Healthcare service quality and Patients' satisfaction of Public and Private Hospitals in Haryana using PLS SEM model

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Abstract

The healthcare industry ideally should be the patient centric and professionally backed consortium profoundly responsible for the well-being and health of the society. This study was conducted to examine healthcare service quality and patient satisfaction level of public and private hospitals in Haryana. A self-structured questionnaire was developed in the study. In order to conduct the analysis, a sample size of 500 patients was used. Appropriate statistical methods including Structural Equation Modeling were applied in the present research to analyze the collected data and to examine the proposed model and hypotheses. To determine the causality between the constructs, SEM, Path analysis, Cronbach's Alpha and Factor Analysis approaches were utilized. This research found that Accessibility services, Administrative service, Infrastructure service, Physician Interpersonal services has direct impact on patient satisfaction in hospitals and medical services, nursing services and nutrition services has no impact on patient satisfaction. Similarly Patient overall satisfaction and recommendation behavior was

reported to be significantly related indicate that with the change of one variable other variable will also vary.

Introduction

The healthcare industry in India is an integral part of the Indian economy having a direct consumer front. The healthcare in India is one of the pillars whose strength will count towards the population's well-being. Multiple variables are responsible for the efficiency of healthcare and service quality in India which will enhance patient satisfaction. These factors can be different or coherently valid in different states of India. The domain of healthcare industry involves the various branches including pharmaceuticals, hospitals, dieticians, para-medical staff and other (Kaushal et.al, 2021). An effective coherence between all the spheres of healthcare will lead to a community with quality patient experience. The basis of the healthcare industry is to keep the patient in the center and initiate services providing exemplary quality and importance to patient's perspective. In the Northern region, there are multiple private and government sector hospitals which work towards the betterment of the state's population (Fatima et.al, 2018). Through this research study, the patient's perspective on the satisfaction, quality of services provided and service value would be evaluated in the demographics of Haryana (Kaushal et.al, 2021). The healthcare system and the patient satisfaction comprises of the multiple factors corresponding to the availability of doctors, nurses, the meal times, dietary services and other patient related factors. An evaluation of these factors will provide an understanding on the amount of patient centric approach which is present in the healthcare community of Haryana (Fatima et.al, 2018). The healthcare industry is a vast industry and the patient's perspective needs to be understood in response of the services received (Katyal, 2018). A directional

improvement in the planning and impact of healthcare services through evidence based research would lead to the betterment of service quality and patient's satisfaction, which is the aim of this research.

Literature Review

The understanding of the patient perspective on the service quality and the factors impacting its value is crucial to be evaluated to mince the techniques and methodologies for identifying the shortcomings if any, which further can be improved. The considerable improvement in the service quality to patients will lead in the increment of the quality of healthcare services which would uplift the whole healthcare ecosystem and the involved professionals to be more productive and efficient towards their services.

According to Kaushal et.al, 2021, the patients are at the central position in the whole healthcare consortium. In a general healthcare environment, the idea should be to keep the system patient centric, which has been proven to be not the actual case (Kaushal et.al, 2021). In reality, the patients are considered to be at the output end and the physicians, attending doctors, pharmacists, Para-medical staff and other healthcare professionals become the epicenter of the healthcare ecosystem. This can lead to an overpowering setup initiating the patient's role as the listener in the whole system (Kaushal et.al, 2021). Under such circumstances, the service quality received by the patient as a parameter to evaluate the healthcare services becomes even more crucial and productive.

In the research by Fatima et.al 2018, the decision making power in the hospitals of Haryana has been evaluated by the research done to prove the central consortium being governed by the healthcare professionals (Fatima et.al, 2018). In the research conducted on 611 patients in

Islamabad, Lahore about the patient's perspective and service quality through the methodology of common variance and correlation and regression revealed the upper hand of the private hospitals in achieving the desirable service quality and showcased a much higher satisfaction in terms of patient's perception about the quality and loyalty of the healthcare staff towards the patients, during their stay (Fatima et.al, 2018). The results of the research built and proved the basic idea of building trust and loyalty with the patients which is depicted to be lesser in extent in the government funded hospitals in Lahore.

In the study performed by Katyal, 2018, the maternal healthcare services have been analyzed in the demographics of Haryana to evaluate the utilization pattern of the healthcare services and the service quality of the maternal branch of healthcare (Katyal, 2018). The community and societal factors have a strong impact on the results of the study with a straight forward conclusion which appraises the maternal healthcare services to become more efficient for patient utilization. This has been specifically directed towards the public and government centers providing the maternal healthcare services. Through this research, the spectrum of maternal and child healthcare has also been analyzed for the quality of services and the patient's perspective for the same.

In the hospital based survey in Faridabad by Goyal et.al, 2017, the majority of the surveyed patients depicted a satisfactory response towards the service quality of the healthcare staff. Around 89% of the patients responded satisfied with a high ratio of service quality which was not discovered to be variable in different genders (Goyal et.al, 2017). Multiple factors like the availability of staff, presence of pharmacists, diet and nutrition and others were examined for the above result. The similar study pattern in the hospitals of Jordon revealed different results which were affected by the factors of empathy and reliability of the hospitals, staff and the healthcare

services (Al-Damen, 2017). The patients were observed to be moderately satisfied with a specific scope of improvement in certain directions.

In the study conducted across Rohtak, Haryana by Arora et.al, 2019 for the service quality of maternal and child healthcare, the help by the support staff and the beneficiaries emerged out to be the major impactful factor in determining the satisfactory quotient (Arora et.al, 2019).

Aims and Objectives

- To develop a model on the basis above factor for achieving patient satisfaction in hospital in Haryana.

Research Methodology

For the research study, the data has been collected from the demographics of hospitals of Haryana comprising of the regions Jind, Rohtak, Karnal, Sonipat and Gurugram. The data has been collected in the qualitative studies through the parameters of service quality and its perception by the patients. The various parameters for which the service quality has been measured include premises/employees, doctors, medical services, diagnostic services, nurses' medical services, admissions, meals, rooms and discharge. The data for the above variables has been analyzed through the vast and credible software of PLS SEM to convert the qualitative data into the quantitative figures with a confidence limit. Around 10 hospitals, including the private and the government funded ones have been evaluated on the above parameters and the patient data has been analyzed from the SEM Model. The data collection has been done through the primary and secondary means wherein the primary model has been based on the patient data and their answers to the satisfaction gap model constructed. The secondary research involved the co

llection of resources and directional theories from the secondary resources like peer-reviewed research articles, established journals and books on the same topic of expertise. The results of the SPSS software have been analyzed in the results and findings section which would reflect on the patient's perspective and satisfaction level of the service quality for the evaluated hospital and healthcare services. Thus the data were used from 500 patients and analysis of multivariate data analysis includes factor analysis and Partial Least Square PLS SEM to look at relationship between variables. In Table 1, the study variables, item numbers and sources of adapted scales are shown

Table 1

Variable		No of items	Reference
Service Quality	Accessibility	6	Mitropolos et al. (2018)
	Administrative	9	
	Infrastructure	9	
	Emergency	8	
	Nursing	7	
	Physician	6	
	Interpersonal		
	Medical	11	
	Nutritional	6	
Patient Satisfaction		5	Huyen (2016)
Recommendation Behavior		7	Oliver (1999)

Figure:1

Figure- 1 below show a model presenting the variable of the study. The model shows Healthcare Services as on Independent variable, Patient satisfaction as a independent variable and Recommendation behavior as a dependent variable.

Structural Model
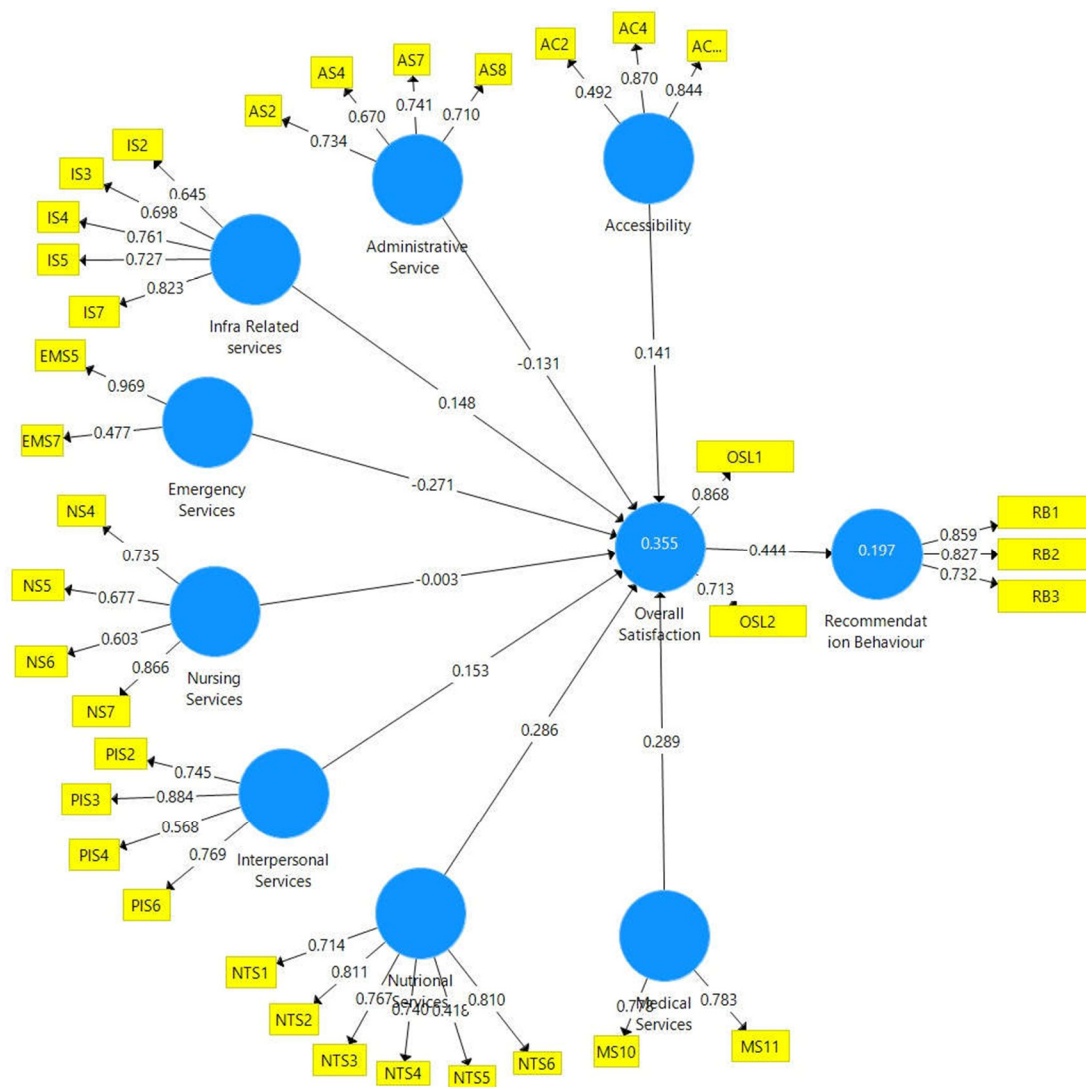
Above Figure reveals the structural associations among (different healthcare services, overall satisfaction and recommendation behaviour). Their significance for each dependent model and path coefficients is too showed through the figure. A weight (coefficient) is allocated to the performance of each healthcare service attribute on the basis of the relationship strength with latent variable.

Convergent Validity and Composite Reliability

Construct	Item	Factor Loading	Cronbach's Alpha (CA) (above 0.70)	Composite Reliability (CR) (Above 0.60)	Average Variance Extracted (AVE) (Above 0.50)	√AVE	Convergent Validity
Accessibility	AC1	0.844	0.768	0.791	0.571	.755	Yes
	AC2	0.870					
	AC4	0.492					
Administrative Service	AS2	0.734	0.796	0.806	0.510	.714	Yes
	AS4	0.670					
	AS7	0.741					
	AS8	0.710					
Infra Related Services	IS2	0.645	0.898	0.816	0.538	.733	Yes
	IS3	0.698					
	IS4	0.761					
	IS5	0.727					
	IS7	0.823					
Emergency Services	EMS 5	0.969	.845	0.804	0.583	.764	Yes
	EMS7	0.477					
Interpersonal services	PIS2	0.745	.757	.834	.563	.750	Yes
	PIS3	0.884					
	PIS4	0.568					
	PIS6	0.769					
Medical services	MS10	0.776	.858	.658	.609	.780	Yes
	MS11	0.783					
Nursing services	NS4	0.735	.718	.846	.528	.727	Yes
	NS5	0.677					
	NS6	0.603					
	NS7	0.866					
Nutritional Services	NTS1	0.714	.830	.888	.522	.723	Yes
	NTS2	0.811					
	NTS3	0.767					
	NTS4	0.740					
	NTS5	0.478					
	NTS6	0.810					
Overall Satisfaction	OSL1	0.868	.725	.756	.631	.794	Yes
	OSL2	0.713					
Recommendation Service	RB1	0.859	.733	.752	.653	.808	Yes
	RB2	0.827					
	RB3	0,732					

The above table is the analysis of the convergent validity and composite reliability used in the present research. Cronbach's alpha is a widely accepted measure to check the internal consistency of the scale. The Cronbach's alpha score for all the constructs i.e. accessibility, administrative services, infra related services, emergency services, interpersonal services, medical services, nursing services, nutritional services, overall satisfaction and recommendation serviceswas found to be higher than 0.70 suggesting high internal consistency.The inter-relationship between the items AC1, AC2, AC4 and the construct accessibility is more than 50% significant with the AVE value of 0.571 which is well beyond the prescribed limit of 0.5. Similarly, the relationship within the items of AC1, AC2 and AC4 is more than 50% significant with the CR value of 0.794 which is also beyond 0.6. The inter-relationship between the items AS2, AS4, AS7, AS8 and the construct administrative servicesis 0.510 which is beyond the 0.5. Moreover, the relationship within the items is again higher than the prescribed limit with CR 0.806. For the construct infra related services the interrelationship with the items IS2, IS3, IS4, IS5, IS7 is representing AVE 0.538 and the relationship within the items is also 0.816 which is well above the acceptable limit. For the construct emergency services the inter-relationship between the items EMS5, EMS7 and the construct is 0.583 which is beyond the 0.5. Moreover, the relationship within the items is again higher than the prescribed limit with CR 0.804. Similarly for the construct interpersonal services, AVE is .563 representing acceptable level of interrelationship between items PIS2, PIS3, PIS4, PIS6 and the construct. The relationship within the items is 0.834 which is well beyond the acceptable criteria.For the construct medical services the inter-relationship between the items MS10, MS11 and the construct is 0.609 which is beyond the 0.5. Moreover, the relationship within the items is again higher than the prescribed limit with CR 0.658.For the construct nursing services the interrelationship with the items NS4, NS5, NS6, NS7 is representing AVE 0.528 and the relationship within the items is also 0.846 which is well above the acceptable limit. Likewise for the construct nutritional services, AVE is .522 representing acceptable level of interrelationship between items NTS1, NTS2, NTS3, NTS4,NTS5, NTS6 and the construct. The relationship within the items is 0.888 which is well beyond the acceptable criteria.

Moreover for the overall satisfaction and recommendation services the value of AVE is .653 and .631 respectively which represents the acceptable level of interrelationship between the constructs and the items. Regarding the interrelationship within the items the value of CR is .756 and .752 which is again beyond the predicted limit.

Discriminant Validity

Discriminant analysis is established to check the dissimilarity between the different constructs. Fornell and Larcker(1981) suggested that if the inter - construct correlations are less than the square root of AVE, then discriminant validity is achieved.

Table: Square root of Average variance Extracted (AVE) and Correlation between Constructs

	Accessibility	Administrat...	Emergency ...	Infra Relate...	Interperson...	Medical Ser...	Nursing Ser...	Nutrional S...	Overall Sati...	Recommen...
Accessibility	0.755									
Administrati...	0.170	0.714								
Emergency ...	0.307	0.320	0.764							
Infra Relate...	0.525	0.301	0.421	0.733						
Interperson...	0.353	0.164	0.373	0.481	0.750					
Medical Ser...	0.043	0.050	0.165	0.165	0.176	0.780				
Nursing Ser...	0.400	0.389	0.368	0.628	0.517	0.239	0.727			
Nutrional S...	0.145	-0.120	-0.083	0.093	-0.041	0.148	0.057	0.723		
Overall Sati...	0.220	-0.145	-0.127	0.215	0.189	0.337	0.160	0.395	0.794	
Recommen...	0.425	0.112	0.154	0.416	0.245	0.319	0.489	0.307	0.444	0.808

In the above table the square root of the AVE is shown in the diagonals, while the correlations between the constructs is shown in the off diagonals. From the above table it is evident that all the square roots of AVE are higher than the construct correlations. Hence, the model represents sufficient amount of inter discriminant validity

Path Analysis Results:

Construct	Path Coefficients	t-statisics	P value	Significant/Non-significant
Accessibility -> Overall Satisfaction	0.141	1.399	0.003	**Significant**
Administrative Service -> Overall Satisfaction	0.131	1.127	0.004	**Significant**
Infrastructure Service -> Overall	0.271	1.717	0.000	**Significant**

Satisfaction				
Emergency Services -> Overall Satisfaction	0.148	1.120	0.025	**Significant**
Interpersonal service-> Overall Satisfaction	0.153	1.150	0.000	**Significant**
Medical services-> Overall Satisfaction	0.289	3.598	0.982	**Non-significant**
Nursing services-> Overall Satisfaction	.003	0,022	0.071	**Non-Significant**
Nutritional Services -> Overall Satisfaction	.286	3.464	0.082	**Non-Significant**
Overall Satisfaction ->Recommendation Behaviour	.444	5.911	0.001	**Significant**

The results of path analysis reveals that the relationship between the accessibility and overall satisfaction has been supported (β: 0.141, t: 1.399, $p<0.05$). The result stated that there is a strong impact of accessibility on overall satisfaction. Thus, H_1 was supported. Further, the relationship between administrative service and overall satisfaction (H_2) was assessed with the value of β: 0.131, and at t-value of 1.127, $p<0.05$. The output indicates that the administrative services have significant association with overall satisfaction of patients. Thus, H_2 was also supported. The third hypothesis H_3 focuses on the relationship between infrastructure related services and overall satisfaction. The association between these two variables was also found to be significant with β: 0.271, t: 1.717, $p<0.05$. Likewise, for association between emergency services and overall satisfaction the association was found to be significant with β: 0.148, t: 1.120, $p<0.05$. Hence both the hypotheses H_3 and H_4 were supported. For hypothesis H_5 stating the relationship between interpersonal service and overall satisfaction, β: 0.153, t: 1.150 and $p > 0.05$. Hence the linkages between these two variables received a strong support for the significant association. For the relationship between medical services and overall satisfaction, β: 0.289, t: 3.598, $p>0.05$ which stated that no significant association was reported between these two variables and hence H_6 was not supported. Moreover for hypothesis H_7, related to nursing services and overall satisfaction β: 0.003, t: 0.022 and $p>0.05$ and for hypothesis H_8, regarding association between nutritional services and overall satisfaction, β: 0.286, t: 3.464 and $p > 0.05$. Hence from these values it can be stated that both H7 and H8 are again not supported and indicates no association among the variables. Similarly, for the association between overall

satisfaction and recommendation services it was reported thatβ: 0.444, t: 5.911 and p < 0.05. Hence the linkages between these two variables received a strong support indicating that with the changing satisfaction level of patients their recommendation behaviour will also change.

Conclusion:

On the basis of Structural Equation Modelling it has been found that accessibility services, administrative services, infrastructure services, physician interpersonal services have significance level less than 0.05 and hence all have a significant association with the overall satisfaction of patients. With the change in these services, overall satisfaction of patients will also vary. While, a insignificant association was reported between medical services, nursing services, and nutritional services with overall satisfaction of patients which indicates that these variables does not contribute toward the satisfaction of patients. Similarly overall satisfaction and recommendation behaviour was reported to be significantly related indicating that with the change of one variable other variable will also vary.

References

Kaushal, N., Ghalawat, S., Malik, J. S., & Goyal, M. (2021). A Study on Evidence-based

Decision Making in Hospitals of Haryana. *Indian Journal of Extension Education,* 57(1), 99-104.

Fatima, T., Malik, S. A., & Shabbir, A. (2018). Hospital healthcare service quality, patient

satisfaction and loyalty: An investigation in context of private healthcare systems. *International*

Journal of Quality & Reliability Management.

Katyal, S. (2018). Patterns of utilisation of material healthcare services in Haryana, India. *Asia*

Pacific Journal of Health Management, 13(1), 17-31.

Goyal, P., Singh, N., & Lukhmana, S. (2017). Patient perception and satisfaction are prudent for assessment and improvement of hospital services: a cross sectional study among OPD patients at ESIC Medical College and Hospital, Faridabad, Haryana. *Int J Community Med Public Health*, *4*(11), 4165-4168.

Al-Damen, R. (2017). Health care service quality and its impact on patient satisfaction "case of Al-Bashir Hospital".

Arora, V., Kharb, M., Sinha, L. N., & Verma, R. K. (2019). Service quality dimensions regarding maternal and child health-care provided to the beneficiaries attending a Nagrik Hospital Rohtak Haryana. *International Journal of Medical Science and Public Health*, *8*(12), 1039-1045.

Aladwan, M. A., Salleh, H. S., Anuar, M. M., ALhwadi, H., & Almomani, I. (2021). The relationship among service quality, patient satisfaction and patient loyalty: case study in Jordan Mafraq hospital. *Linguistics and Culture Review*, 5(S3), 27-40

Zeithamal,V.A.,Berry,L.L.,&Parasuraman,A.,(1996).The behavioural consequence of service quality. *Journal of Marketing*,60(2),31-46

M-Daoar,R.M.A.,Munusamy,S.,(2019). Effect of Personnel Care Quality of Private Healthcare Providers on Arab Patients'Satisfaction and Word-of Mouth Communication: An Empirical Research in India.*International journal of Engineering and Advanced Technology*,9(1),5374-5383

Afridi,S.A.,Haider,M.,&Alam,W.,(2019).Impact of Service Quality om Word of mouth communication:mediating role of customer satisfaction. *Journal of management science*,12(1),1-10

Parasuraman,A.,&Berry,L.L.,(1985). A conceptual Model of service quality and its implication for future research. *Journal of Marketing*,49(4),41-50

Djaja,D.,jasfar,P.&Mady,H.,(2018).The effect of Healthcare Service Quality, Hospital image and experience Economic on worth through BPJS patient perception type B Hospital in west java,4(1),1-19

Huyen,T.T.H.,(2016). Service Quality and Patient satisfaction &Loyalty in Public Hospitals in HO Chin minh City

Oliver,R.L.,(1999). Whece consumer loyalty ?. *Journal of Marketing*,63 (4),33-44

Parasuraman, A.,Zeithaml,V.A.,&Berry,L.,(1988). SERVQUAL:A multiple –item Scale for measuring consumer perception of service quality, *Journal of Retailing*,64 (1),12-40

Kamra,V.,Singh,H.,&Kumar De,K.,(2019). Factor affecting patient satisfaction :An exploratory study for quality management in healthcare sector. *Total quality management & Business Excellence,* 27(9),1013-1027

Hair,Jr,J.F.,Sarstedt,M.,Mathews,C.M.,&Ringle,C.M.(2016).Identifying and treating unobserved heterogeneity with FIMIS-PLS:Part 1-method,*European Business Review*

Hair Jr,J.F.,Sarstedt,M.,Ringle,C.M.,Gudergan, S.P.(2017). Advanced issue in Partial least squares structural equation modeling. SAGE Publication

Murti.Arjun ., Desh Pande.A.,Srivastava.N.,(2013).Service Quality,Coutomer satisfaction and Behavioural intention Health Care Service Exploring the Indian perspective. *Journal of healthcare management* ,15(1),29-44

Anabila, P., Kumi, D.K.& Anome, J. (2019). Patients' perceptions of healthcare quality in Ghana: A review of public and private hospitals, *International Journal of Health Care Quality Assurance* ,volume1, pp. 176-190

Shafiq,M.,Naeem,M,A.,Munawar,z.,and Fatima,I.,(2017).Service Quality Assessment of hospitals in Asian Context:An Emipical Evidence from Pakistan,*INQUIRY:The Journal of Healthcare Organization, Provision and Financing*,54(1),1-12

Cronin JJ,Taylor SA.,(1992).Measuring Service Quality:A reexamination and extension, *Journal of Marketing*,56(3),55-68