

SERVICE QUALITY AND SERVICE SATISFACTION IN THE INPATIENT SETTING: MODERATING ROLE OF INSURANCE STATUS

Vanita Singh*¹, Amit Garg²

1. Management Development Institute, Gurgaon, India

2. Indian Institute of Management, Ahmedabad, India

Correspondence: vanita.singh@mdi.ac.in

ABSTRACT

BACKGROUND:

The purpose of this study is to propose and test for the moderating role of insurance status on the relationship between service quality (SQ) and service satisfaction (SS) in a hospital setting. The study focuses on the state-run health insurance (SHI) provided to economically deprived families in India.

METHODOLOGY:

Using a reliable and validated structured questionnaire adapted from Dagger's hierarchical model of health service quality, exit interviews were conducted with 279 respondents. 310 study participants were randomly recruited (response rate = 90%) from the discharge list of general surgery ward of a private hospital in the Thane district of Maharashtra, India. Multi-group Structural Equation Modelling (SEM) in AMOS v.22 was used to test for the hypothesized model.

FINDINGS:

The study finds that patients' perceptions of different service quality dimensions, including inter-personal, administrative and technical are affected by the insurance status. The analysis identified technical quality as the key determinant of overall perceived service quality for patients insured under SHI. Results support our proposed moderating effect of insurance status on the relationship between service quality and service satisfaction.

CONCLUSION:

The study findings indicate that patients receiving free treatment under SHIs may not have higher expectations of inter-personal and/or administrative quality but are concerned about technical quality. For paid patients all the dimensions of service quality determine overall perceived service quality and service satisfaction. The study findings have implications for market segmentation strategies based on the insurance status. The study provides insights to SHI implementers for improving the program in the long run and also help hospital administrators identify the quality dimensions to focus upon and ensure patient satisfaction and loyalty.

KEYWORDS

service quality; patients' satisfaction; state health insurance; moderation; multi-group SEM; technical quality

INTRODUCTION

State health insurance schemes (SHIs) have been launched across developing countries to achieve Universal Health Coverage (UHC). Under the UHC framework, just providing services is not enough, as we need quality services for the coverage to be effective in terms of health gains for the population [1]. Most of the low-middle income countries, including India, rely on private providers to provide quality care to their poor population through SHIs [2–4].

The Indian studies focusing on the service provisioning of private providers in India raises concerns regarding the quality of care due to the profit motives of the private sector [5–7]. The quality issues that have been highlighted in the private sector includes; Length of Stay (LOS) being affected by non-clinical factors [8]; insurance status affecting the likelihood of undergoing procedures [9]; over-prescription, over-diagnosis and use of branded drugs [6, 10, 11]. These quality issues affect the overall satisfaction of the patient and thus treatment outcome.

The patients' perception of service quality is a key determinant of patient satisfaction which has implications for the success and profitability of health care organizations [12, 13]. In the Indian context, the majority of the studies exploring the quality aspects of health service delivery have focused on assessing structural quality through facility surveys [14]. Though the role of socio-economic factors affecting the perceptions of service quality from the users' perspective has been studied to some extent [15, 16], however, the role of insurance status, specifically government provided, remains understudied.

The existing literature on the impact of health insurance schemes [17, 18] raises concerns about the quality of care received under health insurance schemes in low resource settings. The studies specific to the Indian context also highlights the issues of quality under State Health Insurance schemes or community based health insurance schemes [6, 19, 20]. The most commonly reported issue with the quality of care under SHIs is the denial of treatment or delay in providing treatment by private providers empanelled under these schemes. A recent study by Khetrpal et al. (2019) reports that service satisfaction is higher among SHI beneficiaries when compared with non-SHI beneficiaries in private hospitals in two Northern states of India. The study also highlights that though SHI beneficiaries had higher levels of service satisfaction the service quality was

doubted. This indicates that there is no conclusive evidence regarding differences in service quality or satisfaction among insured and uninsured patients. With this background, we propose and test for a moderating role of insurance status.

This study contributes to the literature on health care service quality in Indian context by focusing on multiple dimensions of health care quality, including, inter-personal, administrative, and technical quality. Further, the role of insurance status in affecting the perceptions of service quality and thereby service satisfaction is largely understudied. Our study fills this research gap by proposing and testing for a differential effect of insurance status (moderating effect) on the relationship between service quality and service satisfaction in a hospital setting.

STATE HEALTH INSURANCE SCHEME

Mahatma Jyotiba Phule Jan Aarogya Yojana (MJPJAY) is a State run health insurance scheme (SHI) in the state of Maharashtra, earlier known as "Rajiv Gandhi Jeevandaayi Aarogya Yojana". This scheme was launched in the year 2012 in a phased manner, covering eight districts in its first phase. The eight districts included, Gadchiroli, Amravati, Nanded, Sholapur, Dhule, Raigad, Mumbai city, and Mumbai Suburban. Later in November 2013, the scheme was extended to the whole state. Currently, it empanels 973 health facilities with 677 private and remaining in public sector. It covers below poverty line families and marginal above poverty line (those with annual income less than 100000 rupees [about \$USD1,360]). It provides a financial coverage of \$USD2,039 to all eligible households.

THEORETICAL BACKGROUND

SERVICE QUALITY

Service Quality is broadly defined as an assessment procedure, whereby customers compare their expectations about a service with their perceptions of the way that service was performed [21, 22]. Some of the early conceptualizations of service quality in the goods marketing literature are based on the disconfirmation paradigm [21, 22]; which suggests that the comparison of perceived and expected performance of a product or service defines quality perception.

The conceptualization of service quality perception follows either the "Nordic" perspective [21] or the "American" perspective [22]. The Nordic perspective defines service

quality in terms of functional and technical quality while the American perspective defines service quality in terms of service encounter characteristics. In the service sector the most widely used measure of service quality is "SERVQUAL" proposed by Parasuraman, Zeithaml, and Berry in the year 1985 [22]. SERVQUAL is based on an "American" perspective and records consumers' expectations and perceptions of a service along these five dimensions, namely, "reliability", "empathy", "tangibles", "responsiveness", and "assurance". The service quality is then recorded by the difference between expectations and perceptions. SERVQUAL is a generic quality measurement tool applicable across service sectors however, it is critiqued for theoretical as well as psychometric concerns [23–26].

The reliability of the SERVQUAL scale in measuring perceived service quality in the healthcare setting has mixed results. Some researchers regard SERVQUAL as a valid measure of perceived service quality in a healthcare setting [27] others consider it inappropriate in the healthcare context [25, 28]. As per Koerner (2000), the SERVQUAL is ineffective in capturing the service quality dimensions of inpatient care.

Dagger et al. (2007) developed a hierarchical model of service quality measure based on the "Nordic perspective". They identified four primary dimensions from the marketing literature that reflect service quality dimensions, including inter-personal quality, administrative quality, environment, and technical quality. As the focus of this research is on comparing the process dimension of quality, we measure inter-personal (IPQ), administrative (AQ), and technical (TQ) quality along with overall service quality (SQ) and service satisfaction.

SERVICE SATISFACTION

Consumer satisfaction is fundamental in the services marketing research and is believed to be largely affected by service quality perceptions [29–31]. The expectancy-disconfirmation is the major theoretical framework used to explain customer satisfaction in the services marketing literature. The disconfirmations can be positive, negative, or nil. When a product or service performs below customer's expectations then there exists negative disconfirmation resulting in dissatisfaction [29, 32, 33].

The recent transformation of the patient as a consumer of healthcare has given impetus to satisfaction evaluations and market research in the health sector [34]. Presently,

managing patients' satisfaction is the most crucial task for hospital managers and thus, there is a growing body of literature exploring patient's satisfaction and factors affecting it [35, 36]. However, there is no consensus on the factors and there exists contradicting results across studies [36].

Service quality is considered as an antecedent to service satisfaction [25, 37, 38]. Researchers' posit that higher level of satisfaction is an indicator of higher perceived service quality. Further, in a healthcare setting overall perception of service quality (SQ) is affected by various dimensions of healthcare quality, including, inter-personal (IPQ), administrative quality (AQ), and technical quality (TQ) [25, 30]. Existing studies in healthcare setting have found that service quality is a determinant of service satisfaction [39–41]. With this theoretical background, our first set of hypotheses are:

H1a: Inter-personal quality (IPQ) will have a significant positive association with Overall Perceived Service Quality (SQ)

H1b: Administrative quality (AQ) will have a significant positive association with Overall Perceived Service Quality (SQ)

H1c: Technical quality (TQ) will have a significant positive association with Overall Perceived Service Quality (SQ)

H2: The overall service quality (SQ) will have positive association with service satisfaction (SS).

PERCEIVED SERVICE QUALITY AND SERVICE SATISFACTION: EFFECT OF INSURANCE STATUS

With increasing coverage of health insurance in developing countries, the study of the effect of insurance status on service delivery components including access and quality is gaining attention among researchers. There are limited studies, especially in the context of Low-Middle Income Countries, that have looked at the effect of insurance status on quality, its dimensions and on service satisfaction. Further, the limited existing evidence remains inconclusive as some studies report positive effect of insurance status on service quality while others report negative effect. A study conducted in the United States among Latinos concludes that insured patients give higher ratings on perceived service quality and service satisfaction [42]. Few studies from Low-Middle Income Countries (LMICs) report negative perceptions of quality among insured wherein insured patients experienced longer waiting times, verbal abuse, and discrimination from health providers [43, 44] while other researchers from similar

study setting report no significant differences in the perceived quality and satisfaction between insured and uninsured [45]. Similarly, the findings related to the relationship between service quality and service satisfaction are inconsistent. Few studies have found that customers report higher levels of satisfaction even with lower perceived service quality [30, 46, 47]. We posit that these inconsistencies in the relationship between service quality and service satisfaction could be explained by moderating role of insurance status.

We propose and test for the moderating role of the insurance status on the relationship between the dimensions of service quality and perceived service quality and on the relationship between service quality and

service satisfaction. Based on this, our next set of hypotheses are:

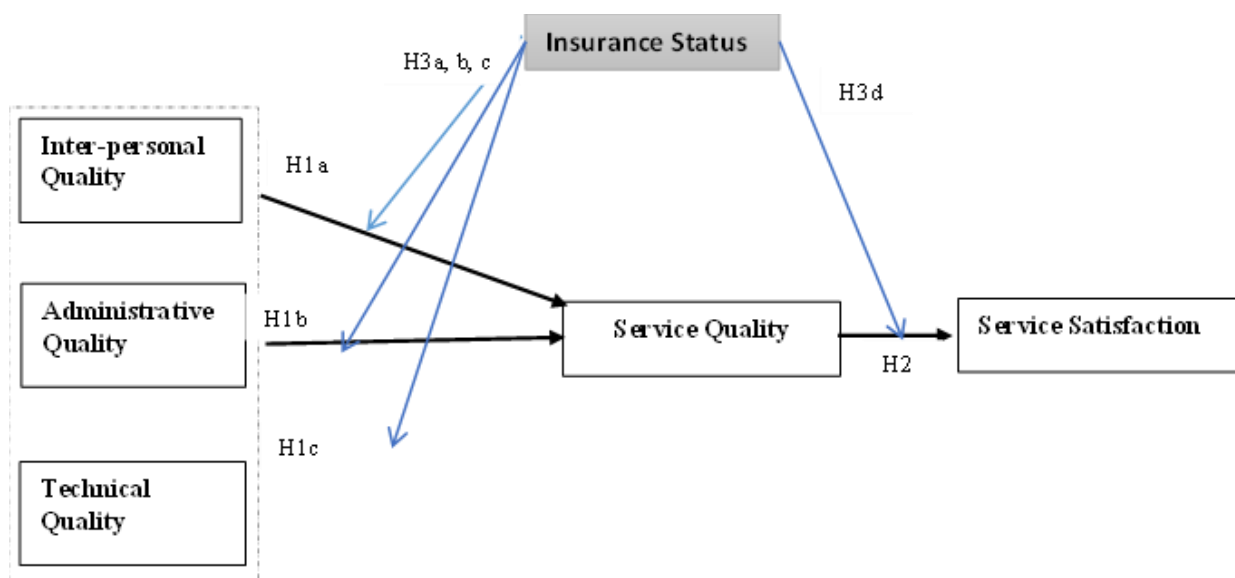
H3a: Insurance status will have differential effect (moderating effect) on the relationship between IPQ and SQ

H3b: Insurance status will have differential effect (moderating effect) on the relationship between AQ and SQ

H3c: Insurance status will have differential effect (moderating effect) on the relationship between TQ and SQ

H3d: Insurance status will have differential effect (moderating effect) on the relationship between SQ and SS.

FIGURE 1: THEORETICAL MODEL FOR THE STUDY



METHODOLOGY

STUDY DESIGN

The study used a cross-sectional design to collect data on patients' perception of service quality and service satisfaction. Our interest variables included: Inter-personal Quality (IPQ), Administrative quality (AQ), Technical Quality (TQ), Overall service quality (SQ) and patients' satisfaction (SS). We have measured these variables using existing validated scales adapted from Dagger et al. (2007). The reliability of the scales was pre-tested through a pilot study (N = 40) in the same study setting. Based on the results of pilot study few items were reworded and few items were deleted. The item-wise details of the latent constructs are provided in the measurement section under methodology.

STUDY SETTING

The study was done in the general ward of a tertiary level private teaching hospital in Thane district, Maharashtra. The study site was purposely selected as our focus was private hospital empanelled under state run PFHI, Mahatama Jyotiba Phule Jan Aarogya Yojana (MJPJAY). The selected hospital is a 1400 bedded private hospital empanelled with MJPJAY and is among the top private hospitals in terms of the number of patients served under MJPJAY. We selected general ward to get a matching sample (comparison group) in terms of socio-economic characteristics as MJPJAY beneficiaries receive treatment in the general ward under this scheme. Within the general ward top six departments, Cardiology, Cardio-Vascular and Thoracic Surgery, Gastro-intestinal surgery,

Genitourinary, General Surgery, Onco-surgery, in terms of the volume of patients served under MJPJAY were selected.

SAMPLE SIZE

The required sample size for this study was calculated using (33):

$\alpha = 0.05$ (the false positive rate)

power = 0.80 or $\beta = 0.20$

and effect size (the standardized difference) of 0.5

$$N = 2(Z_{\alpha/2} + Z_{1-\beta})^2 / (\mu_1 - \mu_2)$$

Based on this, the required sample size was 64 for each group. We tried to accomplish as large sample as possible and collected data from 119 respondents from the insured group and 160 respondents in the uninsured group.

DATA COLLECTION

The data was collected from February – March 2020 using a pre-designed survey instrument. Our sampling frame was the discharge list of the six selected departments. The random sampling approach was used to recruit patients from the discharge list of the general surgery ward under 6 departments: Gastrointestinal; Oncology; Genito-urinary; Cardiology and Cardiothoracic Surgery and General Surgery.

On daily basis, from the discharge list of each of the department 2-3 patients were randomly selected and approached for being a part of the study. The selected patients were explained the purpose and objective of the

study. If the patient gave his/her consent to take part in the study, the responses were recorded using a pre-defined survey instrument.

MEASURES

Latent Variables:

The survey questionnaire included five validated constructs; inter-personal quality (IPQ), administrative quality (AQ), technical quality (TQ), overall service quality (SQ) and service satisfaction. All these constructs were adapted from previous studies [30, 48] and tailored to the context of inpatient services. All the items of the construct were measured on a five-point Likert Scale ranging from 1-5 (5-strongly agree to 1: strongly disagree). The negative worded items were reverse coded while entering the data. All the measures exhibited high reliability in our study sample, measured using Cronbach's alpha.

Inter-personal Quality (IPQ): We measure IPQ along three core themes as identified by Dagger et al. (2007), namely, manner of interaction, nature of the communication process (whether interactive), and mutuality of relationship.

Technical Quality (TQ): We measure TQ based on the perception about providers' skills and competence and satisfaction with the treatment outcome.

The details of the quality and satisfaction constructs are given in table 1. The construct validity and reliability testing of the adapted latent variables is provided in results section under measurement model testing.

TABLE 1: DETAILS OF LATENT CONSTRUCTS USED IN THE STUDY

Construct: Inter-personal Quality (IPQ)
IPQ1: I feel the staff at the hospital are not open to queries
IPQ2: I always get personalized attention from the staff
IPQ3: I do not find it easy to discuss things with the staff at the hospital
IPQ4: I feel the staff understand my needs
Construct: Administrative Quality (AQ)
AQ1: The admission process was not smooth and hassle-free
AQ2: There exists good coordination between various departments of the hospital
AQ3: The discharge procedures at the hospital are not efficient
AQ4: The administration system at the hospital is excellent
Construct: Technical Quality (TQ)
TQ1: I am impressed with the care provided at the hospital
TQ2: The care provided by the hospital is not of a high standard
TQ3: You can rely on the staff at the hospital to be well trained and qualified

TQ4: I believe the staff at the hospital are not highly skilled and competent
Construct: Service Satisfaction (SS)
SS1: My feelings towards the hospital are very positive.
SS2: I do not feel good about coming to this hospital for my treatment.
SS3: Overall, I am satisfied with the hospital and the service it provides.
SS4: I feel satisfied that the results of my treatment are the best that can be achieved.
SS5: The extent to which my treatment has produced the best possible outcome is not satisfying
Construct: Overall Service Quality (SQ)
SQ1: The overall quality of the service provided by the hospital is excellent.
SQ2: The quality of the service provided at the hospital is not impressive
SQ3: The services provided by the hospital are not of high standard.
SQ4: I believe the hospital offers service that is superior in every way.

Control Variables:

Socio-demographic variables that have been found to affect service satisfaction were included as covariates in the overall model fit. These include:

Age: Respondents were asked about their completed age in years and recorded as a continuous variable;

Gender was dichotomous variable with Males coded as 1 and Females coded as 2;

Residence was dichotomous with Urban coded as 1 and Rural coded as 2;

Monthly Household Income: Respondents were asked about their monthly family income from all sources combined which was then recorded as continuous variable.

Education level: Respondents were asked about their completed years of schooling and recorded as a continuous variable.

Admitting department: This information was recorded from the discharge list provided by the hospital. The admitting departments were coded as: 1- Cardiology; 2- Gastroenterology surgery; 3- Oncology surgery; 4- Genitourinary surgery; 5- General surgery; 6- Cardiovascular Thoracic surgery.

Length of stay in the hospital (LOS): LOS was recorded from the discharge list provided by the hospital.

Perceived health status at admission: Patients were asked to rate their perceived health status at the time of admission on a Likert scale of 1-5 (1: Very Poor; 5: Excellent).

Perceived health status at discharge: Patients were asked to rate their perceived health status at the time of discharge on a Likert scale of 1-5 (1: Very Poor; 5: Excellent).

ANALYTIC STRATEGIES

As our variables of interest were latent constructs so we use factor analysis in AMOS v.22 to estimate the dimensions of service quality, overall perceived service quality and patients' satisfaction. The data was collected in a cross-sectional manner, thus, we use common latent factor method to address the risk of common method variance bias (CMB) [49]. The values for the latent variables were obtained through data imputation (by regression) on the measurement model using AMOS [50].

In order to test our hypothesis 1a, 1b, 1c and hypothesis 2, which relates to testing the base model, we did SEM path analysis. For testing hypothesis 3, which involves testing for the moderation effect, we use Multi-group SEM. Multi-group SEM helps to answer the question, "does group membership moderate the relations specified in the model?" [51]. Multi-group SEM uses covariance SEM approach for between group analysis and first involves establishing measurement model invariance [52, 53]. Once the measurement model equivalence is established then structural equation model is tested for between-group differences.

RESULTS

SAMPLE CHARACTERISTICS

Table 2 presents the sample characteristics. 42% of our study sample were covered under PFHI. The average age was 45 years and in the range of 18-70 years. 29% of our respondents were female. The average years of completed education was 8.2 years. 23% of our sample belonged to minority religion (other than Hindus). There were 9% migrants in our sample who reported not having ration card and thus not being entitled to receive health scheme benefits. 26% of our study sample were from rural areas. The average length of stay of our study sample was 11.4 days and ranged from 2 days to 90 days. Our study sample reported spending 25545 rupees on an average in the general ward of a private hospital.

EXAMINING THE OVERALL MEASUREMENT MODEL

The measurement model was tested using AMOS version 22. The hypothesized twenty-one factor model, where each factor loads onto their corresponding latent factor,

provided a good fit to the data ($\chi^2 = 302$, $df = 166$; $RMSEA = .054$, $CFI = .97$, $TLI = .97$) [51]. The confirmatory factor analysis showed that the latent constructs IPQ, AQ, TQ, SQ and SS have adequate convergent validity, i.e., Average Variance Explained (AVE) is greater than 0.5 (Malhotra & Dash, 2011). The composite reliabilities for IPQ, AQ, TQ, SQ and SS were 0.92, 0.87, 0.90, 0.87 and 0.93 respectively.

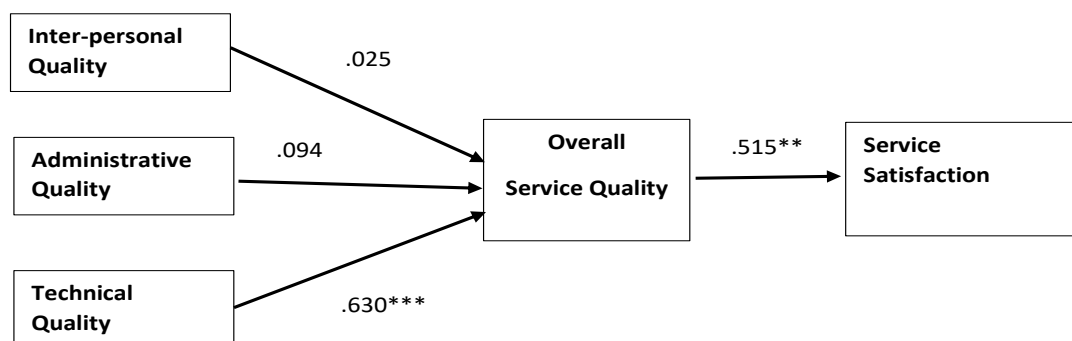
EXAMINING THE OVERALL STRUCTURAL MODEL

The overall structural model fit was good as evident with model fit indices $\chi^2 = 450$, $df = 249$; $RMSEA = .05$, $CFI = .96$, $TLI = .95$. With a well-fitting overall structural model, we tested our proposed hypothesis (H1a, H1b and H1c). Our results support our hypothesis 1c, significant positive relationship between TQ and SQ (coefficient: .630; p-value: <.00) but not hypothesis 1a and 1b as though the relations are positive but statistically insignificant. Hypothesis 2 is supported with significant positive association between service quality and service satisfaction (coefficient: 0.515; p-value: <.00).

TABLE 2: SAMPLE CHARACTERISTICS

Variables	Mean/Proportion	S.d.	Min.	Max.
Treatment covered under PFHI	0.42	0.49	0	1
Age (in years)	45.26	13.46	18	70
Sex=Female	0.29	0.45	0	1
Education (in years)	8.27	4.37	0	15
Religion= Minority	0.23	0.42	0	1
Migrant without Ration Card	0.09	0.28	0	1
Annual Family Income (in Rs.)	193060	102764	25000	600000
Rural residence	0.26	0.44	0	1
Perceived HS at admission	2.31	0.96	1	4
Perceived HS at discharge	4.2	0.81	1	5
Average level of SS	3.7	0.82	1	5
Avg. length of stay (los) in days	11.36	10.12	2	90
Avg. Medical Expend. (in rupees)	21244	37972	0	320000

FIGURE 2: RELATIONSHIP BETWEEN DIMENSIONS OF SERVICE QUALITY AND SERVICE SATISFACTION (BASE MODEL)



MULTI-GROUP SEM RESULTS

Our Hypothesis 3 suggests that the relationships posited in our base model will be moderated by the insurance status. We test for the moderating role of insurance status on the relations posited in the base model using Multi-group SEM. As suggested in the methodology section, first we establish measurement invariance before testing for structural invariance [54].

TESTING FOR MEASUREMENT INVARIANCE:

Measurement invariance tests whether the equations used to create the latent factor scores are equal across the groups which in turn ensures that the constructs are operationalized similarly across the two groups (38). We test for the invariance related to factor loadings. Goodness of fit results from this test of invariant factor loadings provided evidence of a well-fitting model with $\chi^2=840$; $df=340$; CFI = .93, RMSEA: .07. We use the CFI difference test [52] for testing measurement invariance across our two groups. Based on our results of measurement invariance test (delta CFI = 0.001), we contend that our measurement model is completely invariant across insured and uninsured patients.

BETWEEN-GROUP DIFFERENCES IN PATH COEFFICIENTS

Table 3 presents the standardized estimates for the path coefficients and for the control variables affecting service satisfaction. The standardized estimates of TQ->SQ are positive and significant across both the groups (Insured: coeff. = .836 and p-value = .00; Uninsured: coeff. = .402 and p-value = .00) while the path from IPQ to SQ and AQ to SQ is positive and significant only for the uninsured group (IPQ->SQ: 0.125, p-value: .087; AQ->SQ: 0.191, p-value: .067). The path from SQ to SS is insignificant for the insured group (-.144, p-value = .419) while it is positive and significant for the uninsured group (coeff. = .327, p-value = .00). The path from TQ to SS is positive and significant for both insured (coeff. = .550, p-value = .00) and uninsured (coeff. = .391, p-value = .00).

Among the control variables affecting our final outcome variable (Service Satisfaction -SS), perceived health status at discharge is positive and significant for both the groups (Insured: coeff. = .187, p-value = .00; Uninsured: coeff. = .174, p-value = .00). Respondents from lower age category, higher education status, females and with higher length of stay are less satisfied in our study sample, however, these estimates are statistically not significant (see table 3 for details). In the next section we test for structural invariance between the two groups to conclude if the estimates observed are significantly different between the two groups.

TESTING FOR STRUCTURAL INVARIANCE:

The unconstrained model provided a χ^2 value of 886 with 592 degrees of freedom. The chi-square difference test for the fully constrained model of structural weights indicated a deterioration of the model (delta $\chi^2=111$; delta degrees of freedom = 29; p=0.00) which is statistically significant. The chi-square difference value is statistically significant at a probability of less than .01 which suggests that one or more of the paths are not invariant across the two groups. Further, we identify the specific path coefficients that were different for the two groups. For this, we constrain only the specific path to be tested and using CFI difference test we assess for the structural invariance. The CFI difference between unconstrained model (CFI = .94) and structural weights model (CFI = .92) is 0.02, which is greater than the threshold for establishing structural invariance suggesting that the structural coefficients are significantly different across the two groups. On further testing for the specific path coefficients the CFI difference test results show (table 4) that the path coefficients for SS<-SQ, SQ<-TQ, SQ<-AQ and SQ<-IPQ are significantly different between the two groups. This provides evidence in support of our hypothesis 3a, 3b, 3c, and 3d.

TABLE 3: RESULTS OF MULTI-GROUP SEM

Paths	Unstandardized Estimates	
	Insured	Uninsured
IPQ → SQ	-0.081	0.125*
AQ → SQ	-0.006	0.191**
TQ → SQ	0.836***	0.402***
SQ → SS	-0.144	0.327***
IPQ → SS	-0.172	.167*
AQ → SS	0.228	0.183

TQ → SS	.550***	.391***
<u>Control Variables: Effect on SS</u>		
Age (in years)	0.178**	-0.029
Education (in completed years)	-0.081	-0.021
Gender (Male=1; Female=2)	-0.022	-0.083
Residence (Urban=1; Rural=2)	0.062	-0.017
Perceived HS [^] [1: Very Poor to 5: Excellent]	.187***	.174***
Length of Stay (LOS) [in days]	-0.04	-0.006

[^]: HS – Perceived Health Status at discharge

Notes: * p < 0.1, ** p < 0.05, *** p < 0.01

TABLE 4: RESULTS OF MULTI-GROUP STRUCTURAL INVARIANCE TEST

Model	Δ Chi-square	p-value	CFI
Structural Weights	112.28	0.00	0.92
Structural Covariances	150.62	0.00	0.92
SQ->SS	144.40	0.00	0.92
IPQ->SQ	135.63	0.00	0.92
AQ->SQ	137.32	0.00	0.92
TQ->SQ	142.70	0.00	0.93
TQ->SS	135.42	0.00	0.93
AQ->SS	135.21	0.00	0.93
IPQ->SS	137.81	0.00	0.93

**Unconstrained Model: Chi-square = 885; D.f. = 592; p-value = .00; CFI = 0.94*

DISCUSSION

We tested first the structural model for the overall fit with the data and then to test our proposed hypothesis of moderation by insurance status we did multi-group structural invariance test. The fit indices including Chi-square, CFI, TLI exhibited good fit with our sample data validating Dagger's hierarchical model for service quality in Indian healthcare (inpatient) setting.

Our tests of hypothesis 1a, 1b and 1c suggest positive relationship between different dimensions of quality (Interpersonal, Technical, and Administrative) and overall service quality (SQ). Further, technical quality (TQ) has the largest effect on the overall perceived service quality (SQ). This finding resonates well with the existing evidence of the preference for technical quality over inter-personal quality (39). The multi-group analysis suggests that for the uninsured (self-paid) patients all the dimensions, including inter-

personal, administrative and technical are significant predictors of overall perceived service quality while for those insured (receiving free treatment under State health insurance scheme) only technical quality significantly determines overall service quality.

The results show that the base model (combined sample) is closer to uninsured model. The existing studies report inter-personal, administrative and technical all having significant effect on overall service quality [30, 32, 46, 55]. The results of regression analysis showed that age, gender and education have no significant association with satisfaction. Similar findings have been reported by other studies as well [35, 56].

The multi-group analysis highlighted the moderating role of insurance status on the relationship between dimensions of service quality and overall service quality and service quality and patient satisfaction. The insured patients are mainly concerned about technical quality while for the

uninsured all the dimensions, inter-personal, technical and administrative, are significant predictor of overall perceived service quality. Further, the service quality is not a significant predictor for satisfaction among insured patients while it remains significant for uninsured patients. The literature on consumer research [37, 57, 58] suggests that consumers use price as a cue to quality and the service quality expectations are formed accordingly. Perhaps, the insured sample in this study expect lower quality as they receive free services under SHI. The lower service quality expectations result in higher satisfaction for insured sample in our group.

CONCLUSION

This study highlighted the moderating role of insurance status on the relationship between service quality and patients' satisfaction. The technical quality plays a major role in setting up overall service quality expectations. Accordingly, hospitals need to ensure technical quality for ensuring higher satisfaction and customer loyalty in turn. The study findings have significant managerial implications for health care organizations deciding to serve beneficiary of State-run health insurance programs in India. The organizations may benefit from effective segmentation strategies. For insured patients, organizations must focus on technical quality while for uninsured patients inter-personal, technical and administrative dimensions are equally important. The effective resource utilization can be achieved by focusing on technical quality and thus ensuring satisfied and loyal patient base for business expansions. By ensuring satisfied and loyal patients organizations empaneled under SHIs have a chance to increase their customer base for services not covered under these schemes.

LIMITATIONS

The study sample was small and represents only a section of population. Future work may consider replicating study with a large sample at multiple sites and study the effect of hospital type (public/private/trust) on the proposed relationships.

Ethical Approval: The study was approved by Institutional Review Board of IIM Ahmedabad. Reference Number: IIMA IRB 2020-12

Acknowledgements: We would like to thank the hospital authorities for permitting us to do this study. We also thank

all our study respondents who spent their valuable time and helped us finish this research.

References

1. Morgan R, Ensor T, Waters H. Performance of private sector health care: implications for universal health coverage. *The Lancet*. 2016.
2. Ranjan A, Dixit P, Mukhopadhyay I, Thiagarajan S. Effectiveness of government strategies for financial protection against costs of hospitalization Care in India. *BMC Public Health*. 2018.
3. Planning Commission of India. High Level Expert Group Report on Universal Health Coverage for India. 2011.
4. Boerma T, Eozenou P, Evans D, Evans T, Kieny MP, Wagstaff A. Monitoring Progress towards Universal Health Coverage at Country and Global Levels. *PLoS Medicine*. 2014.
5. Nandi S, Dasgupta R, Kanungo K, Nundy M, Murugan G. Challenges in attaining universal health coverage: empirical findings from Rashtriya Swasthya Bima Yojana in Chhattisgarh. *BMC Proc*. 2012.
6. Ghosh S, Gupta ND. Targeting and Effects of Rashtriya Swasthya Bima Yojana on Access to Care and Financial Protection. *Econ Polit Wkly*. 2017.
7. Patel V, Parikh R, Nandraj S, Balasubramaniam P, Narayan K, Paul VK, et al. Assuring health coverage for all in India. *The Lancet*. 2015.
8. Sengupta R, Rooj D. The effect of health insurance on hospitalization: Identification of adverse selection, moral hazard and the vulnerable population in the Indian healthcare market. *World Dev*. 2019.
9. Desai S, Shuka A, Nambiar D, Ved R. Patterns of hysterectomy in India: a national and state-level analysis of the Fourth National Family Health Survey (2015–2016). *BJOG An Int J Obstet Gynaecol*. 2019.
10. Hooda SK. Government Spending on Health in India: Some Hopes and Fears of Policy Changes. *J Health Manag*. 2015.
11. Rent P, Ghosh S. Understanding the "Cash-Less" Nature of Government-Sponsored Health Insurance Schemes: Evidence From Rajiv Gandhi Jeevandayee Aarogya Yojana in Mumbai. *SAGE Open*. 2015.
12. Agyapong A, Afi JD, Kwateng KO. Examining the effect of perceived service quality of health care delivery in Ghana on behavioural intentions of patients: The mediating role of customer satisfaction. *Int J Healthc Manag*. 2018.
13. Kissi J, Dai B, Dogbe CSK, Banahene J, Ernest O. Predictive factors of physicians' satisfaction with

- telemedicine services acceptance. *Health Informatics J*. 2019.
14. Mohanan M, Hay K, Mor N. Quality of health care in India: Challenges, priorities, and the road ahead. *Health Affairs*. 2016.
 15. Pramanik A. Patients' Perception of Service Quality of Health Care Services in India: A Comparative Study on Urban and Rural Hospitals. *J Health Manag*. 2016.
 16. Sharma JK, Narang R. Quality of healthcare services in rural India: The user perspective. *Vikalpa*. 2011.
 17. Ekman B. Community-based health insurance in low-income countries: A systematic review of the evidence. *Health Policy and Planning*. 2004.
 18. Spaan E, Mathijssen J, Tromp N, McBain F, ten Have A, Baltussen R. The impact of health insurance in Africa and Asia: a systematic review. *Bull World Health Organ*. 2012.
 19. Devadasan N, Criel B, Van Damme W, Lefevre P, Manoharan S, van der Stuyft P. Community health insurance schemes & patient satisfaction - Evidence from India. *Indian J Med Res*. 2011.
 20. Prinja S, Kaur M, Kumar R. Universal Health Insurance in India: Ensuring equity, efficiency, and quality. *Indian J Community Med*. 2012.
 21. Gronroos C. "Strategic Management and Marketing in The Service Sector. *Swedish Sch Econ Bus Adm*. 1982.
 22. Parasuraman a, Zeithaml V a, Berry LL. SERVQUAL: A Multiple-Item scale for Measuring Consumer Perceptions of Service Quality. *Journal of Retailing*. 1988.
 23. Buttle F. SERVQUAL: review, critique, research agenda. *Eur J Mark*. 1996.
 24. Asubonteng P, McCleary KJ, Swan JE. SERVQUAL revisited: A critical review of service quality. *Journal of Services Marketing*. 1996.
 25. Koerner MM. The conceptual domain of service quality for inpatient nursing services. *J Bus Res*. 2000.
 26. Cronin JJ, Taylor SA. Measuring Service Quality: A Reexamination and Extension. *J Mark*. 1992.
 27. Rohini R, Mahadevappa B. Service Quality in Bangalore Hospital-an Empirical Study. *J Serv Res*. 2006.
 28. Ramez WS. Patients' Perception of Health Care Quality, Satisfaction and Behavioral Intention: An Empirical Study in Bahrain. *Int J Bus Soc Sci*. 2012.
 29. Oliver RL. A conceptual model of service quality and service satisfaction: Compatible goals, different concepts. *Adv Serv Mark Manag*. 1993.
 30. Dagger TS, Sweeney JC, Johnson LW. A hierarchical model of health service quality: Scale development and investigation of an integrated model. *J Serv Res*. 2007.
 31. MM K. A reconceptualization of service quality and development of an instrument for inpatient nursing services. 1996.
 32. Oliver RL. Satisfaction: A behavioral perspective on the consumer, Second edition. 2014.
 33. Oliver RL, DeSarbo WS. Response Determinants in Satisfaction Judgments. *J Consum Res*. 1988.
 34. Sitzia J, Wood N. Patient satisfaction: A review of issues and concepts. *Soc Sci Med*. 1997.
 35. Naidu A. Factors affecting patient satisfaction and healthcare quality. *Int J Health Care Qual Assur*. 2009.
 36. Batbaatar E, Dorjdagva J, Luvsannyam A, Savino MM, Amenta P. Determinants of patient satisfaction: A systematic review. *Perspectives in Public Health*. 2017.
 37. Zeithaml VA. Consumer Perceptions of Price, Quality, and Value: A Means-End Model and Synthesis of Evidence. *J Mark*. 1988.
 38. Chou S-M, Chen T-F, Woodard B, Yen M-F. Using SERVQUAL to evaluate quality disconfirmation of nursing service in Taiwan. *J Nurs Res*. 2005;13:75-84.
 39. Alhashem AM, Alquraini H, Chowdhury RI. Factors influencing patient satisfaction in primary healthcare clinics in Kuwait. *Int J Health Care Qual Assur*. 2011;24:249-62.
 40. Schweikhart SB, Strasser S, Kennedy MR. Service recovery in health services organizations. *Hosp Health Serv Adm*. 1993;38:3-21.
 41. Gill L, White L. A critical review of patient satisfaction. *Leadership in Health Services*. 2009.
 42. Perez D, Ang A, Vega WA. Effects of health insurance on perceived quality of care among Latinos in the United States. *J Gen Intern Med*. 2009.
 43. Dalinjong PA, Laar AS. The national health insurance scheme: Perceptions and experiences of health care providers and clients in two districts of Ghana. *Health Econ Rev*. 2012.
 44. Duku SKO, Nketiah-Amponsah E, Janssens W, Pradhan M. Perceptions of healthcare quality in Ghana: Does health insurance status matter? *PLoS One*. 2018.
 45. Abuosi AA, Domfeh KA, Abor JY, Nketiah-Amponsah E. Health insurance and quality of care: Comparing perceptions of quality between insured and uninsured patients in Ghana's hospitals. *Int J Equity Health*. 2016.
 46. Caruana A, Money AH, Berthon PR. Service quality and satisfaction- the moderating role of value. *Eur J Mark*. 2000.

47. De Ruyter K, Bloemer J, Peeters P. Merging service quality and service satisfaction: An empirical test of an integrative model. *J Econ Psychol.* 1997.
48. C. Y, K. S, E. H, Y. O, E. B, V. R, et al. Relapse prevention group therapy via video-conferencing for substance use disorder: Protocol for a multicentre randomised controlled trial in Indonesia. *BMJ Open.* 2021;11:e050259. doi:<http://dx.doi.org/10.1136/bmjopen-2021-050259>
49. Lindell MK, Whitney DJ. Accounting for common method variance in cross-sectional research designs. *J Appl Psychol.* 2001.
50. Arbuckle JL. IBM SPSS Amos 21 User ' s Guide. Crawfordville, FL Amos Dev 2012.
51. Kline RB, Kenny DA. Core SEM Techniques and Software. *Princ Pract Struct Equ Model.* 2005.
52. Cheung GW, Rensvold RB. Evaluating goodness-of-fit indexes for testing measurement invariance. *Struct Equ Model.* 2002.
53. Byrne BM. *Structural Equation Modeling With AMOS.* 2016.
54. Byrne BM. *Structural Equation Modeling With AMOS.* 2013.
55. Taylor SA, Baker TL. An assessment of the relationship between service quality and customer satisfaction... *J Retail.* 1994.
56. Materla T, Cudney EA, Hopen D. Evaluating factors affecting patient satisfaction using the Kano model. *Int J Health Care Qual Assur.* 2019.
57. Kondasani RKR, Panda RK. Customer perceived service quality, satisfaction and loyalty in Indian private healthcare. *Int J Health Care Qual Assur.* 2015;28:452–67.
58. Rao AR. The quality of price as a quality cue. *Journal of Marketing Research.* 2005.