the clinic investigated was poor on the assurance dimension. Further, Lim and Tang (2000) developed a modified SERVQUAL model considering six dimensions viz. tangibles, reliability, assurance, responsiveness, empathy, accessibility and affordability. They have put emphasis on affordability of patients relating to their satisfaction. Andaleeb (2001) employed modified the SERVQUAL model by including three new dimensions viz. communication, discipline and baksheesh (unofficial payments to service providers) in lieu of empathy, tangibles and reliability. In their research work, it was observed that discipline had a great impact on patient satisfaction whereas baksheesh had least impact on patient satisfaction. Both the researchers, Jaboun and Chaker (2003) conducted a comparative study on public and private hospitals at UAE. Their research result revealed that there is a significant differences between private and public hospitals in terms of overall service quality in empathy, tangibles, reliability and administrative responsiveness. They conducted a comparative analysis between private and public hospitals and pointed out that public hospitals were perceived to be better than the private hospitals as far as service quality is concerned. Patients of private health organizations in South Africa found that the service quality dimensions of nursing staff viz. empathy, assurance and tangibles have positive impact on the loyalty of patients, Boshaff and Gray (2004). In this study, Kilbourne *et.al.* (2004) proved that SERVQUAL is capable of capturing even slight quality indicators in a multi-dimensional way, namely, tangibles, responsiveness, reliability and empathy as well as overall service quality. Ramsuran-Fowder (2005)

considered two additional dimensions viz. core medical outcomes and professionalism/skill/competence along with five generic dimension of SERVQUAL model. They also incorporated a few additional items within each of the five SERVQUAL dimensions and finally found that those five dimensions could not be replicated fully to the healthcare services. Karassavidou et.al. (2007) applied SERVQUAL model to measure a service quality on three dimensions viz. a) human aspects, b) physical environment and infrastructure of the care unit and c) access. They applied a modified version of SERVQUAL model where demographic features of patients (age, gender, education and income) have been taken into account. Applying SERVQUAL model the researchers have measured gaps between patients' expectation and perception for above-mentioned three dimensions. The research result pointed out that the human aspect is the most important area where the relationship of patients with physicians and other staff of hospital occupy the central place of the healthcare system. According to Mangkolrat (2008), in her recent work on patient satisfaction measurement, suggested a conceptual framework where she measured the gap between patients' expectation and their perception in the light of service quality. Akter *et al.* (2008), in their research on service quality perception and satisfaction, applied SERVQUAL model considering three new dimensions viz. communication (a system to convey message to patients and patient parties), discipline (control of non performance of prescribed duties and non-adherence to written rules), tips or 'Baksis' (extra compensation in order to receive satisfactory service) replacing other three dimensions viz reliability, tangibles and empathy suggested by Parasuraman et.al.

METHODOLOGY

Instrument Development

This research study employed the in- depth interview procedure as the method of collecting qualitative data about healthcare service quality because the technique is particularly suited to determining perceptions of patients. The method has content validity for exploring the range of perceptions about hospital quality because the open-ended questions generate data in the patients' own words; there were no closed-ended questions asked in this stage, in-depth interviews conducted government hospital located in Lucknow city in Uttar Pradesh. The in-depth interview covered topics related to perception about the service quality of hospital such as clean rooms, bathrooms, & toilets, neat appearance, proper sitting and bedding arrangement, sophisticated equipment, electricity and hygienic drinking water, medical store, diagnostic centre and a blood bank, proper parking space, a notice board and

a suggestion box, sufficient number of doctors, nurses and technical experts, hygienic canteen, sufficient ambulances, dustbins and spittoons, oxygen cylinders, promised services, record book of patients, reasonable service charge, providing different specialties, explained procedure of treatment, help the patients, quick process of admission, less formality, queries of patients, prompt response, educated hospital staff, assurance of recovery, experienced doctors, convey information accurately, Impartial behaviour, individual attention, and consider financial condition of patients. A 35-item questionnaire to measure hospital service quality was developed using in-depth interview with patients

Data Collection

A cross-sectional study was conducted during April-June, 2015 in Lucknow, the capital of Uttar Pradesh. The study sample was selected from among all patients who were hospitalized in government hospitals of Lucknow. Three government hospitals namely King George Medical University, Dr Ram Manohar Lohia Institute of Medical Sciences and Balrampur Hospital were considered for investigation and the samples were divided among the 03 government hospitals based on proportionality to the size. The inclusion criteria comprised adult patients aged 18 years and older who had stayed at least 24 hours in the hospital and were willing to participate in the study. The samples were selected randomly in each hospital, and the questionnaires were given to them on the day of discharge. The aim of the study was explained to patients, and they were assured of the privacy of their information. The selected scale items were translated from English into Hindi, the principal language of Uttar Pradesh. The translation was verified by experts. Each scale item had an associated 5-point Likert-type scale ranging from a score of 1 for 'completely disagree' to 5 'completely agree', with 3 being the neutral position. Finally, 814 of the 1000 questionnaires distributed between the patients (response rate = 81.4%) were filled out and gathered for analysis.

Demographic Profile of the Patients

Distributions of the demographic characteristics of respondents are presented in Table 1. Out of 814 respondents 438 (53.80%) are male and 376 female (46.2%) and 20.14%, 15.84%, 19.77%, 21.74%, 22.48% of the respondents were below 30 years, 31-40 years, 41-50 years, 51-60 years, and above 60 years old respectively. 43.98% (358) of respondents had qualification up to illiterate, 38.57% (314) were Primary and secondary intermediate level, and rest of the patients 17.44% (142) were related graduate level. While majority of the patients were urban 71.62 (583) and rural constituted 28.37% (231) of the total sample.

Table 1
Socio-Demographic Data of the Sample (N = 814)

| Variables | | N | % |
|-----------------|------------------------------|-----|-------|
| Gender | Male | 438 | 53.80 |
| | Female | 376 | 46.20 |
| Age (Years) | <30 | 164 | 20.14 |
| | 31-40 | 129 | 15.84 |
| | 41-50 | 161 | 19.77 |
| | 51-60 | 177 | 21.74 |
| | 61> | 183 | 22.48 |
| Education Level | Illiterate | 358 | 43.98 |
| | Primary and Secondary School | 314 | 38.57 |
| | Graduates | 142 | 17.44 |
| Residence | Urban | 583 | 71.62 |
| | Rural | 231 | 28.37 |

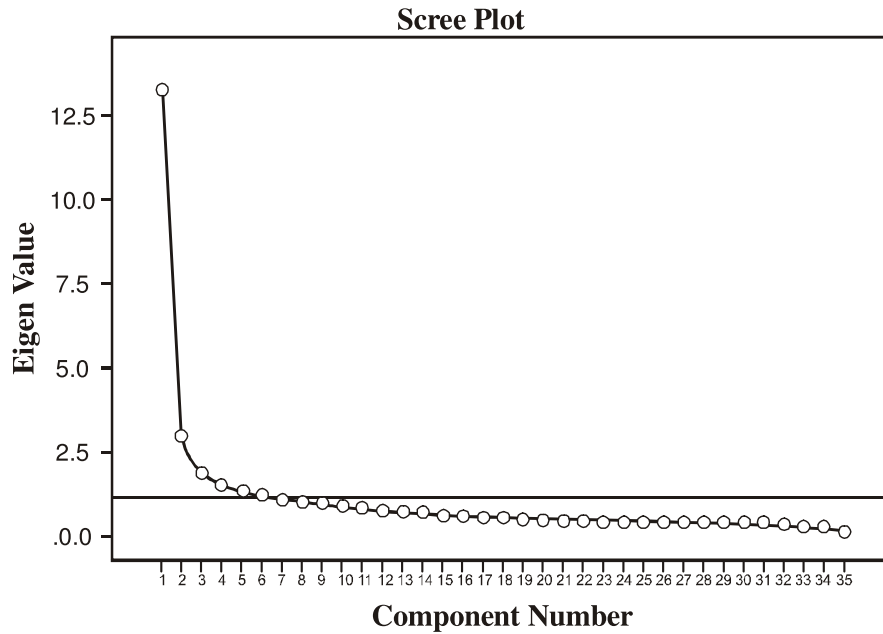
Statistical Methods

Exploratory factor analysis is used to identify the underlying factors, service quality gap, paired t-test and Cronbach's alpha is used to measure the internal consistency of the scale, followed by regression analysis.

Variables Measuring Client-Perceived Quality

Principal component analysis suggested five important factors. This research paper uses exploratory factor analysis in order to identify the various determinant factors of service quality in government hospitals at Lucknow in Uttar Pradesh. Principal Component analysis was employed for extracting factors and orthogonal rotation with Varimax was applied. As latent root criterion was used for extraction of perception of patients towards service quality in government hospitals, only the factors having latent roots or eigenvalue greater than one were considered significant; all other factors with latent roots less than one were considered insignificant and disregarded. The extracted influencing factors of service quality along with their Eigen Value are shown in Figure 1.

Figure 1 : Scree Plot of 35 Variables



Influencing factors of service quality in hospitals have been given appropriate names on the basis of variables represented in each case. The names of the factors, the statements, the labels and factor loading have been summarized in Table 1. There are six factors each having eigenvalue exceeding one for factors are 13.214, 2.981, 1.846, 1.458, 1.280, and 1.182 respectively. The 35 items were subjected to EFA and a final six -factor model was estimated, while 14 items exhibited low factor loadings (<0.50). The six -factor solution accounted for 62.746% of the total variance, and exhibited a KMO measure of sampling adequacy of 0.878. It is a pretty good extraction because we are able to economize on the number of choice factors (from 35 to 6 underlying factors), we lost 37.254 % of information content for choice of variables. The percentages of variance explained by factors one to six are 37.755, 8.516, 5.276, 4.166, 3.656, and 3.377 respectively. Large communalities indicate that a large number of variance has been accounted for by the factor solutions.

Table 2

| Constructs | Factor-1 | Factor-2 | Factor-3 | Factor-4 | Factor-5 | Factor-6 | Communalities |
|---|----------|----------|----------|----------|----------|----------|---------------|
| Aesthetic | | | | | | | |
| Sitting and Bedding Arrangement | 0.681 | | | | | | 0.502 |
| Functional Hygienic Canteen | 0.667 | | | | | | 0.592 |
| Staff are Neatly Dressed | 0.695 | | | | | | 0.514 |
| Adequate Dustbins and Spittoons | 0.797 | | | | | | 0.653 |
| Professionalism/Skill/Competence | | | | | | | |
| Sufficient Doctors & Technical Staff | | 0.826 | | | | | 0.662 |
| Educated and Knowledgeable Staff | | 0.769 | | | | | 0.586 |
| Experienced Doctors | | 0.631 | | | | | 0.581 |
| Patients Properly Examined | | 0.727 | | | | | 0.548 |
| Promptness Attention | | | | | | | |
| Quick Admission Process | | | 0.758 | | | | 0.565 |
| Prompt Response to Patient | | | 0.879 | | | | 0.734 |
| Hospital is Less Formal | | | 0.722 | | | | 0.523 |
| Caring Staff | | | | | | | |
| Queries Properly Addressed | | | | 0.793 | | | 0.648 |
| Visitors Properly Treated | | | | 0.867 | | | 0.726 |
| Impartial Staff Towards the Patients | | | | 0.716 | | | 0.520 |
| Individual Attention to Their Patients | | | | 0.746 | | | 0.552 |
| Medicine Availability | | | | | | | |
| Fair Health Service Charges | | | | | 0.832 | | 0.672 |
| Upgraded Medical Facility | | | | | 0.787 | | 0.628 |
| In house medical facilities | | | | | 0.756 | | 0.572 |
| Accessibility and Affordability | | | | | | | |
| Convenient Operating Hours | | | | | | 0.752 | 0.554 |
| Promised Services on Time | | | | | | 0.824 | 0.660 |
| Consider Financial Condition | | | | | | 0.776 | 0.638 |
| Eigen Value | 13.214 | 2.981 | 1.846 | 1.458 | 1.280 | 1.182 | |
| Variance (%) | 37.755 | 8.516 | 5.276 | 4.166 | 3.656 | 3.377 | |
| Cumulative Variance (%) | 37.755 | 46.271 | 51.547 | 55.713 | 59.368 | 62.746 | |
| Reliability Alpha (%) | 0.853 | 0.795 | 0.815 | 0.829 | 0.884 | 0.859 | |
| Number of Items (Total=21) | 04 | 04 | 03 | 04 | 03 | 03 | |

Note : Extraction Method –Principal Component Analysis, Rotation Method – Varimax with Kaiser Normalization, KMO (Kaiser-Meyer-Olkin Measure of Sampling Adequacy) = 0.878, Bartlett's Test of Sphericity: p = 0.000 ($\chi^2 = 2084.744$, d.f = 595)

The main purpose of the EFA was to confirm whether items were loaded correctly to the corresponding factors as identified by previous research. The purpose was also to assess the dimensionality, measurement, and psychometric properties of scale items used in the study. In order to quantify the scale reliabilities of the factors identified, Cronbach's Alpha Coefficient were computed; all of the alpha coefficients easily passed the minimum level of 0.70 recommended by Nunnally (1978) indicating acceptability and reliability of all of the scales.

Gap Analysis in Healthcare Services

Gap analysis is not new in healthcare services context, and a number of studies have been influenced by the work of (Parasuraman *et al.*, 1985). For example, (Long *et al.*, 1999) 'gap analysis' to develop a number of questions in order to compare what client 'look for' (expect) and what they 'experience' on a course. (Sander *al.*, 2000) meanwhile examined customers' expectations and preferences. Customers judge actually quality according to their expectations (Ghobadian *et al.*, 1994; Dotchin & Oakland, 1994; Kandampully, 1997; Fergueson *et al.*, 1999, Lee *et al.*, 2000; Walter & Germunden, 2000). The ultimate measure of quality is whether or not the product or service lives up to expectations of the patients. The most widely used and tested service quality instrument has SERVQUAL, based on the service quality 'gap model' (Parasuraman *et al.*, 1988, 1991, 1993, 1994), which defines service quality as a function of gap between patients' expectations of a service and their perceptions of the actual service delivery by organization. The instrument represents a multi-item scale that since its development has been widely used for measuring patient expectations and perceptions of service quality in government hospitals. It consists of 21 parallel expectation (E) and perception (P) statements the six service quality dimensions. In order to obtain view for the statement, patients are required to select a response on Likert scales that range from strongly disagree to strongly agree. This then allows for the difference scores for each dimension to be calculated. The difference ($P - E = Q$) represents the measure of service quality (Q). Where Q is negative a service gap exists. However, Q is positive, patient expectations are being exceeded.

Service Quality Gaps Analysis (P-E)

The service quality gaps are demonstrated in the Table 2. As each item has a negative value, clients' perceptions of the service are falling short of their expectations.

Table 3

| S. No. | Variables | Perception Mean (S.D) | Expectation Mean (S.D) | Gap (P-E) |
|---|--|-----------------------|------------------------|-----------|
| Aesthetic | | | | |
| 1. | Sitting and Bedding Arrangement | 3.55 (0.892) | 4.69 (0.486) | -1.14 |
| 2. | Functional Hygienic Canteen | 3.65 (0.977) | 4.57 (0.607) | -0.92 |
| 3. | Staff are Neatly Dressed | 4.23 (0.750) | 4.77 (0.423) | -0.54 |
| 4. | Adequate Dustbins and Spittoons | 3.88 (0.891) | 4.53 (0.540) | -0.65 |
| Professionalism/Skill/Competence | | | | |
| 5. | Sufficient Doctors & Technical Staff | 4.17 (0.635) | 4.72 (0.473) | -0.55 |
| 6. | Educated and Knowledgeable Staff | 4.22 (0.871) | 4.61 (0.490) | -0.39 |
| 7. | Experienced Doctors | 4.19 (0.837) | 4.59 (0.514) | -0.40 |
| 8. | Patients Properly Examined | 4.15 (0.914) | 4.70 (0.503) | -0.55 |
| Promptness Attention | | | | |
| 9. | Quick Admission Process | 3.77 (0.952) | 4.57 (0.517) | -0.80 |
| 10. | Prompt Response to Patient | 3.73 (0.662) | 4.59 (0.534) | -0.86 |
| 11. | Hospital is Less Formal | 3.71 (0.946) | 4.48 (0.643) | -0.77 |
| Caring Staff | | | | |
| 12. | Queries Properly Addressed | 3.79 (0.908) | 4.58 (0.606) | -0.79 |
| 13. | Visitors Properly Treated | 3.54 (0.729) | 4.49 (0.559) | -0.95 |
| 14. | Impartial Staff Towards the Patients | 3.81 (0.534) | 4.50 (0.522) | -0.69 |
| 15. | Individual Attention to their Patients | 3.35 (0.814) | 4.38 (0.632) | -1.03 |
| Medicine Availability | | | | |
| 16. | Fair Health Service Charges | 3.95 (0.809) | 4.54 (0.576) | -0.59 |
| 17. | Upgraded Medical Facility | 4.01 (0.823) | 4.66 (0.517) | -0.65 |
| 18. | In house Medical Facilities | 4.18 (0.744) | 4.61 (0.510) | -0.43 |
| Accessibility and Affordability | | | | |
| 19. | Convenient Operating Hours | 3.76 (0.793) | 4.65 (0.520) | -0.89 |
| 20. | Promised Services on Time | 3.89 (0.931) | 4.54 (0.521) | -0.65 |
| 21. | Consider Financial Condition | 3.47 (0.948) | 4.33 (0.817) | -0.86 |
| | SERVQUAL TOTAL | 81.00 | 96.1 | -15.1 |

The mean scores from the sample are illustrated in Table 2. For each statement the mean Expectation (E) and Perception (P) values, along with a service quality value from the formula are presented, $Q = P - E$ (Parasuraman *et al.*, 1988). The three columns provide summary results for the perception of patients in government hospitals, and the overall SERVQUAL results are illustrated in Table 2, above the three columns. Where the gap (P-E) is negative, this refers to perceptions of the healthcare services in government hospitals falling short against initial patients' expectations, and the presence of service quality gaps. The findings suggest a shortfall on all the items measured. The expectation and perception items were measured using a five point Lickert Scale, from 1 = strongly disagree, to 5 = strongly agree, with three serving as a mid point/neutral opinion on the scale. Mean scores greater than three identify a tendency for patients to agree with a particular statement, whereas means of less than three indicate disagreement.

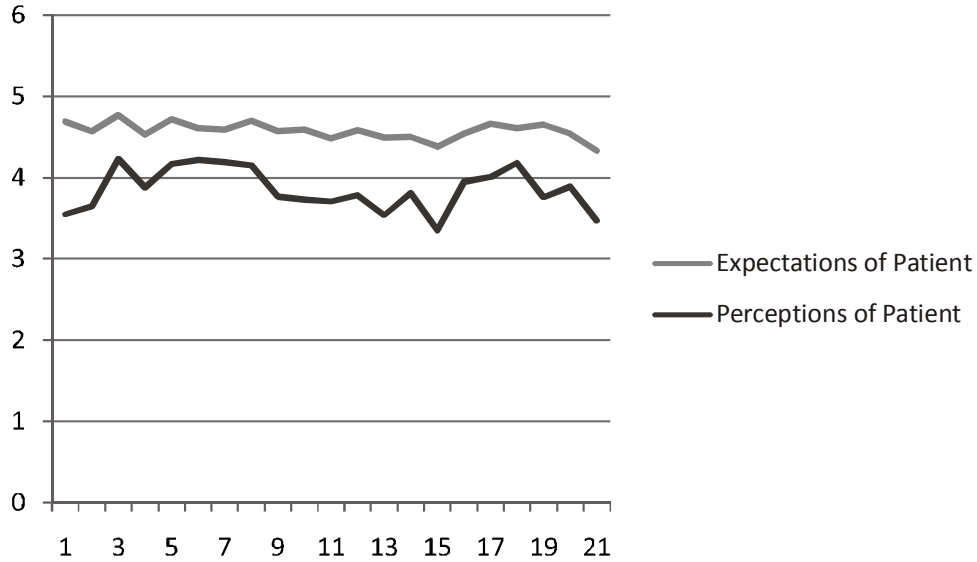
Expectations (E)

Tables 2 depicts the following useful information, it can be concluded that expectation (E) values among the patients per se were high (means ranging from 4.33 to 4.77). All the statements illustrate mean scores of 4.33 or greater. This suggests that patients really have high expectations in terms of prompt service.

Perceptions (P)

Overall 21 perception' items are close to mid value (3) on the scale, suggesting there is some agreement among. Meanwhile 7 items (3, 5, 6, 7, 8, 17, and 18) exceeded 4.00, suggesting that the sample had a tendency to agree that staff are neatly dressed, sufficient doctors & technical staff, educated and knowledgeable staff, experienced doctors, patients properly examined, upgraded medical facility, and in house medical facilities.

Figure 2 : Service Quality Gap



Paired Sample t-test Statistics

Paired sample t-tests were also undertaken on the perception and expectation mean items, in order to identify whether or not statistically significant service quality gaps were apparent.

Findings from data presented in Table 4 demonstrate significant differences between public hospitals clients' perceptions and expectations of healthcare service on all 21 statements. However, for all the statements, there is a statistical significance of a 0.05, which illustrates a statistically significant gap between the patients' perceptions and expectations of healthcare service at the 95% confidence level. These represent service quality gaps that the government hospitals should take the appropriate measures on-board to bridge.

Predicting Patient Satisfaction

A Multiple Linear Regression (MLR) analysis was conducted to investigate the influence of aesthetic, professionalism, promptness attention, caring staff, medicine availability, accessibility and affordability on satisfaction. The test of multiple linear regression assumption found expected patterns for non-violation of the assumptions and this result supports the use of multiple linear regression as an appropriate statistical analysis for this study. Tables 5 and 6 provide the results of the multiple linear regression analysis. Based on the results in Table 5, it seems

Table 4

| S. No. | Variables | Perception Mean (S.D) | Expectation Mean (S.D) | Gap (P-E) | Paired t-test | p-value |
|---|--|-----------------------|------------------------|--------------|---------------|---------|
| Aesthetic | | | | | | |
| 1. | Sitting and bedding arrangement | 3.55 (0.892) | 4.69 (0.486) | -1.14 | 8.648 | .004 |
| 2. | Functional hygienic canteen | 3.65 (0.977) | 4.57 (0.607) | -0.92 | 7.927 | .000 |
| 3. | Staff are neatly dressed | 4.23 (0.750) | 4.77 (0.423) | -0.54 | 6.673 | .000 |
| 4. | Adequate dustbins and spittoons | 3.88 (0.891) | 4.53 (0.540) | -0.65 | 5.700 | .003 |
| Professionalism/skill/competence | | | | | | |
| 5. | Sufficient doctors & technical staff | 4.17 (0.635) | 4.72 (0.473) | -0.55 | 4.823 | .000 |
| 6. | Educated and knowledgeable Staff | 4.22 (0.871) | 4.61 (0.490) | -0.39 | 4.007 | .000 |
| 7. | Experienced doctors | 4.19 (0.837) | 4.59 (0.514) | -0.40 | 4.450 | .005 |
| 8. | Patients properly examined | 4.15 (0.914) | 4.70 (0.503) | -0.55 | 8.083 | .000 |
| Promptness Attention | | | | | | |
| 9. | Quick admission process | 3.77 (0.952) | 4.57 (0.517) | -0.80 | 7.036 | .000 |
| 10. | Prompt Response to patient | 3.73 (0.662) | 4.59 (0.534) | -0.86 | 6.726 | .000 |
| 11. | Hospital is less formal | 3.71 (0.946) | 4.48 (0.643) | -0.77 | 6.529 | .000 |
| Caring Staff | | | | | | |
| 12. | Queries properly addressed | 3.79 (0.908) | 4.58 (0.606) | -0.79 | 7.447 | .000 |
| 13. | Visitors properly treated | 3.54 (0.729) | 4.49 (0.559) | -0.95 | 6.414 | .000 |
| 14. | Impartial staff towards the patients | 3.81 (0.534) | 4.50 (0.522) | -0.69 | 5.297 | .000 |
| 15. | Individual attention to their patients | 3.35 (0.814) | 4.38 (0.632) | -1.03 | 7.090 | .001 |
| Medicine Availability | | | | | | |
| 16. | Fair health service charges | 3.95 (0.809) | 4.54 (0.576) | -0.59 | 5.751 | .002 |
| 17. | Upgraded medical facility | 4.01 (0.823) | 4.66 (0.517) | -0.65 | 6.260 | .000 |
| 18. | In house medical facilities | 4.18 (0.744) | 4.61 (0.510) | -0.43 | 4.448 | .001 |
| Accessibility and Affordability | | | | | | |
| 19. | Convenient Operating Hours | 3.76 (0.793) | 4.65 (0.520) | -0.89 | 6.346 | .000 |
| 20. | Promised services on time | 3.89 (0.931) | 4.54 (0.521) | -0.65 | 8.340 | .000 |
| 21. | Consider financial condition | 3.47 (0.948) | 4.33 (0.817) | -0.86 | 5.047 | .000 |
| | SERVQUAL TOTAL | 81.00 | 96.1 | -15.1 | | |

that both models have worked well in explaining the variation in satisfaction (Model 1 : $F = 35.881$; $df = 812$; $p = .000$; Model 2: $F = 9.160$; $df = 811$; $p = .003$). The proportion of explained variance as measured by R-square for Model 1 ($R^2 = .268$) and Model 2 were ($R^2 = .331$). In other words, 33.1% of the variation in satisfaction is explained by aesthetic and accessibility in Model 2. As indicated by the unstandardized coefficients (Table 6), both aesthetic ($t = 3.264$, $p = .002$, $b = .483$) and accessibility ($t = 3.027$, $p = .003$, $b = .379$) were found to exert a significant positive influence on satisfaction.

Table 5
Model Summary

| Model | R | R ² | Adj. R ² | Std. Error of the Estimate | Change Statistics | | | | | Durbin-Watson |
|-------|-------|----------------|---------------------|----------------------------|-----------------------|----------|-----|-----|--------------|---------------|
| | | | | | R ² Change | f Change | df1 | df2 | Sig.F Change | |
| 1 | .518a | .268 | .261 | .83121 | .268 | 35.881 | 1a | 812 | .000 | 1.815 |
| 2 | .575b | .331 | .317 | .79863 | .063 | 9.160 | 1b | 811 | .003 | |

- a. Predictors : (Constant), Aesthetic
 b. Predictors : (Constant), Aesthetic, Accessibility
 c. Dependent Variable : Satisfaction

Table 6
Coefficients^a

| Model | Variable | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|-------|---------------|-----------------------------|------------|---------------------------|-------|------|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | .842 | .484 | | 1.739 | .085 |
| | Aesthetic | .747 | .125 | .518 | 5.990 | .000 |
| 2 | (Constant) | .447 | .483 | | .925 | .357 |
| | Aesthetic | .483 | .148 | .335 | 3.264 | .002 |
| | Accessibility | .379 | .125 | .311 | 3.027 | .003 |

- a. Dependent Variable : Satisfaction

According to stepwise method, Aesthetic and Accessibility factors exert influence on patient satisfaction ($p = .002$), and other factors such as Professionalism, Promptness Attention, Caring staff and Medicine availability do not seem to influence patient satisfaction. Thus the full model for public hospitals is found as :

$$Y (\text{Satisfaction}) = 1.028 + 0.667 (\text{Aesthetic}) + .064 (\text{Professionalism}) + .080 (\text{Promptness attention}) - .200 (\text{Caring staff}) - .347 (\text{Medicine availability}) + .455 (\text{Accessibility and affordability})$$

DISCUSSION

This study has revealed how modified SERVQUAL instrument could help public hospitals identify the healthcare service characteristics that are considered important by patient's point of view. Public hospitals may improve their level of quality and the appropriateness of the model can be monitored longitudinally, with resources being shifted to those areas which most heavily influence patient perceptions of service quality in the state of Uttar Pradesh. This research considers healthcare service quality to be an important factor of patient satisfaction and patients' perception. Modified SERVQUAL instrument demonstrated that all six dimensions of healthcare quality were significant in explaining patient satisfaction. Moreover, aesthetic, professionalism/skill/competence, promptness attention, caring staff, medicine availability, accessibility and affordability were also significant in explaining patient perception. Results of paired t-test showed that there is a statistically significant difference at $p < 0.05$ level between the perception and expectation of modified instrument scores in the three public hospitals in Lucknow. The regression results also suggested that perceived quality have the biggest impact on general patient satisfaction i.e. aesthetic has the largest positive effect followed accessibility and affordability, promptness attention and professionalism, while caring staff and medicine availability have the negative impact on patient satisfaction in the public hospitals. These are important areas in which healthcare services in Uttar Pradesh require more attention.

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