SERVICE QUALITY MEASUREMENT IN MULTISPECIALTY HOSPITALS IN INDIA: A DYADIC APPROACH

A thesis submitted to the
University of Petroleum and Energy Studies

For the Award of

Doctor in Philosophy
in
Management

BY

Raghav Upadhyai

August 2021

SUPERVISORS
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DECLARATION

I declare that the thesis entitled Service Quality Measurement in Multispecialty Hospitals in India: A Dyadic Approach has been prepared by me under the guidance of Dr. Arvind Kumar Jain, Sr. Associate Professor, SoB, UPES, Dr. Hiranmoy Roy, SoB, UPES and Dr. Vimal Pant, Associate Professor, NIFTEM. No part of this thesis has formed the basis for the award of any degree or fellowship previously.

Raghav Upadhyai

DATE : 20.8.21

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Certificate

I certify that Raghav Upadhyai has prepared his thesis entitled **"Service Quality Measurement in Multispecialty Hospitals in India: A Dyadic Approach",** for the award of PhD degree of the University of Petroleum & Energy Studies, under my guidance. He has carried out the work at School of Business, University of Petroleum & Energy Studies.

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Date: 22nd March, 2021

ABSTRACT

Service is a value creation process. The service logic postulates that the service provider facilitates resources like knowledge and skills and makes them available to the user. The service seeker integrates them with other environmental resources and use these resources as services. Value is generated in the process of service-in-use. The perceived value generated and cocreated in the direct and indirect interactions between service provider and service seeker may not be the same for all users. Hence, a metric of measurement is needed for assessment of value of service. Of late, customer centric metric of quality is being used for such assessments, which is the gap between service user expectations and their perception of the experiences (service gap).

Each customer has expectations based upon previous experiences, word of mouth or based upon their personal needs. With these expectations, a health care seeker passes through a journey of wellness and interacts directly or indirectly with the tangible and intangible resources including service providers. During the customer journey, each touchpoint generates some experiences. The summation of these experiences leads to formation of the customer's perception of quality. However, customer's perception of quality is (i) idiosyncratic, (ii) experiential, (iii) meaning laden. The heterogeneity of customer perceived quality calls for collective understanding and agreement on the service quality evaluation metric. Recently, several customer centric quality measurement instruments have been used, adapted and created for assessment of hospital service quality. However, such quality measurement metrics do not pay much heed to the role of the service providers as resource facilitator.

Power dominance of service provider is highly exemplified in professional service like health care. The prime resource i.e. application of knowledge and skills that the provider possess influences the resources available to the service seekers in their wellness journey. Unlike many other services, health care has high degree of

information asymmetry where the service provider has the essential technical know-how, which the service seeker lacks significantly. Service seekers are passive recipients of service as they are considered to be layman and it is believed that they are unable to evaluate technical aspects of care. Service quality evaluation in the provider dominant health care service thus calls for different approach.

In early times, this power dominance led to provider-centric quality assessment in health care. Review of the processes of care and the patient record audits were being done essentially by the peers for regulatory and compliance purpose. Involvement of patients in such an assessment was considered to be professional infringement by the health care providers. As targeted community health care improvement programs were being launched by the governments and public funded institutions, the outcome of such programs was also included in health care quality assessments. Thus, consumerism led to inclusion of health care service users in health care quality evaluations.

Health care providers have their own expectations of value that is identified and created by them. These may or may not match with the value expected from the service by the seekers of care (knowledge gap). Similarly, the perception of value delivered by the service providers may or may not match with the perception of service seekers' experiences (perception gap). It is important to assess health care service quality not only by looking at service gap, but also identifying knowledge and perception gaps. Therefore, inclusion of both the parties in the health care service quality assessment becomes essential.

This mixed method research attempts to measure service quality in the multispecialty hospitals in India and addresses how to identify these gaps for managerial decision making. In the initial phase, this study attempts to identify the dimensions of service quality from the health care seekers and providers perspective. Rounds of interviews were being conducted with both the stakeholders which resulted in development of item pool indicating health care service quality dimensions. The identified statements which emerged from interview rounds were

subjected to collective judgement of the panelist using Delphi method to gain insight into the appropriateness of the statements in measuring hospital service quality.

The validity and reliability of the statements were being checked on the factor structure based upon Pivotal-Core-Peripheral Model of Service Quality. The identified hospital service quality dimensions and their statements were presented in form a questionnaire to the health care service providers and customers in a chain of multispecialty hospital. Towards the end the data collected from the instrument was analyzed using a novel dyadic approach for measurement of service quality. This approach helped in identifying service gap from the providers and seekers perspective. Further, knowledge gap and perception gap has also been identified which gives new managerial insights for improving hospital service quality.

Dedicated to

my parents

and

my wife

ACKNOWLEDGEMENT

I would like to thank my guides and mentor Dr A.K. Jain and Dr. Hiranmoy Roy, whose constant nurturing, support, and guidance through thick and thin in this academic pursuit steered this work. I would not have sailed this far in this journey without them. My sincere gratitude to my external supervisor Dr. Vimal Pant who always encouraged me to stay focused. I can foresee that the bonds we share now will fortify in the times to come.

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Thank you all for a new beginning!

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1 CHAPTER 1: INTRODUCTION

1.1 HEALTHCARE SECTOR IN INDIA

Indian health care sector is composed of hospitals and clinics (71 percent), followed by pharmaceuticals (13 percent), medical equipment (9 percent), medical insurance (4 percent) and diagnostics (3 percent) (PwC, 2015). Health care sector is fourth largest employer with a work force of over 3 lac personnel. This sector is expected to witness 22% CAGR between the period of 2016-22. Health care industry is one of the fastest growing industry in India. With growing demand of health care services, rising medical tourism, and 100% FDI, health care sector contributes significantly to the economic upliftment of economy and society as well.

Rising income, availability of high-quality healthcare facilities, societal awareness towards preventive medicine and growing disease burden, demand for public and private hospitals has significantly increased. Own Account Entrepreneurs (OAE) and even private entrepreneurs in medical profession are being challenged by state-of-the-art medical facilities provided by select government hospitals and medical colleges.

1.2 HEALTHCARE TRENDS

According to census 2011 India's estimated population was 1.21 billion, where approx. 31% of the population is living in urban areas. As per industry reports a major part of the population is living in rural areas wherein only 33 % of the doctors are operating. This major divide is creating pressure on the health care providers in the urban areas, while medical needs of rural population getting unattended. Public health care facilities account for only less than a fourth of the number of patients treated. Against WHO standards of 1 doctor, 2.5 nurses, 3.5 hospitals per 1000 population, India is having 0.65 doctors, 1.3 nurses and 1.3 beds. This drastic shortfall is leading to many challenges. Non-uniform spread of health care facilities

is leading to accessibility challenge. In certain parts of country people have no other option but to travel a long distance to reach the nearest health care facility. According to Industry reports (PwC India, 2018) out-of-pocket expenditure on health care in India is extremely large, which is to a tune of 70% of the total medical expenditure. Ironically, around 60% of this goes in buying medicines alone. In India, an exorbitant 70% of the health care expenditure is on private health care. The situation becomes alarming when more than 85% of this expenditure is out-of-pocket. Loans to a tune of 47% and 31% of the health expenditure respectively in rural and urban area causes significant financial burden to patients and their caretakers. With 21% global disease burden out of which 63% being non-communicable disease, India's health care trends are in disturbing state.

1.3 GOVERNMENT OUTLOOK

With roughly 1.6% of GDP as the budgetary allocation in the recent 2020, India falls short of its targeted number of 2.5%. With lack of health awareness, accessibility, availability, affordability, and accountability, health care sector in India needs drastic change. Government of India has envisioned to provide universal access to quality care without financial hardship in National Health Policy 2017. The patient-centric approach to health care may lead to upliftment of health for all. WHO defines Patient centeredness as "a dimension of performance wherein a hospital places patient at the center of care and service delivery by paying particular attention to patients' and their families' needs, expectations, autonomy, access to hospital support networks, communication, confidentiality, dignity, choice of provider, and desire for prompt, timely care."

In 1990 hospital sector was awarded industry status. This helped hospitals in getting investments from banks and other financial institutions (Ramesh & Nishant, 2006). Emergence of private health care sector in India was led by various Own Account Entrepreneur (OAE), private for-profit institutions, charitable trusts, and missions

etc. Inorganic growth of private clinics to polyclinics, dispensaries and single bed nursing homes to large corporate owned hospital, teaching hospitals in form of private medical colleges, physiotherapy and diagnostic centers, and blood banks catered to growing demand of health care seekers which was not fulfilled by public healthcare facilities. According to industry estimates private hospitals cater to more than 70% of the health care needs in India. Demand for OAEs is gradually declining, which accounted for approximately 72% of the demand for the private health care needs. This could be attributed to rise of private multispecialty hospitals which can serve wide-ranging needs of health care seekers.

1.4 GROWING DEMAND AND EMPLOYMENT OPPORTUNITIES

Health care sector employs nearly 5 million people and was estimated to grow beyond 7.5 million post 2020. Additional job opportunities will be created in the health care sector with growing number of physicians as it is estimated that a physician requires support of 5.6 full-time health care professionals is delivering services. Growing demand for health care services can be fulfilled by employing 1.54 million additional doctors and 2.4 million nurses. Additional manpower will reduce the capacity constraints, resulting into productivity gains. Improved productivity will not only ease out pressure on the overburdened system but also reduce helping improving the quality of care.

According to IBEF (2020), nearly half of the demand for hospital beds can be attributed to lifestyle related diseases such as stress, obesity, poor diet and alcohol consumption, hypertension, and cholesterol. Running cost of the facilities and cutthroat competition thwarts private hospitals to reduce the cost of care. Health care seekers have started looking for preventive care rather than curative one to avoid financial hardships due to unforeseen health conditions. Private health care players are extending their footprints by collaborating with public health care facilities to expand their reach at the cost of affordable care (e.g., Apollo hospitals,

Fortis). Other health care providers are expanding their reach by adoption of technology enabled services reaching out to tier 2 and 3 cities (e.g., Aravind Eye Care, Narayan Hrudalaya).

Availability of affordable care is still a distant dream in India. Rising elderly population, varying disease patterns, growth in medical tourism, improved awareness, growing income, and need for preventive care and diagnostic facilities are constantly swelling up the demand. Consumer expectations from hospitals are changing from mere point of delivery of care to one stop solution for all their health care needs. Besides care patients and their attendants are now looking for pharmacy, diagnostics, and investigation under one roof. Further, their comfort and other physical tangible assets apart for deliverables of health care are also becoming part of their expectations. Consumer willingness to even pay premium for such a differentiation can be seen as progression towards non-economic value of service pricing strategy being adopted by hospitals (Gilmore, 2013). The pricing accounts for the memorable experiences staged by providers ranging from the process of care and stay to addressing individual need of all their patients and attendants. Having quality and patient safety at heart of many hospitals, several European and US based hospitals have developed patient centric service quality evaluation programs. Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) and Picker Patient Survey are popular service quality measurement tools used in US and UK. This has led to growing demand for service quality managers not only internationally but also in India, who coordinate with various functions in the hospitals in implementing end to end quality.

1.5 SATISFACTION WITH SERVICE QUALITY AND BEHAVIORAL INTENTION

Consumer centric measures of service quality in terms of feedback related to patient experiences is considered and significant source for quality improvement (Raleigh et al., 2015). Many countries including USA, UK, Switzerland, Denmark, and Australia have already well placed in terms of quality in health care delivery

through such programs. Patient satisfaction on several indicators such as outcome of care, empathy and support given by health care providers, and sharing of medical information are key ingredients of quality improvement programs in these countries (Cordina, Kumar, & Moss, 2015).

1.6 BEHAVIOURAL AND FINANCIAL CONSEQUENCES OF SERVICE QUALITY

Zeithaml (2000) proposed a model of behavioural and financial consequences of service quality (see Figure 1:1 below). The behavioural outcome of service quality coupled with behavioural intention leads customer to stay loyal impacting revenue, increased spending by consumers, charging price premiums by service providers and increased referrals. On the contrary unfavorable behavioural intentions can defect the customer leading to decreased spending by customer, lost customers and higher costs borne by service provider to attract a new one.

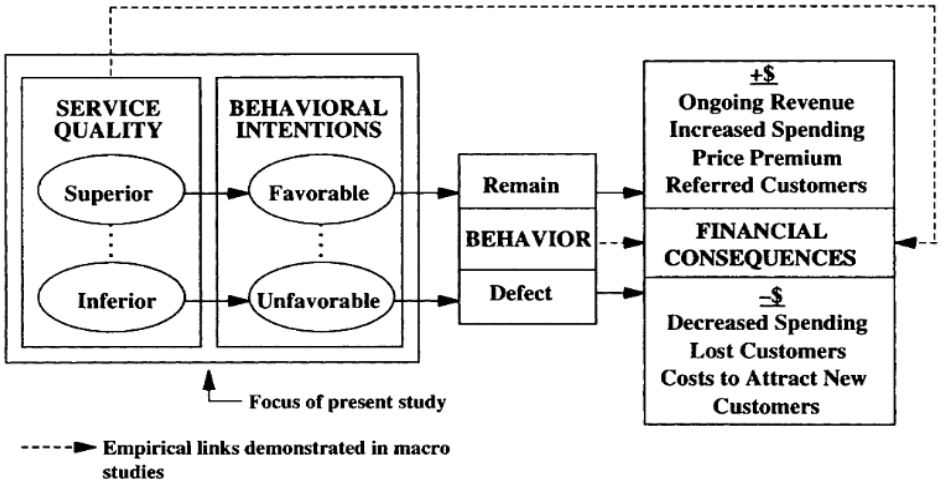


Figure 1:1 Service Quality, Behavioural Intentions and Financial Consequer Adapted from: Zeithaml, V. A. (2000). Service quality, profitability, and the econo worth of customers: what we know and what we need to learn. Journal of the acad of marketing science, 28(1), 67-85

Service quality can be used as an offensive strategy. Improved service quality leads to business performance via market share (Phillips, Chang, & Buzzell, 1983), higher than normal market share (Kordupleski, Rust, & Zahorik, 1993) and charging approx. 8% higher price than competition (Gale, 1992). Some firms use service quality as defensive strategy as it costs approximately 20% less to serve existing customer than a new customer (Peters, 1988). Customer retention can lead to increase in profits from 25-85% (Rechinhheld & Sasser, 1990). Service quality even increases customer loyalty, reduces price elasticity and lower cost to serve customers (Fornell, 1992; Hallowell, 1996).

1.7 SERVICE QUALITY AND PROFITABILITY

In USA hospital payments are linked to the satisfaction ratings by the patients. Customer satisfaction ratings are linked to the payments in Medicare scheme. HCAHPS is a widely popular customer centric measure of customer satisfaction ratings in USA used for making such payments. According to industry reports (API Healthcare, 2015) poor satisfaction ratings can lead a hospital to lose or gain up to 1.5% of their payments under Medicare scheme. Hospitals having better customer ratings have higher mean margins compared to the ones with poorer customer rating in HCAHPS score, indicating linkages of patient satisfaction scores with revenue and profitability (see **Figure 1**:2 below).

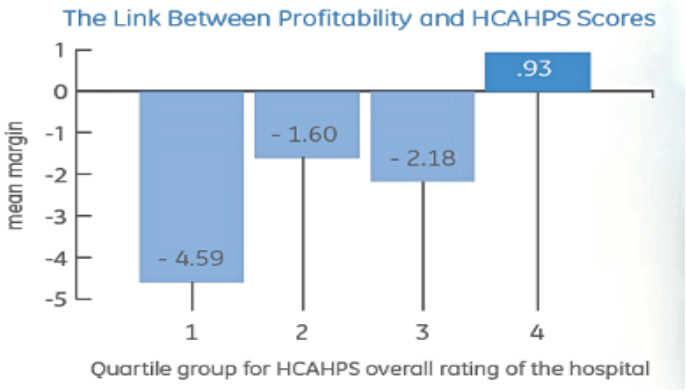


Figure 1:2: Hospital Rating and Profitability

Similar industry reports (Delloite, 2016) suggest that over a six-year period, starting 2008, hospitals having excellent ratings had an average net margin percentage of 4.7 as compared 1.8 percent for those having low ratings on HACHPS score in USA. A 10%-point increase in hospital ratings can make it reach a score of 9 or 10 (out of 10-point scale) which in turn brings about 1.4% and 1.3 % increase in net margin and returns on assets over the hospitals with a rating between 0 to 6. Whilst it is also well established that hospitals having strong financial performance have shown improved scores on patient-reported experiences of care (Akinleye, McNutt, Lazariu, & McLaughlin, 2019).

1.8 Patient Experiences as measure of Satisfaction and Quality in healthcare:

According to industry reports (Delloite, 2016) hospital performance correlates with patient experiences. Patient satisfaction accounts for 61% of net margin difference and 58% return on assets difference between excellent and moderately rated hospitals on HCAHPS in USA Improving patient experiences thorough patient satisfaction, patient safety and clinical outcomes are three priority areas where patient-focused organisations seek to improve upon (Bees, 2016).

Irrespective of hospital type, excellent rated hospitals have higher profitability and as compared to moderate and low levels of patient ratings (see Figure 1:3 above).

Figure 1:3: Patient Experience Rating and Hospital Profitability
Source: (Betts, Balan-Cohen, Shukla, & Kumar, 2016), "The value of patient experience"

Hospitals offering superior patient experience have 50 percent higher margins vis- a-vis their peers (Devarakonda, 2015) (see Figure 1:4 below).

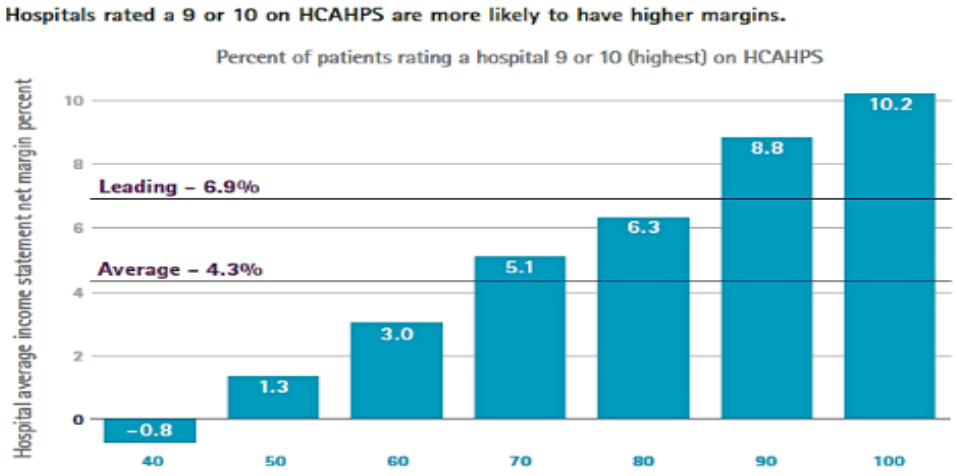


Figure 1:4: Patient Experience Ratings and Hospital Mar
Source: Accenture (2015), "Happy Patients, Healthy Margins"

1.9 STATE OF SERVICE QUALITY AND SATISFACTION IN HEALTHCARE:

Many hospitals of London Trust received poor ratings in the patient surveys which was attributed to poor quality of care leading them to rework on quality improvement programs (Picker, 2015). It is well established that patient satisfaction as an indicator of quality, leads to profits, and organisations worldwide are understanding this strategic shift (Eliades, Retterath, Hueltenschmidt, & Singh, 2012). Patient centric measures, such as improvement of quality, rather than cost cutting is the strategy available to hospitals to move further for profitable operations (Devarakonda, 2015).

Indian diaspora is no different from the international markets. Industry experts believe that India is attracting significant number of patients from abroad with emergence of topnotch hospitals equipped with advanced world-class technologies and highly competent and qualified health care professionals. On the other hand, affordability, accessibility and inconsistent quality of care are pertinent challenges for the masses which need to be addressed (Betts et al., 2016). A recent report by *The Lancet* estimates that lack of access to or poor quality of health care leads to death of around 2.4 million Indians each year. National Health Policy draft released in 2015 highlighted that health care service quality is in a state of serious concern in India compromising the effectiveness of care. A report "Health Systems for New India: Building Blocks" (NITIAayog, 2019) recommend to gear up health system to provide access along with quality of health care, which are areas of grave concern in India.

A report "Reengineering Indian healthcare 2.0" (FICCI, 2019) brought to light the state of poor health care quality in hospitals across India. According to it the top reasons contributing to patient dissatisfaction includes patients' unhappiness towards (i) reasonableness and correctness of pricing (63%) (ii) service responsiveness and waiting times (63%) (iii) belief that hospitals are not concerned

about their feedback (59%) (iv) frequency and mode of communication on patient progress (50%) (v) and hospital cleanliness (49%). On the other hand, private hospitals inspite of being considered as preferred service provider over government hospitals are facing concerns related to profitability and ROCE (see **Figure 1**:5 below).

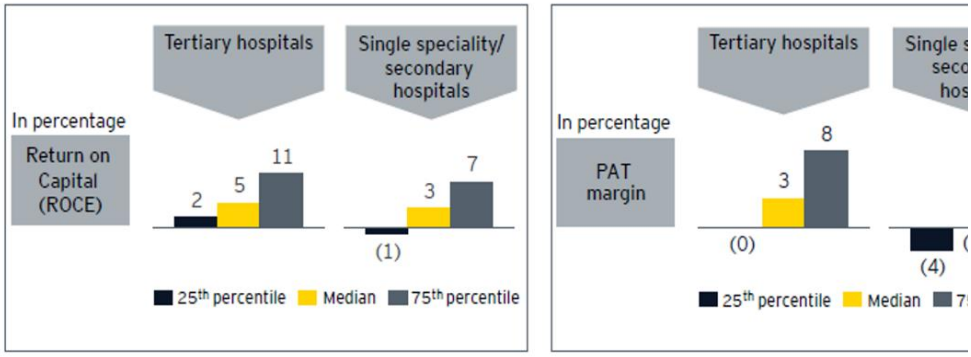


Figure 1:5: ROCE and PAT of Multispecialty Hospitals in India
Source: VCCEdge. EY Analysis in FICCI (2019), "Re-Engineering Indian Healthcare 2.0"

The condition of patient satisfaction in multispecialty hospitals is quite dismal where 61% of the respondents opined that hospitals didn't act in their best interest and 42% believed that doctors didn't had patients' best interest at heart (see **Figure 1**:6 below). Patients have shown significant concerns related to cost of care and the billing related issues as well in this survey (see **Figure 1**:7**, Figure 1**:8**, Figure 1**:9**, Figure 1**:10**).**

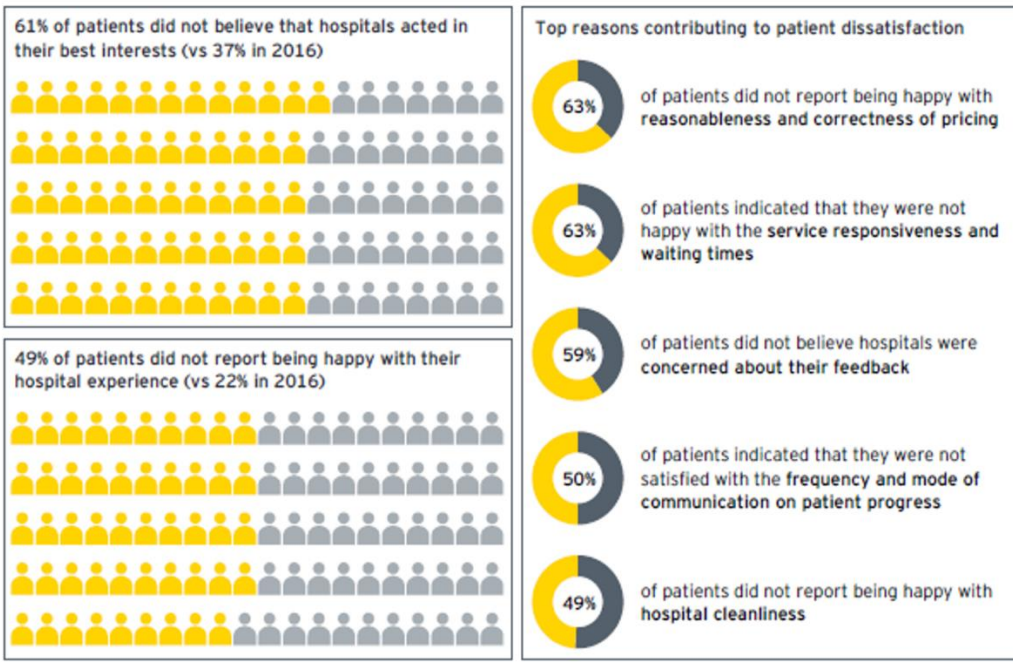


Figure 1:6 Declining Trust and Belief in Multispecialty Hospitals in India
Source: FICCI (2019), "Re-Engineering Indian Healthcare 2.0"

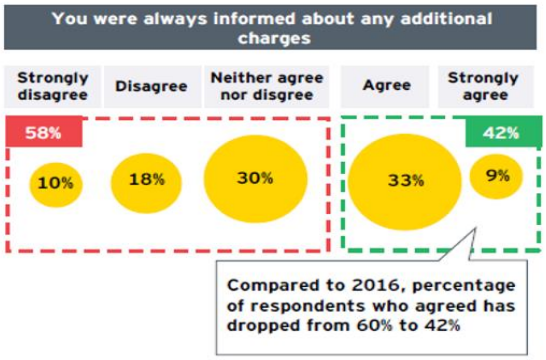


Figure 1:7:Patient distrust related to additional charges in Multispecialty Hospit
Source: FICCI (2019), "Re-Engineering Indian Healthcare 2.0"

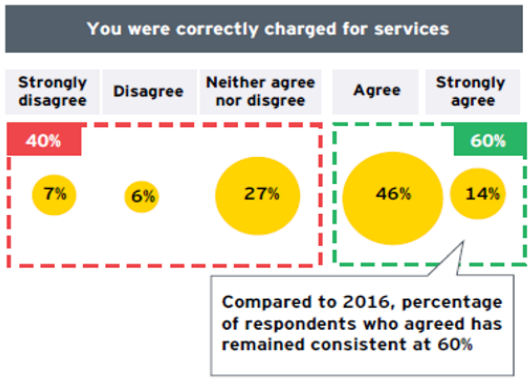


Figure 1:8: Patient distrust related to service charges in Multispecialty Hospitals
Source: FICCI (2019), "Re-Engineering Indian Healthcare 2.0"

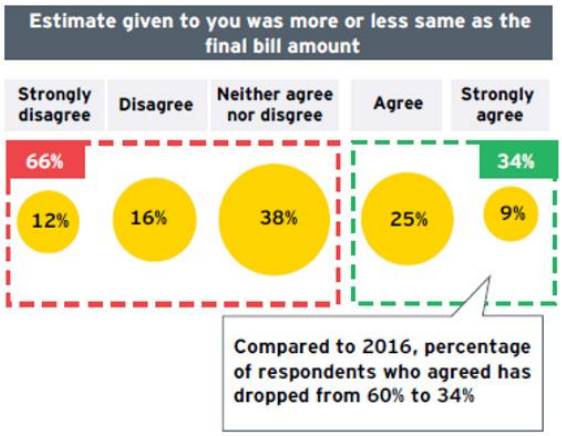


Figure 1:9: Patient distrust related to bill amount in Multispecialty Hospitals
Source: FICCI (2019), "Re-Engineering Indian Healthcare 2.0"

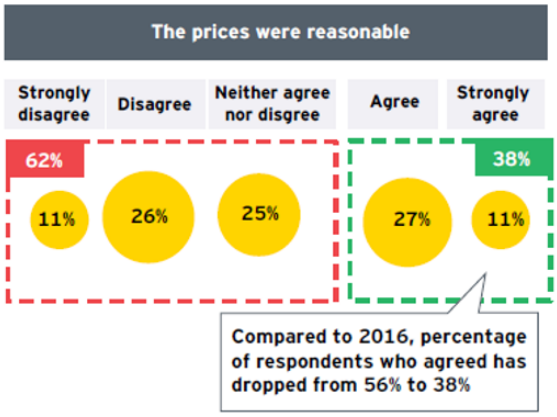


Figure 1:10: Patient distrust related to reasonable prices in Multispecialty Hospitals
Source: FICCI (2019), "Re-Engineering Indian Healthcare 2.0"

1.10 BUSINESS PROBLEM

Against this backdrop, the business problem can be summarized as:

"Poor quality of health care services is leading to poor financial performance of multispecialty hospitals in India".

2 CHAPTER 2: LITERATURE REVIEW

2.1 INTRODUCTION

High degree of intangibility poses a major challenge for the service provider to communicate quality to the service seekers. Furthermore, it is difficult for the healthcare providers to show the service in advance. The challenge of non-searchability of service makes the consumer decision complex in the pre-purchase phase of service selection. Incorporeal experience of service can only be understood when the service seekers pass through various touchpoints in their wellness journey. Healthcare services are marked with high degree of information asymmetry. This leads to mental impalpability in service seekers in the evaluating complex, processes and/or deliverables including multi-dimensional goals of healthcare service. Differing expectations from service and perception of experiences of hospital service seekers and providers is another challenge which has been addressed in the chapter

Further, this chapter sheds light on seemingly complex nature of healthcare services. The abstract idea of healthcare service quality has been decoded by combing the existing literature on themes related to service quality, its dimensions, measurement and models available in published work over the period of time. The subsequent sections of this chapter explore the dimensionality of hospital service quality and its salient work in terms of its measurement. A novel dyadic approach in measuring hospital service quality has been proposed towards the end of this chapter which tries to assess to service quality evaluation perspectives from both the service seekers and providers side.

2.2 CONCEPT OF SERVICE QUALITY

Services have been defined differently by many others. From simplistic definitions "Services are deeds, processes, and performances." (V. A. Zeithaml, Bitner, & Gremier, 2017) to "An act or performance that creates benefits for customers by

bringing about a desired change in-or on behalf of the recipient." (Wirtz & Lovelock, 2011), it seems quite evident that underlying essence is the human effort. Services have also been defined based on their typical characteristics "An activity, benefit, or satisfaction offered for sale that is essentially intangible and does not result in the ownership of anything." (Kotler & Armstrong, 2018).

The conventional Four P's i.e., product, price, place, and promotion given by McCarthy in 1960 have been extended by Booms and Bitner in 1981 by encompassing people, process and physical evidence. The pervasive nature of service is our daily life can be witnessed from the publicly supplied utilities like electricity to water, banking to education, transportation to hotels and many more. Several privately owned services span across the world which impact our personal and professional life.

Hospital services have been seen differently from other services due to its atypical nature (Berry & Bendapudi, 2007). Health care service seekers usually go through a state of anxiety, pain, and fear of outcome which is not case in other services. They feel perceived lack of control over their current physical state and are at high risk of being harmed by the service providers themselves. Even service providers operate under physical and emotional challenges.

Quality has several meanings associated with it when seen from service provider and service seekers perspectives. Product specific approach to service quality defines it to be "conformance to requirements" (Philip Crosby) and "fitness for purpose" (Juran). Market based view of quality defines it to be "predictable degree of uniformity and dependability, at low cost and suited to the market" (Edward Fleming). Japanese management thinker Ishikawa Karou extended the definition by stating that "Quality does not mean the quality of product, but also of after sales service, quality of management, the company itself and the human life."

A thematic literature review was conducted to identify relevant literature on the themes of Hospital Service Quality (HSQ), its dimensions, and measurement. To the best of researcher's ability and available published literature EBSCO and

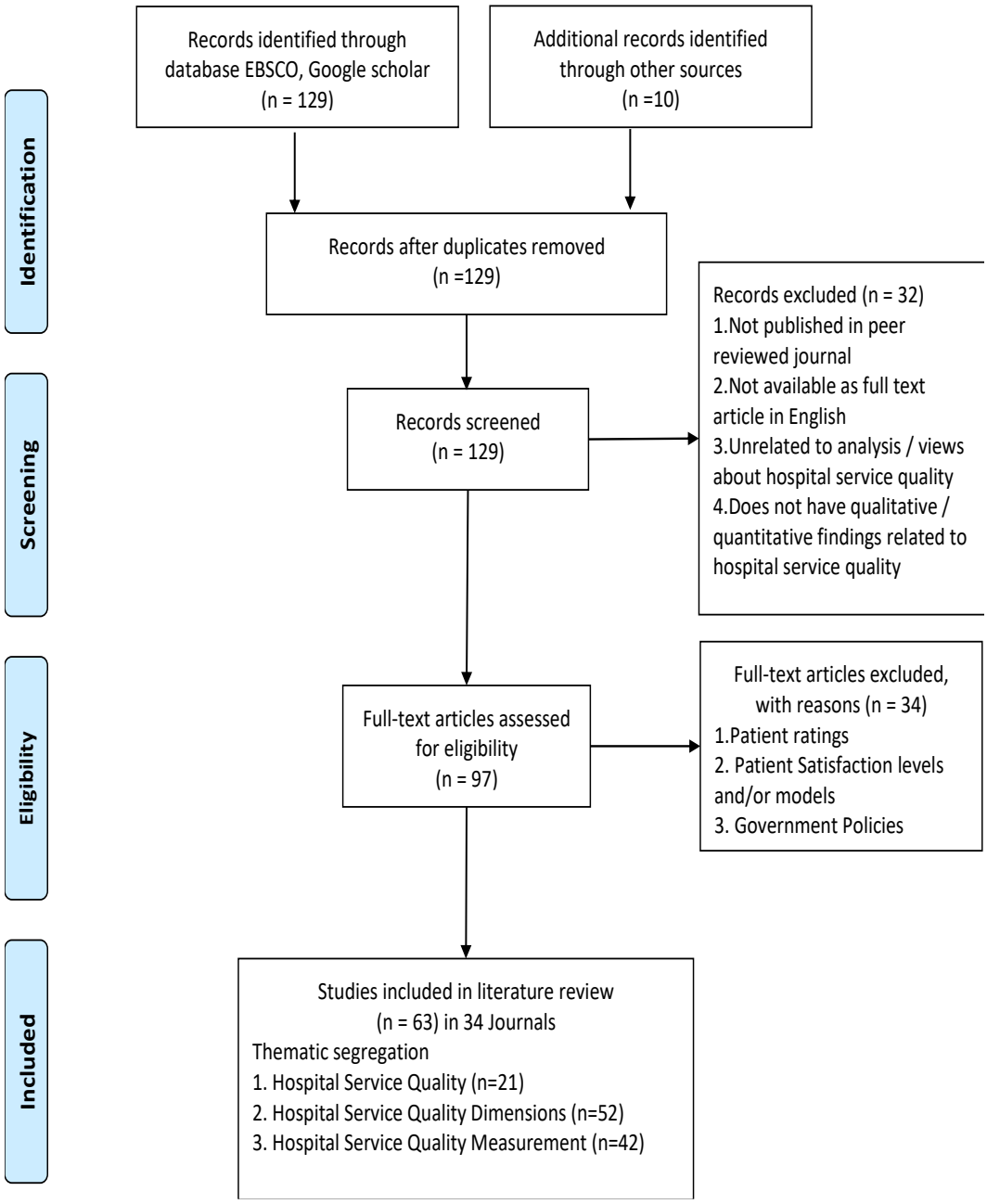
google scholar database was combed to identify the full text articles in English language. This resulted in identification of sixty-three articles in thirty-four academic journals which were used to build understanding about the identified themes (see Table 2-1 below).

It is believed that quality can not only be measured against certain standards or benchmark but also against the customer expectations and their experiences of service (Brown & Swartz, 1989). Certain services like health care are need based and require high degree of customization, therefore assessment of service quality on objective measures may thus be flawed. Differing wants and needs of patients, subjective assessment of quality and growing consumerism in the hospital services led to shift in measurement of service quality from audits of patient records, adherence to protocols and outcome of care as measure of quality (Aday & Andersen, 1974; Kelman, 1976; Sheps, 1955).

Quality was classified as technical and functional (Gronroos, 1984) and called for inclusion not only health care customers but providers as well for its evaluation (Brown & Swartz, 1989). The use of disconfirmation paradigm based service quality evaluations become prominent, where performance of service was matched with the expectations (V. A. Zeithaml, Berry, & Parasuraman, 1993). Accumulated experiences of customers in their service journey through various touchpoints leads to formation of perceived service quality (Gilmore, 2013; Gronroos, 1984). The gap arising as difference between consumer perception and their expectations of service leads to evaluation of service quality (V. Zeithaml & Berry, 1994). However, this view was challenged upon by many (Taylor & Cronin, 1994; Teas, 1993).

Table 2-1: List of Journals

S No.	Journal Name	Number of Selected Articles
1	Benchmarking: An International Journal	1
2	BMC Health Services Research	3
3	Clinical Governance An International Journal	1
4	Engineering Economics	1
5	Health Policy and Planning	1
6	Health Service Research	1
7	International Research Journal of Business and Management	1
8	International Journal for Quality in Health Care	4
9	International Journal of Business and Social Science	2
10	International Journal of Consumer Studies	2
11	International Journal of Health Care Quality Assurance	14
12	International Journal of Pharmaceuticals and Healthcare Management	1
13	Journal of Business Research	1
14	Journal of Formosan Medical Association	1
15	Journal of Health Care Quality Assurance	1
16	Journal of Health Management	1
17	Journal of Healthcare Management	1
18	Journal of Indian Business Research	1
19	Journal of Management in Medicine	1
20	Journal of Marketing	1
21	Journal of Service Research	2
22	Journal of Services Marketing	2
23	Journal of Services Research	2
24	Managing Service Quality: An International Journal	2
25	Marketing Health Services	1
26	Middle East Journal of Scientific Research	1
27	Procedia Economics and Finance	1
28	Research Journal of Business Management	1
29	Research Journal of Commerce & Behavioural Science	2
30	Social Science & Medicine	1
31	The IUP Journal of Marketing Management	1
32	Total Quality Management	1
33	Total Quality Management & Business Excellence	3
34	Vilakshan	3
	Grand Total	63


Identification
Screening
Eligibility
Included
Records identified through database EBSCO, Google scholar (n = 129)
Additional records identified through other sources (n =10)
Records after duplicates removed (n =129)
Records screened (n = 129)
Records excluded (n = 32)
1.Not published in peer reviewed journal
2.Not available as full text article in English
3.Unrelated to analysis / views about hospital service quality
4.Does not have qualitative / quantitative findings related to hospital service quality
Full-text articles assessed for eligibility (n = 97)
Full-text articles excluded, with reasons (n = 34)
1.Patient ratings
2. Patient Satisfaction levels and/or models
3. Government Policies
Studies included in literature review (n = 63) in 34 Journals
Thematic segregation
1. Hospital Service Quality (n=21)
2. Hospital Service Quality Dimensions (n=52)
3. Hospital Service Quality Measurement (n=42)

2.3 HOSPITAL SERVICE QUALITY (HSQ)

The operational definition of service quality for the purpose of this study is based on the disconfirmation paradigm and is based on the gap arising out of service seekers' expectations and their perception of the service performance. We included patients' attendants as service seekers as they also experience service in the Indian scenario along with the patients. Based on this premise we adopted the definition of hospital service quality given by Aagja & Garg (2010) which states that "*Hospital service quality is the discrepancy between patient's or patient's attendants' perceptions of services offered by a particular hospital and their expectations about hospitals offering such services*."

Hospital service quality typically reported on structural aspects of care, process and outcomes (Donabedian, 1988). Gronroos (1984) however believed that hospital service quality has associated technical and functional dimensions. He believed that it is not easy for a health care seeker to evaluate technical quality. Further, outcome of care might take a long time show its effect and hence could not be evaluated immediately (Berry & Bendapudi, 2007). At times, patients are unable to properly evaluate the outcome of care. Besides this, functional quality is common in marketplace and health care seeker can easily evaluate it. Later interpersonal dimension was also included in the hospital service quality evaluations (Baltussen, 2002). This dimension includes the behavioural aspects of service provider which brings humanness to the care (see Figure 2:1 below). Domains of patient safety, clinical effectiveness, and patient experiences (including compassion, dignity and respect) constitutes service quality (Black et al., 2014). Evaluating health care seekers' perception of service becomes important in hospital settings as they effect both design and delivery of service (Brown & Swartz, 1989).

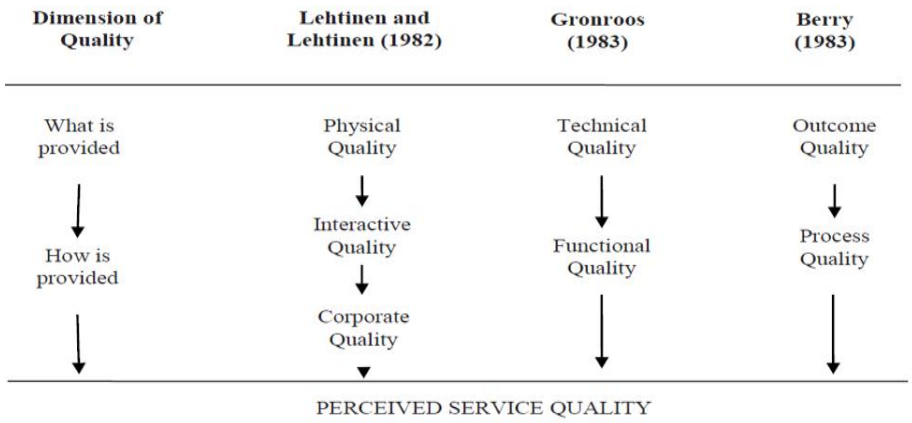


Figure 2:1: Perceived Service Quality Dimensions
Adapted from: Purcărea, V. L., Gheorghe, I. R., & Petrescu, C. M. (2013).The Assessment of Perceived Service Quality of Public Health Care Services in Roman Using the SERVQUAL Scale. Procedia Economics and Finance, 6(13), 573–585.

The Institute of Medicine (IOM) definition of quality of care however include 'outcome' and stresses on the 'technical aspects' of care "*the degree to which health services for the individuals and populations increase the likelihood of desired health outcomes and are consistent with the current professional knowledge*." WHO recommends quality health care services to be safe (avoiding injuries to people for whom the care is intended, effective (providing evidence-based health care services to those who need them), people-centered (providing care that responds to individual preferences, need and values), and timely (reducing waiting times and sometimes harmful delays). Many authors equate health care service quality to 'satisfaction' of patients and their attendant (Jandavnath & Byram, 2016; Kondasani & Panda, 2016; Mostafa, 2005; Pakdil & Harwood, 2005; Ramsaran-Fowdar, 2008). However, it is reasoned that inspite of satisfaction with the 'outcome of care' a health care seeker might not have witnessed satisfactory level of service delivery during the 'process of care' (Ransom et al. (2005, p 6).

2.3.1 Determinants and Dimensions of Hospital Service Quality

Significant work of Parasuraman et.al (1982) advocated tangibility, reliability, responsiveness, empathy, and assurance as five dimensions of service quality. This led to adoption of these dimensions in the health care services as well (Altuntas, Dereli, & Yilmaz, 2012; Bahadori, Raadabadi, Ravangard, & Baldacchino, 2015; Dheepa, 2015; Ramez, 2012; Sadiq Sohail, 2003; Zarei, Arab, Froushani, Rashidian, & Tabatabaei, 2012). Validity and reliability of these dimensions in several research settings led to establishment of these dimensions as generalizable and linked to patient satisfaction (Andaleeb, 2001; Jandavath & Byram, 2016; Mohamed & Azizan, 2015; Ramez, 2012) and loyalty (Amin & Nasharuddin, 2013; Kheng, Mahamad, Ramayah, & Mosahab, 2010; Mosahab, Mahamad, & Ramayah, 2010). However, it is also proposed that these dimensions are context specific (Ladhari, 2008) and seekers of care may allocate different relative importance to these dimensions (Cronin & Taylor, 1992; Otani, Waterman, Faulkner, Boslaugh, & Dunagan, 2010; Singh & Prasher, 2019).

The relative standing of each dimension has been given due weightage in Pivotal-Core-Peripheral (PCP) model of service quality, which proposes three hierarchical levels of service attributes (Philip & Hazlett, 1997). The model classifies the service quality dimensions based on their relative importance as: Pivotal (end product or outcome), Core (people, process and organizational structure), and Peripheral (incidental extras or frills around service encounters) (see **Figure 2**:2 below). The model proposes that pivotal attributes are more important for satisfaction as compared to other ones. Furthermore, as the customer stays longer or frequently exposed to service the other two attributes also starts gaining importance. This brings us to more realistic and credible view of hospital service quality wherein health care seekers' initial evaluation of quality is based upon pivotal attributes i.e., curative part of care. Once patients are exposed to other dimensions of hospital

services during their repeat visit of stay, their evaluation also encompasses core and peripheral attributes of services which are indicative of functional aspects of care.

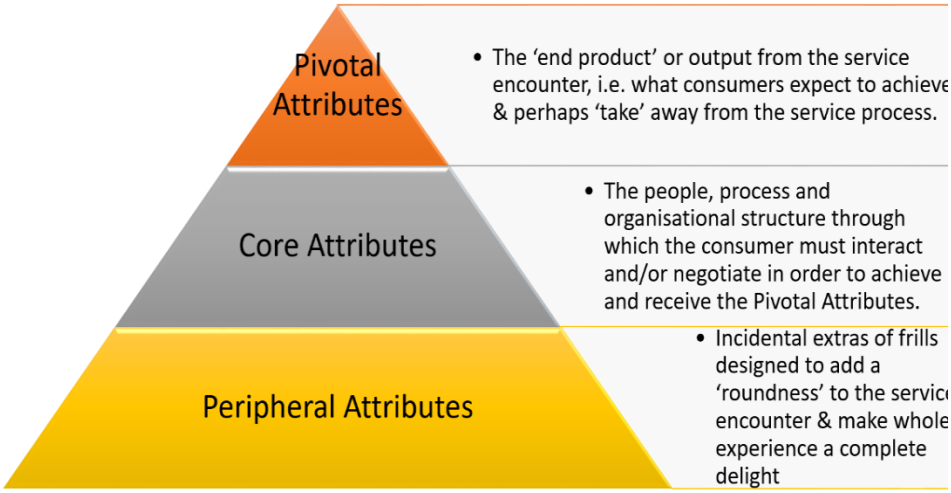


Figure 2:2: Skeletal framework to aid measurement of service quality
Adapted from: George Philip Shirley-Ann Hazlett, (1997),"The measurement of service quality: a new P-C-P attributes model", International Journal of Quality & Reliability Management, Vol. 14 Iss 3 pp. 260 - 286

2.4 PIVOTAL ATTRIBUTES

It is quite evident that knowledge, skills, and competence of the health care provider affects the outcome of care. Patients give high importance to professionalism, skills and competence of care givers in service quality evaluations (Ramsaran-Fowdar, 2008). Consequently, this will lead to good diagnosis and identification of causes of illness, which is an important indicator of health care quality (Haddad, Fournier, & Potvin, 1998; Sharma & Narang, 2011). The treatment protocol selected i.e. attempted remediation post diagnosis and the research on innovative care and new methods of medical services are indicators of technical service quality (Prakash & Mohanty, 2012). Availability of medicine (Hansen et al., 2008; Rao, Peters, & Bandeen-Roche, 2006) along with equipment and instruments (Baltussen, 2002;

Van Duong, Binns, Lee, & Hipgrave, 2004) assist providers of care in delivering services.

Health care seekers look for Medical care (Amin & Nasharuddin, 2013) which should be preventive and safe (Duggirala, Rajendran, & Anantharaman, 2008; Mostafa, 2005; Prakash & Mohanty, 2012). Health care service delivery should be safe which minimizes the chances of infection, injury and harmful side effects (Mostafa, 2005; Piligriemiene & Buciuniene, 2008). Patient safety will not only lead to wellness but also improved patient satisfaction (Duggirala et al., 2008; Kondasani & Panda, 2016). Patient well-being is the prime motive of provider of care. These attributes act as 'must-have' minimum tolerable expectations that not only health care seekers but also providers have it in their mind.

2.5 CORE ATTRIBUTES

Core attributes of health care are delivered to health care seeker through their interactions and negotiations with the people, process and organisational structure (Philip & Hazlett, 1997). During the patient journey in a hospital, they meet medical and administrative staff. The various touchpoints include the admission, pharmacy, diagnostics, billing etc. (Otani et al., 2010; Van Duong et al., 2004). The medical communication emanating out of these interactions, especially related to condition of patients, treatment protocols and procedures and diagnostic & investigation, commonly termed as patient-doctor communication, have strong bearing on the service quality evaluations (Andaleeb, 2001; Hansen et al., 2008; Makarem & Al-Amin, 2014; Mohamed & Azizan, 2015).

Communication from the side of physician has a strong effect on the perceived service quality (Ramsaran-Fowdar, 2008). The disposition and behaviour of the provider towards the patient builds trust in the patient (Piligriemiene & Buciuniene, 2008). This trust is built by how care givers listen to their patients (Hasin,

Seeluangsawat, & Shareef, 2001), friendliness in their behaviour (Choi, Cho, Lee, Lee, & Kim, 2004), respect shown to the patient (Baltussen, 2002) and keeping confidentiality and privacy of patients' illness (Donabedian, 1983). Further, as a human being patients expect compassion, empathy, courtesy, dignity, responsiveness from the care giver which are similar to the dimensions proposed by Parasuraman et al., 1993 (Philip & Hazlett, 1997).

2.6 PERIPHERAL ATTRIBUTES

The frills associated with the service which provide roundness of the service and are usually tangible in nature include Peripheral attributes (Philip & Hazlett, 1997). The quality of rooms and their charges (Makarem & Al-Amin, 2014), the food served and its price (Otani et al., 2010) and payment arrangement as well as credit facility (Van Duong et al., 2004) are associated attributes that constitute peripheral attributes. 'Collectivism' in the culture helps in coping up with the stress in the patients, which in turn effect the service quality evaluations (Rose, Uli, Abdul, & Ng, 2004). Concept of social responsibility has been introduced in the health care service quality evaluation programs which include informed decision making by patients, financial assistance in treatment, distributing health services to remote areas and conducting disease awareness programs (Duggirala et al., 2008). Cost consideration in care in form of equity and responsibility towards society have been considered as attributes of social responsibility (Aagja & Garg, 2010; Chahal & Kumari, 2010).

The image and the reputation of the hospital adds up to corporate quality (Ramsaran-Fowdar, 2008). It is also debated that corporate quality is a consequence of excellent service rather than an antecedent (Chahal & Kumari, 2010). It is evident that the reputation of a hospital is built on the basis of good doctors and their honesty and ethics towards their profession, which in turn effect the service quality through hospital's reputation (Pai & Chary, 2016). Healthscapes (Pai &

Chary, 2016) i.e. the physical settings wherein the health care services are delivered impacts health care service quality evaluation. This includes accommodation, appearance of building, landscaping, staff member's uniform, signage, cleanliness, location of the facility, time taken to reach it etc.

The pivotal, core and peripheral attributes have unequal weightages in evaluation by health care providers and seekers. Providers on one side may consider technical aspects of care, while seekers might consider functional aspects for service quality evaluations. Consequently, providers are more inclined towards pivotal and core attributes while service seekers are more inclined towards functional aspects of care in doing service quality evaluation. Classification of determinants of health care service quality dimensions has been classified under PCP model attributes as shown in Table 2-2 below.

Table 2-2: Salient work on identifying Health Care Service Quality Dimensions

Dimensions	Determinants of Dimension	Authors/Year
Pivotal Dimensions: End Product or Output	Clinical Care	Duggirala et.al. (2008), Otani et.al. (2010), (Amin & Nasharuddin (2013), Krishnamoorthy & Srinivasan (2014), Mohamed & Azizan (2015)
	Professional Knowledge, Skills, Competence	Gabbot & Hogg (1994), Butler et.al. (1996), Olorunniwo et.al. (2006), Piligrimiene & Buciuniene (2008), Fowdar (2008) , Hansen et.al. (2008), Chahal & Kumari (2012), Janbnoun & Chaker (2013), Chang et.al. (2013), Satsanguan et.al. (2015).
	Diagnosis, Treatment, Research	Haddad et.al. (1998), Narang (2010), Prakash & Mohanty (2012)
	Availability of Medicine	Baltussen et.al. (2002), Duong et.al. (2004), Rao et.al. (2006), Hansen et.al. (2008), Narang (2010), Krishnamoorthy & Srinivasan (2014)
	Availability of Equipment and Instruments	Baltussen et.al. (2002), Duong et.al. (2004), Fowdar (2008)
	Need management	Rao et.al. (2006), Teng et.al. (2007), Arasli et.al. (2008)
	Fair & Equitable	Fowdar (2008), Krishnamoorthy & Srinivasan (2014)
	Prevention	Aagja & Garg (2010), Prakash & Mohanty (2012)
	Promptness	Hasin et.al. (2001), Choi et.al. (2004), Senic & Marinkovic (2012), Chang et.al. (2013)
	Safety	Mostafa (2006), Piligrimiene & Buciuniene (2008), Duggirala et.al. (2008), Kondasani & Panda (2015)
Core Dimensions: People, Process, Organizational Structure	Admission, Stay and Discharge Process	Duong et.al. (2004), Mostafa (2006), Aagja & garg (2010), Otani (2010), Amin & Nashruddin (2013), Krishnamoorthy & Srinivasan (2014), Makarem & Amin (2014)
	Medical Communication	Andaleeb (1998), Mostafa (2006), Fowdar (2008), Duggirala et.al. (2008), Hansen et.al. (2008), Makarem & Amin (2014), Mohamed & Azizan (2015)
	Personnel Behaviour	Donabedian (1988), Hasin et.al. (2001), Baltussen et.al. (2002), Choi et.al. (2004), Rao et.al. (2006), Piligrimiene & Buciuniene (2008), Narang (2010), Prakash & Mohanty (2012), Chahal & Kumar (2012),
Peripheral Dimensions: Incidental Extras or frills around service networks	Charges and quality of room & food Payment arrangement	Hasin et.al. (2001), Baltussen (2002), Rose et.al. (2004), Arasli et.al. (2008), Hansen et.al. (2008), Otani (2010), Narang (2010), Makaren & Amin (2014), Kondasani & Panda (2015)
	Image	Fowdar (2008), Otani (2010), Chahal & Kumari, (2012),Senic & Marinkovic (2012), Pai & Chary (2013)
	Social Responsibility	Rose et.al. (2004), Duggirala et.al. (2008), Aagja & Garg (2010), Chahal & Kumari (2012), Amin & Nashruddin (2013)
	Amenities and Physical Infrastructure	Hasin et.al. (2001), Duong et.al. (2004), Choi et.al. (2004), Rose et.al. (2004), Roa et.al. (2006),Mostafa (2006), Teng et.al. (2007); Fowdar (2008), Otani (2010), Chahal & Kumari (2012), Amin & Nashruddin (2013), Krishnamoorthy & Srinivasan (2014), Makarem & Amin (2014), Mohammed & Azizan (2015)

Note: These dimensions are apart from tangibility, reliability, responsiveness, empathy and assurance

As far as dimensionality of the health care service quality is concerned it is assumed to be unidimensional by some (Hansen et al., 2008; Wongrukmit & Thawesaengskulthai, 2014) and up to having as many as ten dimensions (Krishnamoorthy, 2014; Pakdil & Harwood, 2005). Many authors relied upon the conventional five-dimensional construct (see Table 2-3 below).

Table 2-3: Dimensionality of Hospital Service Quality

No. of Dimensions	No. of Studies	Authors/Year
1	2	Hansen et.al. 2008; Wongrukmit & Thawesaengkulthai, 2014
2	1	Butler et.al. 1996
3	3	Choi et.al., 2004; Pai & Chary, 2015; Senic & Marinkovic ,2012
4	7	Baltussen et.al., 2002; Chahal & Kumari, 2010, Dagger et.al., 2007; Duong et.al., 2004, Mostafa, 2006; Narang, 2010, Satsanguan, 2015
5	25	Arasli et.al., 2008; Bakar, 2008;, Hasin et.al., 2001; Irfan et.al., 2001; Otani, 2010; Purcarea et.al., 2013; Rao et.al., 2006; Sohail, 2003; Thawesaengkulthai et.al., 2015: *Babakus & Mangold ,1992; Taylor & Cronin,1994; Sohail,2003; Kilbourne et.al.,2004; Rohini & Mahadevappa,2006; Chowdhury,2008; Sivakumar & Srinivasan,2010; Altuntas et.al.,2012; Zarei et.al.,2012; Ramez,2012; Irfan et.al.,2012; Dheepa et.al.,2015; Venkateshwarlu et.al.,2015; Bahadori et.al.,2015; Jandavnath & Byram,2016; Pramanik,2016*
6	4	Gabbott & Hogg, 1994; Jabnoun & Chaker, 2003; Mohamed & Azizan, 2015; Teng et.al., 2007
7	4	Chang et.al., 2013; Duggirala et.al., 2008; Fowdar, 2008; Lim & Tang, 2000
8	3	Kondasani et.al., 2015; Prakash & Mohanty, 2012; Rose et.al. 2004
10	2	Krishnamoorthy & Srinivasan, 2014; Pakdil & Harwood, 2005

Note: italicized authors used five dimensional construct proposed in SERVQUAL

2.7 MEASUREMENT OF HOSPITAL SERVICE QUALITY

Hospital service quality was initially measured using medical audits of case records (Sheps, 1955). Peers used to conduct audits of health care providers and involvement of health care seekers was considered to be professional infringement (Kelman, 1976). The purpose of such audits was primarily meant for accreditation, certification and licenses. As government funding increased in the development of community through health care programs the need for involvement of the consumers was felt (Aday & Andersen, 1974). It was also realized that these audits are provider centric measures and need for inclusion of informed public was felt (Donabedian, 1983). Over the period of time many studies across continents have been conducted for measuring health care service quality in several ways (see Table 2-4)

Table 2-4: Selected Studies in Health Care Service Quality

Authors/ (Year)	Country	HC Setting / Types of Respondents	Sampling tech / Sample Size	Method of data Collection	No. of Items / Scale	Score	Analytical Technique	Reliability /Validity	No. of Dimensions / Dimensions
Aagja & Garg, (2010)	India	Public Hospitals / Qualitative Study: 7 experts and 3 academicians (for Delphi), views of 10 nurses and 10 patients was also taken Patients and attendants undergoing treatment in Government hospital	Convenience / 200	Self Administered Questionnaire	24 items / 7 point Likert scale (1 strongly disagree, 7 strongly agree)	Perception - Expectation Score	CFA	0.58 <α <0.89	5 dimensions / Development of PubHosQual scale on five dimensions of HSQ: admission, medical quality, overall quality, discharge process and social responsibility
Altuntas et.al., (2012)	Turkey	4 Hospitals / Discharged (IPD)	*** / 281	Self Administered Questionnaire	22 items / 5 point Likert scale (1 strongly disagree, 5 strongly agree)	Perception Score	AHP and ANP	α=0.90	5 dimensions / Tangibility, Reliability, Responsiveness, Assurance, Empathy
Amin & Nasharuddin, (2013)	Malaysia	Public and Private hospitals / Admitted Patients for more than 1 day	Convenience / 216	Self Administered Questionnaire	22 (19 for Survive Quality) items / 7 point Likert scale (1 strongly disagree, 7 strongly	Perception Score	CFA, SEM	0.88 <α <0.96	5 dimensions / Admission, Medical Service, Overall Service, Discharge, Social Responsibility
Andaleeb, (2001)	Banglade sh	57 hospitals and clinics / patient who utilized health services in 12 months	Stage wise Area and Systematic Sampling / 207	Qualitative Interviews Questionnaire	25 items / 7 point Likert scale (1 strongly disagree, 7 strongly agree)	Perception Score	Factor Analysis and Regression	α>0.7	5 dimensions / Responsiveness, assurance, communication, discipline and baksheesh
Arasli et.al., (2008)	Cyprus	Hospital / IPD	Judgmental / 454	Self Administered Questionnaire	48 items / 7 point Likert scale (1 strongly disagree, 7 strongly agree)	GAP Score	Gap Score	α = 0.914	5 dimensions / Empathy, giving priority to inpatients needs, relationships between staff and patients, professionalism of staff, food and physical environment
Babakus & Mangold, (1992)	USA	Mid Sized Hospital / discharged in 13 months	*** / 443	Mail based questionnaire	15 items / 5 point Likert scale (5 strongly agree and 1 strongly disagree)	Perception - Expectation	EFA and CFA	0.495 <α <0.801	5 dimensions / Tangibility, Reliability, Responsiveness, Assurance, Empathy

Authors/ (Year)	Country	HC Setting / Types of Respondents	Sampling tech / Sample Size	Method of data Collection	No. of Items / Scale	Score	Analytical Technique	Reliability /Validity	No. of Dimensions / Dimensions
Cheng & Tang, (2000)	Singapore	4 General Practitioner Clinics, 2 Specialists Clinics / Patients (last 12 months)	Convenience / 252	GP Distributed Questionnaire	25 items / 5 point Likert scale (1 least important, 5 most important)	GAP Score	Gap Score	0.71 <α <0.81	7 dimensions / Tangibility, Responsiveness, Empathy, Reliability , Assurance, Accessibility & Affordability
Choi et.al., (2004)	South Korea	General Hospital / Out patients	Intercept / 537	Self Administered Questionnaire	19 items / 7 point Likert scale (1 strongly disagree, 7 strongly agree)	Perception Score	CFA	0.80 <α <0.94	3 dimensions / Convenience of care process HealthCare provider's concern (other than physicians) Physician's concern Tangibles
Chowdhury, (2008)	Banglade sh	15 Govt. and 20 Private hospitals (including clinics) / Patients and their guardians. Management personnel	*** / 1100 patients. 800 management personnel	Self Administered Questionnaire	21 items / 7 point Likert scale (1 strongly disagree, 7 strongly agree)	Perception - Expectation Score	GAP score	***	5 dimensions / Tangibility, Reliability, Responsiveness, Assurance, Empathy
Dagger et.al., (2007)	Australia	5 clinics of Metropolitan Private Hospital / Oncology Patients (last visit not greater than 12 months) General of family practice	Purposive for FGD / 28 for focus group 778 for EFA and 340 for CFA 215 GP respondents	4 Focus Groups Mail based questionnaire	50 items / 7 point Likert scale (1 strongly disagree, 7 strongly agree)	Perception Score	EFA, CFA	0.92 <α <0.95	4 dimensions / Interactional Quality, Technical Quality, Environment Quality, Administrative Quality
Dheepa et.al., (2015)	India	Government Hospitals / Discharged	Convenience / 286	Interview Schedule	23 items	Perception Score	Factor Analysis and Multiple Regression	***	5 dimensions / Tangibility, Reliability, Responsiveness, Assurance, Empathy
Duggirala et.al., (2008)	India	Hospitals / Patients undergone medical treatment and hospital stay in the recent past	*** / 100	Mail based questionnaire	86 items / 7 point Likert scale (1 strongly disagree, 7 strongly agree)	Perception Score	Confirmator y Factor Analysis. Bivariate Correlations. Multiple Regression Analysis	0.775 <α <0.906	7 dimensions / Infrastructure, Personal Quality, Process of Clinical Care Administrative Procedures Safety Indicators, Overall experience of medical care received, Social Responsibility

Selected Studies in Health Care Service Quality

Authors/ (Year)	Country	HC Setting / Types of Respondents	Sampling tech / Sample Size	Method of data Collection	No. of Items / Scale	Score	Analytical Technique	Reliability /Validity	No. of Dimensions / Dimensions
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Amin & Nasharuddin, (2013)	Malaysia	Public and Private hospitals / Admitted Patients for more than 1 day	Convenience / 216	Self Administered Questionnaire	22 (19 for Survive Quality) items / 7 point Likert scale (1 strongly disagree, 7 strongly	Perception Score	CFA, SEM	0.88 <α <0.96	5 dimensions / Admission, Medical Service, Overall Service, Discharge, Social Responsibility
Andaleeb, (2001)	Banglade sh	57 hospitals and clinics / patient who utilized health services in 12 months	Stage wise Area and Systematic Sampling / 207	Qualitative Interviews Questionnaire	25 items / 7 point Likert scale (1 strongly disagree, 7 strongly agree)	Perception Score	Factor Analysis and Regression	α>0.7	5 dimensions / Responsiveness, assurance, communication, discipline and baksheesh
Arasli et.al., (2008)	Cyprus	Hospital / IPD	Judgmental / 454	Self Administered Questionnaire	48 items / 7 point Likert scale (1 strongly disagree, 7 strongly agree)	GAP Score	Gap Score	α = 0.914	5 dimensions / Empathy, giving priority to inpatients needs, relationships between staff and patients, professionalism of staff, food and physical environment
Babakus & Mangold, (1992)	USA	Mid Sized Hospital / discharged in 13 months	*** / 443	Mail based questionnaire	15 items / 5 point Likert scale (5 strongly agree and 1 strongly disagree)	Perception - Expectation	EFA and CFA	0.495 <α <0.801	5 dimensions / Tangibility, Reliability, Responsiveness, Assurance, Empathy

Authors/ (Year)	Country	HC Setting / Types of Respondents	Sampling tech / Sample Size	Method of data Collection	No. of Items / Scale	Score	Analytical Technique	Reliability /Validity	No. of Dimensions / Dimensions
Duong et.al., (2004)	Vietnam	*** / Prenatal and postpartum women (3 months)	Stratified Area Sampling / 396	12 interviews and 6 Focus Group, Interviewer Administered Questionnaire	20 items / 3 point scale (favorable, neutral, unfavorable)	Perception Score	PCA	0.33 <α <0.76	4 dimensions / Healthcare Delivery, Health Facility Interpersonal Aspects of Care, Access to Care
Fowdar, (2008)	Mauritius	Private Practitioners / Patients and family members having visited GP in one year	Convenience / 260	Self Administered Questionnaire	47 items / 7 point Likert scale (low to high)	Perception - Expectation Score	EFA and linear regression	0.72 <α <0.97	7 dimensions / 7 dimensions 1. Tangibility/Image 2. Reliability/fair and equitable treatment 3. Responsiveness 4. assurance/empathy 5. Core medical services/professionalism/skill/ competence 6. Equipment and records 7. Information dissemination
Gabbott & Hogg, (1994)	UK	Primary Health Care / Patients	*** / 594	Mail based questionnaire	24 items / 5 point Likert scale (5 strongly agree and 1 strongly	Perception Score	EFA	α = 0.87	6 dimensions / Range of Services, Empathy, Doctor specific, Physical Access, Situational, Responsiveness
Haddad et.al., (1998)	Guinea	Hospital, Urban Health Center Rural Health Center / Individuals and Households in one city and two villages	WHO recommended Extended Program for Immunization / 285	Exit Interviews and Household Interviews followed by Questionnaire survey	20 items / 4 point Likert scale with varying options (No response option included)	Perception Score	PCA	Cronbach Alpha= 0.88	3 dimensions / HealthCare Delivery, Healthcare personnel, Health facility
Hansen et.al., (2008)	Afghanistan	Primary Care Services (617): Basic Health Centers, Primary Health Centers, District Hospitals / OPD Patients	Stratified Sampling / 5719 direct Observation 5597 exit interviews	Direct Observation, Exit Interviews based on standardized qualities	8 items / 4 point pictorial Likert Scale with no neutral point from strongly disagree to strongly agree	Perception Score	Descriptive Stats	α = 0.84	1 dimensions / Unidimensional Consisting of 8 items: Cleanliness, Staff Courtesy and respect, Trust in skills and abilities, Explanation of illness, Medicine availability, Reasonable cost, patient privacy

Authors/ (Year)	Country	HC Setting / Types of Respondents	Sampling tech / Sample Size	Method of data Collection	No. of Items / Scale	Score	Analytical Technique	Reliability /Validity	No. of Dimensions / Dimensions
Hasin et.al., (2001)	Thailand	50 bed Private Hospital / IPD and OPD	Symmetric Random Sampling / IPD=138, OPD=255	Self Administered Questionnaire	18 items / 5 point Likert scale (1 not satisfied, 5 most satisfied)	Perception Score	ANOVA	***	5 dimensions / Cleanliness, Service of Doctors, Service of Nurses, Service of Officers, Other Services
Irfan et.al., (2012)	Pakistan	Public Hospital / Discharged and OPD	*** / 369	Self Administered Questionnaire	22 items / 5 point Likert scale (1 strongly disagree, 5 strongly agree)	Perception Score	SEM	0.79 <α <0.90	5 dimensions / Tangibility, Reliability, Responsiveness, Assurance, Empathy
Jabnoun & Chaker, (2003)	UAE	Private and Public Hospitals / IPD patients and family members	*** / 205	Self Administered Questionnaire	39 items / 5 point Likert scale (1 strongly disagree, 5 strongly agree)	Perception Score	EFA, Linear Regression, Anova	0.635 <α <0.860	6 dimensions / Empathy, Tangibles, Reliability, Administrative responsiveness, Supporting skills
Jandavnath & Byram, (2016)	India	Two Superspeciality Hospital / Admitted Patients for min 4 days	*** / 493	Self Administered Questionnaire	28 items / 5 point Likert scale (1 strongly disagree, 5 strongly agree)	Perception Score	CFA, SEM	0.867 <α <0.931	5 dimensions / Tangibility, Reliability, Responsiveness, Assurance, Empathy
Kilbourne et.al., (2004)	UK and USA	Nursing Home Residents with Long term care / Nursing Home residents in long term care	*** / 99 (UK) 195 (USA)	Self Administered Questionnaire	22 items / 7 point Likert scale (1 strongly disagree, 7 strongly agree)	Perception Score	SEM	UK 0.6 <α <0.76 USA 0.7 <α <0.87	5 dimensions / Tangibility, Reliability, Responsiveness, Assurance, Empathy
Kondasani & Panda, (2015)	India	5 Private (Non Corporate) Hospitals / Patients Visited	Convenience / 475	Self Administered Questionnaire	55 items / 5 point Likert scale (1 strongly disagree, 5 strongly agree)	Perception Score	Focus Group (for questionnaire design) Factor Analysis, Regression and Correlation	α = 0.967	8 dimensions / Physical Environment, Reliability, Customer Friendly Staff, Communication, Responsiveness, Privacy & Safety, Customer Satisfaction, Loyalty

Authors/ (Year)	Country	HC Setting / Types of Respondents	Sampling tech / Sample Size	Method of data Collection	No. of Items / Scale	Score	Analytical Technique	Reliability /Validity	No. of Dimensions / Dimensions
Krishnamoorthy & Srinivasan, (2014)	India	Multispecialty Hospital / Discharged	*** / 197	Mail based questionnaire	30 items / 5 point Likert scale (1 strongly disagree, 5 strongly agree)	Perception Score	EFA, Multiple Regression	0.703 <α <0.901	10 dimensions / Medical Service, Empathy, Admission, Discharge, Physical Ambience, Equality, infrastructure, Tangibility, Medical Care, Availability of Medicine
Mohamed & Azizan, (2015)	Malaysia	Multispecialty Public Hospital / Discharged Patients (not more than 12 months) with a min stay of two days	Cluster and convenience / 235	Self Administered Questionnaire	35 items / 5 point Likert scale (1 strongly disagree, 5 strongly agree)	Perception Score	PLS-SEM	0.876 <α <0.945	6 dimensions / Infrastructure, Interaction, Administrative Procedure, Medical Care, Nursing Care
Mostafa, (2006)	Egypt	12 hospitals / About to be discharged patients with a min. stay of 3 days	*** / 332	Self Administered Questionnaire	22 items / 5 point Likert scale (1 strongly disagree, 5 strongly agree)	Perception Score	PCA, discriminant analysis, ANOVA	α=0.994	4 dimensions / Human Performance Quality, Reliability Quality Facility Quality
Narang, (2010)	India	1 Tertiary Health Centre, 1 State Medical Univ, 2 Missionary Hospitals / Patients	Random selection / 461	Interviewer Administered Questionnaire	20 items / 5 point Likert scale (-2 very unfavorable+2 very favorable)	Perception Score	Linear Regression Analysis	α = 0.74	4 dimensions / Health Personnel Practices and Conduct, Adequacy of resources and services, Health care Delivery, Access to Services
Otani, (2010)	USA	Five Large Hospitals (One academic and four community hospital) / discharged (7-14 days)	Stratified Random / 14432	Telephonic Interview	20 items / 5 point Likert Scale (5=Excellent, 4=Very Good, 3=Good, 2=Fair, 1=Poor)	Perception Score	Multiple Regression	0.615 <α <0.93	5 dimensions / Admission Process, Nursing Care, Physician Care, Staff Care, food and room
Pai & Chary, (2015)	India	11 Public, Teaching and Corporate Hospitals / 300 IPD 302 OPD	*** / 602	Self Administered Questionnaire	25 (18 on Service Quality) items / 5 point Likert scale (1 strongly disagree, 5 strongly agree)	Perception Score	PLS-SEM	***	3 dimensions / Healthscapes, Personnel Quality, Service Quality

Authors/ (Year)	Country	HC Setting / Types of Respondents	Sampling tech / Sample Size	Method of data Collection	No. of Items / Scale	Score	Analytical Technique	Reliability /Validity	No. of Dimensions / Dimensions
Pakdil & Harwood, (2005)	Turkey	Preoperative Assessment Clinic / Pre operative patients and their family members	*** / 669	Self Administered Questionnaire	22 items / 3 for expectations (very important, important, not important), perceptions on 5 point Likert scale (1=excellent, 2= very good, 3= good, 4=fair, 5=poor)	Expectations and Perception Scores	Score Based	***	10 dimensions / Tangibility, Reliability, Responsiveness, Competence, Courtesy, Credibility, Security, Access, Communication, Understanding the customer
Prakash & Mohanty, (2012)	India	Hospital / Discharged Patients and Attendants who were admitted for atleast 36 hours	Purposive / 169 (102 patients 57 attendants)	Mail based questionnaire	26 items / 7 point Likert scale (1 very low 7 very high)	Perception - Expectation Score	Factor Analysis and Artificial Neural Networks	$0.63 < \alpha < 0.98$	8 dimensions / 8 dimensions based questionnaire: Prevention, Personnel, Research, Treatment, Diagnosis, Administration, Trust and Education
Pramanik, (2016)	India	Government and Private Hospitals in Urban and Rural Areas / Admitted and Discharged	*** / 368	Self Administered Questionnaire	22 items / 7 point Likert scale (1 strongly disagree, 7 strongly agree)	Perception - Expectation Score	GAP Score	$0.72 < \alpha < 0.86$	5 dimensions / Tangibility, Reliability, Responsiveness, Assurance, Empathy
Purcarea et.al., (2013)	Romania	Gynecology health care forum / Women who have posted their experiences in last three months on forum	*** / 208	Mail based questionnaire	22 items / 5 point Likert scale (1 strongly disagree, 5 strongly agree)	Perception - Expectation Score		Expectation α=.61 Perception α=.73	5 dimensions / Tangibility, Responsiveness, Empathy, Timeliness, Assurance
Ramez, (2012)	Bahrain	Hospitals and Medical Centers / Discharged (within 1 year)	Convenience / 235	Self Administered Questionnaire	22 items / 7 point Likert scale (1 strongly disagree, 7 strongly agree)	Perception - Expectation Score	Factor Analysis, Regression and Correlation	Expectation α=.961 Perception α=.973	5 dimensions / Tangibility, Reliability, Responsiveness, Assurance, Empathy

Authors/ (Year)	Country	HC Setting / Types of Respondents	Sampling tech / Sample Size	Method of data Collection	No. of Items / Scale	Score	Analytical Technique	Reliability /Validity	No. of Dimensions / Dimensions
Rao et.al., (2006)	India	District Hospitals, female district hospitals, community health centers, primary health centers / In patient and Out patient	Convenience / 1837 outpatients and 611 in patients	In-Depth Interviews using Questionnaires	16 items / 5 point Likert type scale (Pictorial money scale one rupee=completely agree, 75 p =agree, 50 p = neither agree nor disagree, 25p disagree, zero paisa= completely disagree)	Perception Score	PCA and multivariate regression	0.19 <α <0.65	5 dimensions / Medicine availability, medical information, staff behaviour, doctor behaviour, hospital infrastructure
Rohini & Mahadevappa, (2006)	India	5 different types of hospitals (Super Specialty, Missionary, Government, Teaching, Multi Specialty Hospitals) / Patients and Management	*** / 500 patient (100 from each hospital), 40 responses from management	Self Administered Questionnaire	22 items / 7 point Likert scale (1 strongly disagree, 7 strongly agree)	Perception - Expectation Score	GAP score	Expectation α=.95 Perception α=.90	5 dimensions / Tangibility, Reliability, Responsiveness, Assurance, Empathy
Rose et.al., (2004)	Malaysia	1 Private and 1 Public hospital / Patients	Convenience sampling (Qualitative) Systematic Random Sampling (Quantitative) / 30 Interviews (18 private and 12 public hospitals) 493 Questionnaire (244 from private and 247 from public hospitals)	Exit Interviews, Self Administered Questionnaire	72 items / 10 point Likert Scale (1 strongly disagree, 10 strongly agree)	GAP Score	EFA, Stepwise Regression	0.81 <α <0.94	8 dimensions / Social support, Patient Education, Technical, Interpersonal, Amenities/environment, Access/Waiting time, Cost, Outcomes

Authors/ (Year)	Country	HC Setting / Types of Respondents	Sampling tech / Sample Size	Method of data Collection	No. of Items / Scale	Score	Analytical Technique	Reliability /Validity	No. of Dimensions / Dimensions
Satsanguan et.al., (2015)	Thailand	20 Private Nursing Homes / Discharged Patients and their relatives	*** / 219	Self Administered Questionnaire	20 items / 7 point Likert scale (1 strongly disagree, 7 strongly agree)	Perception Score	EFA, CFA, SEM	***	4 dimensions / Personnel Quality, Service of Supportive Task, Reliability, Infrastructure
Senic & Marinkovic, (2012)	Serbia	Polyclinic in sate run university / OPD patients	Convenience / 152	Self Administered Questionnaire	18 items / 7 point Likert scale (1 completely disagree 7 completely agree)	Perception Score	PCA, SEM	$0.80 < \alpha < 0.93$	3 dimensions / Personal Relationships, Promptness and Tangibility
Sivakumar & Srinivasan, (2010)	India	Four Multispecialty Hospitals / Patients and Patient's attendants (IPD)	Random / 472	Self Administered Questionnaire	22 items / 7 point Likert scale (1 strongly disagree, 7 strongly agree)	Perception Score	Multiple Regression	$0.60 < \alpha < 0.75$	5 dimensions / Tangibility, Reliability, Responsiveness, Assurance, Empathy
Sohail, (2003)	Malaysia	Five private hospitals / Discharged patients within 6 months	*** / 150	Mail based questionnaire	15 items / 5 point Likert scale (1 strongly disagree, 5 strongly agree)	GAP Score	CFA GAP score	$0.63 < \alpha < 0.86$	5 dimensions / Tangibility, Reliability, Responsiveness, Assurance, Empathy
Taylor & Cronin, (1994)	USA	Hospital Services / Hospital services utilized within 45 days	Mall Intercept / Study 1: 116 Study 2: 227	***	22 items / 7 point Likert scale (1 strongly disagree, 7 strongly agree)	GAP Score	EFA, SEM	Study 1: $0.735<\alpha<0.822$ Study 2: $0.710<\alpha<0.925$	5 dimensions / Tangibility, Reliability, Responsiveness, Assurance, Empathy
Teng etl.al., (2007)	Taiwan	one surgical hospital / patients admitted in surgical wards	Stratified Random / 253	Self Administered Questionnaire	42 items / 5 point Likert scale (1 strongly disagree, 5 strongly agree)	Perception Score	Factor analysis	$\alpha>0.642$	6 dimensions / Needs management Assurance Sanitation Customization Convenience and quiet Attention

Authors/ (Year)	Country	HC Setting / Types of Respondents	Sampling tech / Sample Size	Method of data Collection	No. of Items / Scale	Score	Analytical Technique	Reliability /Validity	No. of Dimensions / Dimensions
Thawesaengskulthai et.al., (2015)	Thailand	A group having 6 hospitals / Patients attending hospital in last 12 months	Stratified Random / 31 experts for scale development 2187for analysis	Delphi for scale development Mail based questionnaire	48 items / 10 point Likert Scale (1 strongly disagree, 10 strongly agree)	Perception Score	CFA, SEM	$\alpha = 0.98$	5 dimensions / Service Facility, Service Personnel, Service Professional, Service Performance, Service Product
Venkateshwarlu et.al., (2015)	India	Hospital / Patients and Visitors	Convenience / 300	Self Administered Questionnaire	22 items / 5 point Likert scale (Very Important, Important, Moderately Important, Less Important, Unimportant)	Perception Score	Regression and Correlation	$\alpha = 0.73$	5 dimensions / Tangibility, Reliability, Responsiveness, Assurance, Empathy
Wongrukmit & Thawesaengkulthai, (2014)	Thailand	Hospital / Patients and their families from four different nationalities	Stratified Random Sampling / 824	Self Administered Questionnaire	36 items / 5 point Kano's model based choice	Perception Score	t-test, One Way Anova	$\alpha = 0.98$	1 dimensions / One Dimensional
Zarei et.al., (2012)	Iran	8 private general hospital / Discharged (IPD)	Random / 983	Self Administered Questionnaire (on the day of discharge)	21 items / 5 point Likert scale (1 strongly disagree, 5 strongly agree)	Perception - Expectation Score	Factor Analysis	$0.85 < \alpha < 0.95$	5 dimensions / Tangibility, Reliability, Responsiveness, Assurance, Empathy

2.7.1 Scales in context of developing countries

Health care need of a developing country is different from that of a developing or under-developed country (Narang, 2010). A twenty-item scale was proposed for under-developed countries which includes three dimensions of health care delivery, health care personnel and health care facility (Haddad et al., 1998). They proposed that each dimension can be considered as a sub-scale, however these sub-scales should be seen in relation to each other. The importance of this scale was that it can easily be administered to a layman. The scale was modified and used in many countries including India (Narang, 2010), Burkina Faso (Baltussen, 2002), Vietnam (Van Duong et al., 2004).

2.7.2 Scales in context of medical field of study

A forty-seven item scale, specifically designed for service quality evaluations on six dimensions in surgical hospitals was developed in Taiwan (Teng, Ing, Chang, & Chung, 2007). The scale falls short of measuring outcome quality of the procedures and is having low reliability. A highly reliable scale of fifty items measuring four dimensions of service quality namely interactional, technical, environmental and administrative quality was also developed in Australia (Dagger, Sweeney, & Johnson, 2007). The scale is however restricted to oncology clinical settings only. The generalizability of these scales to other parts of the world is yet to be ascertained.

2.7.3 Scales in context of health care setting

Taking cues from five dimensions of SERVQUAL scale, a scale specific to private hospitals was developed in Mauritius 'PRIVHEALHQUAL' (Ramsaran-Fowdar, 2008). Apart from five dimensions of SERVQUAL, this scale introduced additional three dimensions of core medical services, equipment and records, and information dissemination. The authors also introduced the 'service superiority' concept based

upon perceived minus desired level of service. This scale used university students and their acquaintances in gathering data for preparation of scale. Another scale specific to the public sector hospitals was developed in India 'PubHosQual' based upon dimensions of admission, medical service, overall service, discharge process and social responsibility (Aagja & Garg, 2010). The twenty-four-item scale is however is restricted to public sector health care settings. Both the scales used gap score for identifying service quality from health care seekers' perspective. The participants of the study include middle and lower-middle socio-economic class respondents.

2.7.4 Scales in context of general hospital setting

An elaborative eighty-six items instrument measuring nine dimensions of patient perceived Total Service Quality was developed using mail based questionnaire responses of health care seekers (Duggirala et al., 2008). A salient dimension of social support (Rose et al., 2004) provided to the patients as a part of social responsibility was added to this instrument by the authors. The Instrument had high reliability, however due to its length, respondent may feel fatigued while filling this questionnaire. Another Instrument (HCQS) of sixty-two items for measuring service quality was developed in India (Chahal & Kumari, 2010). This instrument however proposed that service quality is consequential to outcome quality, whereas outcome quality is affected by interaction quality and physical environment during the process of care. Some salient work in development of instruments for measuring Hospital Service Quality is shown in Table 2-5 below.

Table 2-5: Hospital Service Quality Measurement Instruments

Author	Country	Name of Scale	Score	No. of Items Used	Scale	Reliability/Vlaidity	Dimensions
Haddad et.al. (1988)	Guiena		Perception Score	20	4 point likert scale with varying options (No reposne option included)	α = 0.88	1. Healathcare Delivery 2.Healthcare personnel 3.Health facility
Teng et.al. (2007)	Taiwan	Service Quality Scale for Surgical Hospitalisation (SQHS)	Perception Score	42	7 point likert scale (1 strongly disagree to 7 strongly agree	α>0.642	1. Need management 2. Assurance 3. Sanitation 4.Customization 5. Convenience and quiet 6. Attention
Dagger et.al. (2007)	Australia		Perception Score	50	7 point likert scale (1 strongly disagree to 7 strongly agree	0.92 <α <0.95	1. Interactional Quality 2. Technical Quality 3.Environment Quality 4. Administrative Quality
Fowdar, R.R.R. (2008)	Mauritius	Private Healthcare Quality Scale (PRIVHEALTHQUAL)	Perception - Expectation Score	47	7 point likert scale (low to high)	0.72 <α <0.97	1. Tangiblity/Image 2. Relaibility/fair and equitable treatment 3. Responsiveness 4. assurance/empathy 5. Core medical services/profesionalism/skill/competence 6. Equipment and records 7. Information dissemination
Duggirala et.al. (2008)	India	Patient Perceived Total Quality Service (TQS)	Perception Score	86	7 point likert scale (1 strongly disagree to 7 strongly agree	0.775 <α <0.906	1. Infrastructure 2. Process of Clinical Care 3. Administrative Procedures 4. Safety Indicators 5. Overall experience of medical care received 6. Social Responsibility
Chahal & Kumari (2010)	India	Health Care Service Quality Scale (HCSQ)	Perception Score	62	5 point (1 strongly disagree to 5 strongly agree)	α = 0.91	1. Physical Environment Quality 2. Interaction Quality 3. Outcome Quality 4. Image
Aagja & Garg (2010)	India	Public Hospital Service Quality Scale (PubHosQual)	Perception - Expectation Score	24	7 point likert scale (1 strongly disagree to 7 strongly agree	0.58 <α <0.89	1. Admission 2. Medical quality 3. Overall quality 4. Discharge process 5. Social resoponsibility

2.8 RESPONDENT PROFILES IN MEASURING HOSPITAL SERVICE QUALITY

Both In-Patient Department (IPD) and Out-Patient Department (OPD) patients were approached for hospital service quality evaluations in most of the studies. These patients were usually contacted while they were getting discharged and while some researchers contacted the patients over phone or email in certain studies. Patients at times are not in a state to respond to the queries pertaining to hospital service quality evaluations. Padma et al., (2009) suggested to contact patients' attendants for collecting data who have accompanied them. Many studies included patients' family members to gather data concerning hospital service quality (Pai & Chary, 2016; Pakdil & Harwood, 2005; Satsanguan, Fongsuwan, & Trimetsoontorn, 2015) including their guardians (Chowdhury, 2008) and attendants as well (Aagja & Garg, 2010; Prakash & Mohanty, 2012). In contrast to other studies, a few of the studies included health care service providers as well in service quality evaluations including management personnel (Amin & Nasharuddin, 2013; Chowdhury, 2008; Mahadevappa & Rohini, 2006)..

2.9 DATA COLLECTION STRATEGY IN MEASURING HOSPITAL SERVICE QUALITY

Seemingly there is no fixed data collection strategy which is adopted by researchers in evaluating hospital service quality (see **Table 2-6** below). Nonetheless, self-administered questionnaire emerged as a prominent method of data collection. A few researchers resorted to qualitative data collection as well apart from the quantifiable data. This includes direct observation (Haddad et al., 1998; Hansen et al., 2008), interviews (Andaleeb, 2001; Rao et al., 2006), focus groups (Dagger et al., 2007), Delphi (Aagja & Garg, 2010) and telephonic interviews (Otani et al., 2010). Sample size for analysis in questionnaire based studies varied from 100 (Duggirala et al., 2008) to more than 5000 (Hansen et al., 2008). Discharged patients were contacted using postal surveys (Purcărea, Gheorghe, & Petrescu, 2013) as well as schedules were used to collect the data (Chahal & Kumari, 2010;

Dheepa, 2015). The scale for measuring service quality made use of fifteen items (Sadiq Sohail, 2003) to as many as eighty-six (Duggirala et al., 2008). Interestingly, service quality has also been seen as unidimensional and measured on eight item scale (Hansen et al., 2008). Five-point Likert scale was used in most of the studies, however use of three-point (Pakdil & Harwood, 2005), four-point (Hansen et al., 2008) and even pictorial five-point scale has also been used (Rao et al., 2006) in certain studies.

Table 2-6: Data Collection Strategies in HSQ measurement studies

Item Inventory	No. of Studies
8 to 20	15
21-40	27*
41-60	6
60+	3
Scale Characteristics	**No. of Studies**
3 point scale	2
4 point scale	2
5 point scale	28
7 point scale	18
10 point scale	2
Data Collection Method	**No. of Studies**
Observation	1
Telephonic Interviews	1
Face-to-face Interviews	8
Focus Groups	2
Mail Based Questionnaire	7
Self Administered Questionnaire	34

* 9 studies using 22 item SERVQUAL instrument

2.10 SERVICE QUALITY MODELS

Service quality measurement programs help companies in identifying areas of improvement by understanding lacunas and bring about necessary modifications in service delivery (Bolton & Drew, 1991). Such measurements are based on

theoretical premise of some well-established service quality models. Academic literature is packed with several models of service quality however, GAP model of service quality (Parasuraman, Zeithaml, & Berry, 1985) is quite common amongst the researchers in evaluating a service in various settings. This model quantifies service quality by identifying gaps in the customers' expectations of service and their experience of service performance. The perceived service quality gap is the comparison between the expectations and the perception of their experiences (Parasuraman & Berry, 2004; Parasuraman et al., 1985) (see Figure 2:3 below). This model proposes to measure quality on functional aspects of service rather than the technical aspects, which are usually difficult to evaluate such as outcome (Gronroos, 1984).

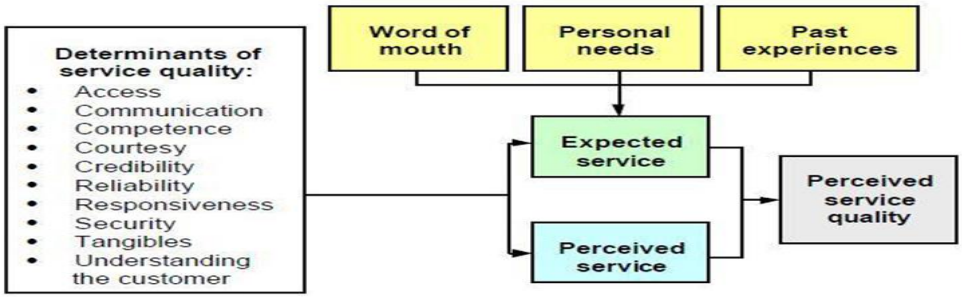

Figure 2:3: Determinants of Perceived Service Quality
Adapted from: A. Parasuraman, Valarie A. Zeithaml and Leonard L. Berry (1993), Conceptual Model of Service Quality and Its Implications for Future Research, *Jour of Marketing*, Vol. 49, No. 4 (Autumn, 1985), pp. 41-50

2.11 GAP MODEL OF SERVICE QUALITY

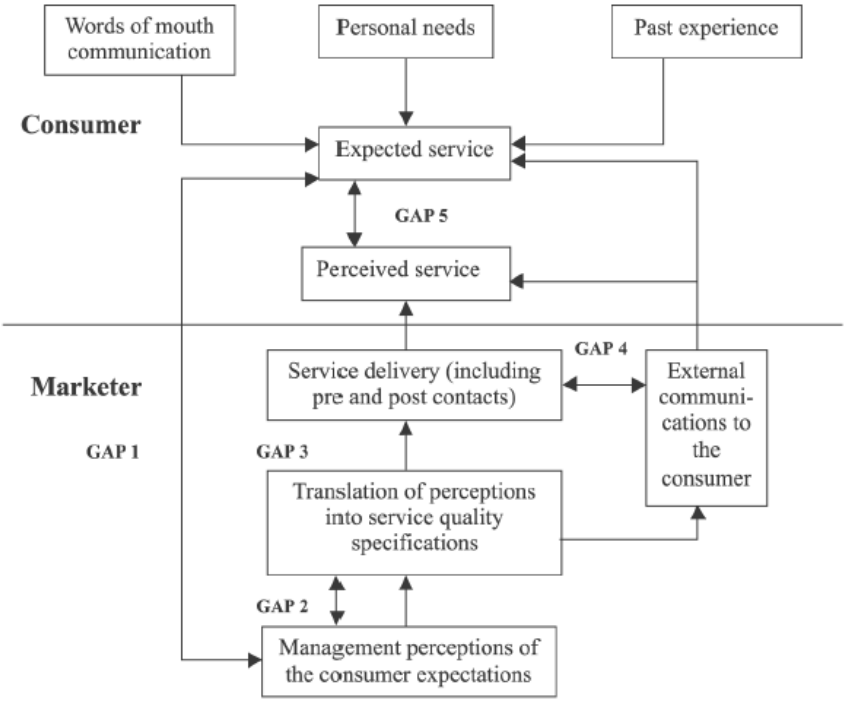

Figure 2:4: Gap Model of Service Quality
Adapted from: A. Parasuraman, Valarie A. Zeithaml and Leonard L. Berry (1993) Conceptual Model of Service Quality and Its Implications for Future Research, *Journal of Marketing*, Vol. 49, No. 4 (Autumn, 1985), pp. 41-50

A five-gap model was proposed by Parasuraman et al. (1985) (see Figure 2:4 above) along with the service quality measurement instrument named SERVQUAL (Parasuraman et al., 1988). SERVQUAL scale measures customer expectations and perception of performance on a twenty-two-item inventory. The mean score arrived at from expectations and perception questionnaire on five dimensions of reliability, responsiveness, assurance, empathy, and tangibility are compared. The direction and magnitude of gap helps the researcher in identifying service quality lacunas. The scale has been recommended to be used in hospital settings by changing the instruction portion of the questionnaire (Babakus & Mangold, 1992).

Inspite of its wide use, this scale has been criticized by many. A few researcher argued that expectation scores have no effect on the satisfaction ratings (Cronin &

Taylor, 1992; Teas, 1993). An alternate scale was also been proposed 'SERVPERF'(Cronin & Taylor, 1994) which counters that the expectations have no effect on the satisfaction. The proposed scale is believed to have higher predictive validity of customer's satisfaction (Cronin & Taylor, 1992; Lee, Lee, & Yoo, 2000; Ramez, 2012; Teas, 1994). The universality of the scale to various service settings has also been challenged upon (Andaleeb, 2001; Babakus & Mangold, 1992). Nonetheless, SERVQUAL scale is preferred in case of its diagnostic capabilities in identifying gaps in contrast to SERVPERF scale which acts a measure of customer satisfaction (Jain & Gupta, 2004). The literature is still divided between the use of 'perception minus expectation' score or 'perceptions only' score for measuring service quality (see Table 2-7 below).

Table 2-7: Use of Expectations and/or Perceptions score in HSQ evaluation

Scoring of Dimension	Author/Year
Perception *minus* expectation Score (18 studies)	Babakus & Mangold,1992; Taylor & Cronin ,1994; Lim & Tang,2000; Baltussen et.al.,2002; Sohail,2003; Rose et.al.,2004; Pakdil & Harwood,2005; Rohini & Mahadevappa,2006; Chowdhury,2008; Fowdar,2008; Bakar et.al.,2008; Arasli et.al.,2008; Aagja & Garg,2010; Prakash & Mohanty,2012; Zarei et.al.,2012; Ramez,2012; Purcarea et.al.,2013; Pramanik,2016
Perception only score (34 studies)	Butler et.al.,1996; Haddad et.al.,1998; Andaleeb,2001; Hasin et.al.,2001; Jabnoun & Chaker,2003; Kilbourne et.al.,2004; Duong et.al.,2004; Choi et.al.,2004; Rao et.al.,2006; Mostafa,2006; Teng et.al.,2007; Dagger et.al.,2007; Duggirala et.al.,2008; Hansen et.al.,2008; Otani,2010; Sivakumar & Srinivasan,2010; Chahal & Kumari,2010; Narang,2010; Altuntas et.al.,2012; Senic & Marinkovic,2012; Irfan et.al.,2012; Chang et.al.,2013; Amin & Nasharuddin,2013; Krishnamoorthy & Srinivasan,2014; Wongrukmit & Thawesaengkulthai,2014; Dheepa et.al.,2015; Satsanguan et.al. ,2015; Venkateshwarlu et.al.,2015; Mohamed & Azizan,2015; Kondasani & Panda,2015; Bahadori et.al.,2015; Pai & Chary,2015; Thawesaengskulthai et.al.,2015; Jandavnath & Byram,2016;

2.12 GAP IN LITERATURE

Our study is based upon the revised Gap model proposed by Wirtz and Lovelock (2011) (see Figure 2:5 below), which is an extension of the previously explained Five-Gap model (see Figure 2:4 above).

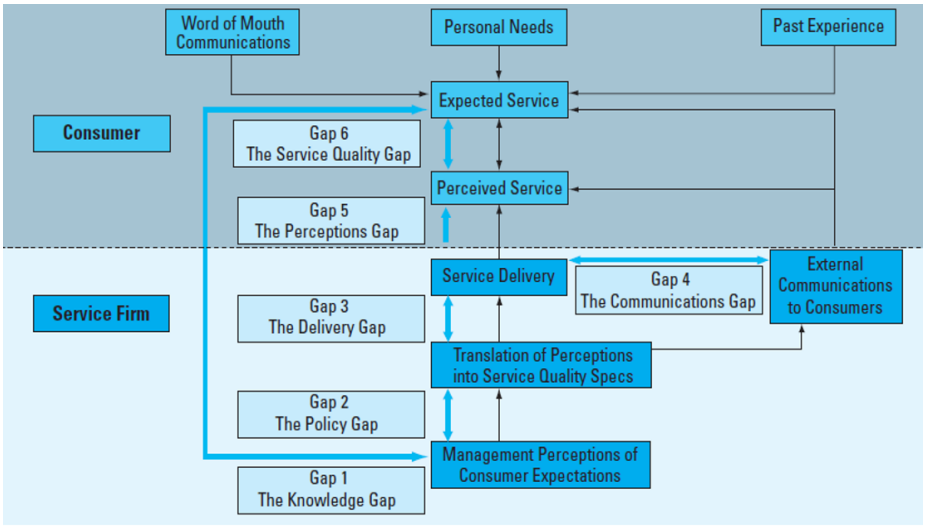

Figure 2:5: Revised Gap Model of Service Quality
Adapted from: Lovelock, C. H., & Wright, L. (1999).Services Marketing: People, Technology and Strategy. 7th ed., Prentice Hall, Upper Saddle River, New Jersey, p391

Authors of this model proposed that customer perception of their experiences relative to their expectations leads to service quality gap. The service gap can be filled by closing other gaps in the service delivery system. It is proposed that service quality evaluations of high-contact credence based services should not be based upon customers' evaluation alone (Choi et al., 2004). Possible gaps from the both sides of service exchange relating to expectations and experiences may have significant impact of quality evaluations (Brown & Swartz, 1989). This model proposes that the knowledge gap is the difference between what patient expects and the hospital service provider perception of such expectations. On the other hand, it is also proposed that the perception gap is the difference between the patient

perception of their service experiences and the providers' perception of the service delivery. The operational gaps for the purpose of this study can be understood the by the three equations as shown in Table 2-8 below.

Table 2-8: Hospital Service Quality Gap in the Study

Gap 1	=	Patient Expectations -	Patient Perception of Service Delivery
Gap 2	=	Patient Expectations -	Provider Perception of Patient Expectations
Gap 3	=	Patient Perception -	Provider Perception of Service Delivery

GAP 1 is called Service Gap (Parasuraman, Zeithaml, & Berry, 1988) while the other two gaps i.e. GAP 2 & 3 are called Knowledge and Perception Gap (Wirtz & Lovelock, 2011). Gap 2 and 3 have also been termed as Perceptual Gaps (Brown & Swartz, 1989). SERVQUAL model provide process to measure GAP 1, however, available published literature sheds little light on any approach to close Gap 2 and Gap 3.

3 CHAPTER 3: RESEARCH METHODOLOGY

3.1 INTRODUCTION

Previous chapter explores the myriad dimensions of hospital service quality, including methods and models of its measurement. It is identified from the literature that hospital service quality is a multidimensional construct. Further, these dimensions may differ from the perspectives of healthcare service seekers and providers and so is the measurement. Widely used service quality models primarily measures hospital service quality from the healthcare service seekers perspective only. Hospital services are professional services and include dyadic exchanges taking place between the service seeker and provider.

This chapter sets the tone for further research that will guide the subsequent knowledge discovery phases. Following sections of this chapter addresses how identified research gap will be filled using mixed method research. The initial qualitative phase of the research includes attribute identification followed by quantitative phase of instrument development. The final phase includes administering the instrument to close service gap, knowledge gap and perception gap using a novel dyadic approach applied in multispecialty hospital service settings.

3.2 RESEARCH GAP

The following gaps have been identified in reference to measurement of service quality in Multispecialty Hospitals to the best of the researcher's knowledge and available literature:

1. No published work in health care services has tried to explore providers' perspective of evaluation of service quality dimensions.
2. No published instrument in health care services is available to measure the knowledge and perception gap.
3. No published approach in health care services is available which integrates customer's and provider's perspectives of measuring service quality gaps.

3.3 RESEARCH PROBLEM

What are the significant attributes of knowledge and perception gap used by the health care service seekers and providers, and how can these gaps be measured to provide service quality?

3.4 RESEARCH QUESTIONS

1. What are the significant service quality attributes used by the health care service seekers and providers for its evaluation?
2. How can the knowledge and perception gap in evaluation of health care service quality be measured?
3. Which approach will integrate customer's and provider's perspective of measuring service quality gaps?

3.5 RESEARCH OBJECTIVES

1. To identify the significant attributes for evaluation of service quality by seekers and providers of health care services.
2. To develop an instrument to measure the knowledge and perception gap in health care service quality.
3. To propose a dyadic approach of measuring customer's and provider's perspectives of health care service quality gaps.

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3.6 RESEARCH DESIGN

I have proposed a pragmatic worldview in the research framework; thus, mixed method research approach has been used to study the problem in hand. An exploratory sequential mixed method design has been used in the study because it helps in understanding the different perspective drawn from the qualitative and quantitative data. This helps in gathering qualitative information for preparing a measurement instrument and then administering it to a relatively large sample for making interpretations (Creswell, 2013, p.267.).

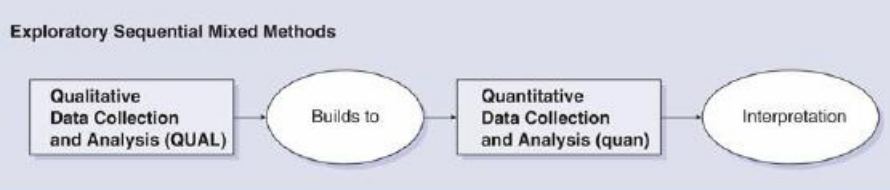

Figure 3:1: Research Design of Study

3.7 PHASE 1: EXPLORATORY PHASE

3.7.1 Attribute Identification (Health care Seeker)

Research Design: Qualitative

Sampling Technique: Purposive Sampling

Elements: Customers of healthcare services.

Sampling Units: IPD and/or OPD patients and their attendants who have availed health care services in last one year.

Extent: The respondents who have visited any multispecialty hospital in India.

Data collection Method: Semi-structured interviews with open ended questions

3.7.2 Attribute Identification (Health care Provider)

Research Design: Qualitative

Sampling Technique: Purposive Sampling

Element: Providers of health care services.

Sampling Unit: Doctors and nursing staff who are interacting with patients and their attendants.

Extent: Doctors and nursing staff employed with multispecialty hospitals in India.

Data collection Method: Semi-structured interviews with open ended questions

3.8 PHASE 2: INSTRUMENT DEVELOPMENT

3.8.1 Dimension reduction and Construction of a Research Instrument

3.8.2 Qualitative Phase (Scale Construction)

The starting point of this phase was construction of an item pool for measuring hospital service quality. A list of statements or items taken from the previous studies undertaken for assessing service quality in hospitals. Service quality variables identified from customers and providers of healthcare services and SERVQUAL questionnaire will be added to them for preparation of larger set of item pool. Based on comparison by reading, repetitive items/statements were excluded and a list of items/statements was prepared which could be adopted for instrument construction purpose. A questionnaire containing all the shortlisted items was prepared.

Delphi method and semi structured interviews were used for validation. The features of Delphi method i.e., anonymity of participants to facilitate free flow of information and insight, iterations to refine the views, controlling the feedback by sharing the views of the other participants for possible change in stand, and statistical analysis of data was done. In a similar type of scale development process for public hospital services Aagja and Garg (2010) used two iterations of Delphi for validating the scale. A panel of doctors, nurses, academician and patients were used for validating the scale. On the basis of responses from the panel items/statements were selected for further evaluation. The criteria for selection of item/statement were based upon the median rating and Item Content Validity. The suggestion of panel for deletion, modification, classification of items/statements

was also considered. The final set of questions were further subjected to statistical analysis for establishing validity of the questionnaire.

3.8.3 Quantitative Phase (Scale Validation)

A new set of data using convenience sampling was collected from the health care service customers who have visited any multispecialty hospital in last one year. The data thus collected was subjected to Confirmatory Factor Analysis (CFA). Reliability and validity of the proposed scale will be tested using appropriate test statistics.

Thus, a final instrument to measure the service, knowledge and perception gap was prepared.

3.9 PHASE 3: ADMINISTERING THE RESEARCH INSTRUMENT

3.9.1 GAP identification

Research Design: Quantitative (Survey Design)

Sampling Technique: Convenience Sampling

Elements: Health care service providers and customers.

Sampling Units: Doctors, nursing staff, patients and their attendants (who have availed the IPD/OPD services in last 1 year).

Extent: Both providers and customers of multispecialty hospital service in India.

Data collection: Primary data will be collected using the proposed research instrument using self-administered questionnaire developed in the previous step, measuring the expectation and experience about the healthcare services.

The providers were asked to complete the questionnaire based on what they perceive about the customer's evaluation of their expectations and experience, from the services provided by them. However, customers were asked about their expectation and experience from the hospital services.

Thus, data available for Patient Expectations, Patient Experience, Provider Perception of patient's expectation and Provider Perception of patient's experience

on Likert scale was evaluated using proposed dyadic approach to measurement of service quality.

3.9.2 GAP analysis

Using the mean score of Patient Expectations, Patient Perception of their experiences, Providers' Perception of patient's expectation and Provider Perception of service delivery, service quality gaps under study was calculated.

Service Gap = Patient Expectations – Patient Perception of their Experiences

Further, Knowledge gap and perception gap was computed as:

Knowledge Gap = Patient Expectations – Provider Perception of Patient Expectations

Perception Gap = Patient Perception – Provider Perception of Service Delivery

4 CHAPTER 4: RESULTS & DISCUSSION

4.1 INTRODUCTION

Based on the research objectives the data collection and analysis were done in three phases. This chapter presents details about the tools and techniques adopted in the both qualitative and quantitative phases of research. The exploratory phase of research includes semi-structured interviews conducted with both healthcare seekers and providers in multispecialty hospitals. The qualitative data were analyzed using template analysis. The interview rounds resulted in identification of hospital service quality themes reflecting in respondents' statements. Differing perspectives hospital service quality between service seekers and providers, commonalities in themes and recurrent themes were identified in this round.

Statements related to hospital service quality were tested for their validity to be included in the measurement instrument. Modified Delphi method was used to develop the initial scale of hospital service quality measurement. Methods adopted for identifying representativeness of the panelist and identifying consensus has been presented including the content and scale validity of the initial instrument thus developed. Quantitative validation and dimension reduction of the initial 49 items scale has been achieved using confirmatory factor analysis. Absolute, relative and non-centrality based fit indices calculated using this technique are presented in this chapter. The final instrument having thirty-eight statements spread across thirteen dimensions of hospital service quality called Dyadic Instrument of Hospital Service Quality Evaluation (DISQUE) has been proposed in this chapter.

Towards the end, this chapter explains how DISQUE can be used to measure hospital service quality in a multispecialty hospital. The results provided in this chapter distinguishes how service quality gap can be measured from the service seekers and providers perspective. The chapter proposes a way to fill the void in addressing how knowledge gap and perception gap can be measured using dyadic approach.

4.2 EXPLORATORY PHASE (INTERVIEW ROUNDS)

4.2.1 Participants and Procedure

Semi-structured interviews were conducted with health care seekers and providers of care. Health care seekers include patients and attendants who have visited any multispecialty hospital in last one-year period. Health care providers who were selected for interviews include doctors, nurses, para-medical staff who have frequent contact with health care seekers. Interviews were also conducted with hospital managers and administrative staff as they are involved in design of service production system.

Amongst health care seekers eleven females and ten males were interviewed during June to September of 2018. Taking cues from other studies along with patients, their attendants were also been interviewed (Kondasani & Panda, 2016; Pakdil & Harwood, 2005; Senić & Marinković, 2013). Participants were identified using snowball sampling, who had experienced service in a multi-specialty hospital in last one year. It becomes difficult for patients and their attendants to clearly remember and narrate their lived experiences which are more than a year (Andaleeb, 2001; Mohamed & Azizan, 2015; Ramez, 2012) hence, other samples with beyond a year of hospital visit were dropped.

Eleven females and sixteen males between an age of twenty-five to fifty-one years consented to be part of health care provide interviews. During the period of June to September of 2018, health care providers were contacted through referrals. Fifteen doctors, nine nursing and para-medical staff and three hospital manager/administrators constituted the sample for the interview round.

Development, testing and revision of Interview protocol was done as per guidelines (Jacob & Furgerson, 2012). Interviews were audio recorded after taking verbal consent of interviewee. Interviewees were informed the purpose and probable outcome of the study and were assured about their anonymity. Interviews started

with collecting demographic information and collecting purpose of visit and related information from healthcare seekers and collecting professional details from health care providers. Open ended questions solicited free flow of opinions on four sections of interview namely; quality in care, aspects of care, assessment of care and gap between expectations and experiences. The recordings were done in mix of English and Hindi language based on the comfort level of interviewee. Recordings were transcribed verbatim in English and were subjected to Template Analysis (TA).

The extensive literature review conducted forehand (Upadhyai, Jain, Roy, & Pant, 2019) with identification of priori themes for conducting interviews (see **Table 4-1** below). This helped in narrowing down the conversations, which were rich with information The improved information power (Malterud, Siersma, & Guassora, 2015) resulted in adequacy of sample. Further, TA based studies commonly applies twenty to thirty samples (McMillan, King, & Tully, 2016) and the objective of this phase was 'meaning saturation' rather than 'code saturation' (Hennink, Kaiser, & Marconi, 2017) establishing sampling adequacy.

Table 4-1: Priori Themes Identified from Literature

1. Pivotal attributes	1.7. Fair and equitable	2.3. Personnel behaviour
1.1. Clinical care	1.8. Prevention	**3. Peripheral attributes**
1.2. Professional knowledge, skills and competence	1.9. Promptness	3.1. Charges and quality of room and food
1.3. Diagnosis, treatment and research	1.10. Safety	3.2. Payment arrangement
1.4. Availability of medicine	**2. Core attributes**	3.3. Image
1.5. Availability of equipment and Instruments	2.1. Admission, stay and discharge process	3.4. Social responsibility
1.6. Need management	2.2. Medical communication	3.5. Amenities and physical infrastructure

4.2.2 Approach to Analysis: Template Analysis

The textual data can be interpreted using differing perspectives. The rationality of belief in our study is contextual constructivism. Therefore, the objective of data analysis and interpretation stresses upon the richness of description produced based upon the reflexivity of the researcher rather than the coding reliability (King, 2004, p256).

Template Analysis (TA) (Blair, 2015) facilitated analysis and organization of textual data. Templates are hierarchically organisation of themes, where the broader themes are kept at higher level which are narrowed down to focused themes within them (Slade et al, 2009). The analysis was simplified due to presence of priori themes which helped in assigning broader themes. TA can be used to establish priori codes which can gradually be revisited and refined (Saunders, Lewis, & Thornhill, 2009) (p505).. This deductive and inductive analysis using TA allows researcher flexibility in data analysis and stresses upon the breadth of template rather than coding depth (Brooks et al., 2015) (see Figure 4:1 below).

Step 1: Become familiar with the accounts to be analysed. *(Read through the full data set.)*
Step 2: Carry out preliminary coding of data *(use of a priori themes in identifying codes)*
Step 3: Organise the emerging themes into clusters and define how they relate to each other within and between the groups *(from a subset of data, hierarchical, parallel and integrative codes are identified)*
Step 4: Define the initial coding template *(capture good cross-section of issues and experiences covered in the data as a whole)*
Step 5: Apply the initial template to further data and modify as necessary *(modify and revise successive versions of template for insertion of new themes, refinement of existing themes and deletion of redundant themes)*
Step 6: Finalise the template and apply the final template to the full data set *(form the template as the base for interpretation of data and writing research findings)*

Figure 4:1: Steps in Template Analysis

4.2.3 Data Analysis and Quality Check

Each theme is a recurring perception or experience of the participants in the hospital service delivery. The initial set of priori theme were classified from the exhaustive literature review done prior to conducting interviews (Upadhyai et al., 2019). Initial set of themes were kept to a minimum to avoid any blinkering effect. These priori themes were classified under broad overarching attributes of PCP model namely; pivotal, core and peripheral (Philip & Hazlett, 1997). The textual data generated through the verbal accounts of the interviews was subjected to analysis. The data were organized to form an initial linear list of templates. The guidelines given by Brooks et al. (2015) were used to create final templates of health care seekers and providers.

'Respondent feedback' and 'audit trails' were prepared while creating and modifying templates as recommended by Nigel King (nd.). One health care seeker and one provider from the interviewed set of respondents were being asked to analyze the final template based on random set of sample scripts. The aim of the analysis was explained forehand to them to solicit a constructive feedback. Feedback received was analyzed and in light of it Template was modified for the purpose of improving it.

4.2.4 Differing accounts for Health Care Service Quality

Variability of Health care is exemplified by the fact each seeker has a differing level of need that must be customized to suit the requirement. Further, seekers of care are reluctant co-producers and the health care providers needs to be motivated enough to keep seekers involved in the process of care. Therefore, relational dimension, which is essentially intangible affect the quality of care being co-produced (Farr, et al, 2015). On the supply side quality in care hinges on effort exerted by the health care provider during consultations (Das, Holla, et al., 2012) and professional knowledge applied rather than the knowledge possessed "Know-

do gap" (Mohanan et al., 2015). Health care services are marked with high degree of information asymmetry (Das & Hammer, 2014; Das, Hammer, & Leonard, 2012) as provider of care has a better understanding, knowledge and expertise of medicine (Purcărea et al., 2013). Health care seeker has no other option left, but to trust the health care provider. Relatively lesser understanding of technical quality leads health care seekers to focus on other aspects of service for evaluation including interactive quality (Lehtinen & Lehtinen, 1982), functional quality (Gronroos, 1984) and process quality (Berry et al., 1985). From the managerial perspective the health care service quality will also include facility compliance as per standards laid which essentially includes administrative quality and behavioural aspects of quality leading to lesser consumer complaints.

4.2.5 Seeker's perspective of Health Care Service Quality

Health care seekers are in a state of anxiety due to physical and psychological discomfort and may not be able to asses service quality reasonably (Berry & Bendapudi, 2007). Further, health care seekers are considered layman and it is assumed that they will not be able to assess technical quality and instead will rely more on functional aspects of service (Gronroos, 1984). Satisfaction with each touchpoint in the patient wellness journey will add up to represent their overall experiences (Dagger et al., 2007). However, outcomes of care are equally important to the service seekers. However, it may be possible that in spite of higher satisfaction from the process of care a health care seeker may not get favourable outcomes from the treatment or vice-versa. This may lead to poor evaluation of hospital service quality. Nonetheless, in spite of conflicting view, customer centricity in hospital service quality prevailed based upon disconfirmation theory on five dimensions of service (Altuntas et al., 2012; Bahadori et al., 2015; Ramez, 2012; Sadiq Sohail, 2003; Zarei et al., 2012).

4.2.6 Provider's perspective of Health Care Service Quality

Service Providers strongly argued that there are certain set of skills which are essential for delivery of health care service. Health care provider must have 'professional knowledge and skills' related to their field. They must possess technical expertise in handling equipment and other related accessories for service delivery. Service quality will also be impacted by the amount of training and expertise that the provider of care has attained (Haddad et al., 1998; Ramsaran-Fowdar, 2008). Further, it is proposed that appropriate use of this knowledge and effectiveness of care benefiting the patients constitutes the 'core medical services' (Farmer, 2006; Mostafa, 2005; Piligriemiene & Buciuniene, 2008). Therefore, any evaluation of health care service quality should include 'professional knowledge and skills' and 'core medical services' as its determinant. This can also be seen from the providers' account of two-pronged bifurcation of HSQ (see **Table 4-2** below)

Table 4-2: Differing components of HSQ (Providers' View)

Component 1		Component 2
Medical care	vs	Hospital care
Clinical part	vs	Administrative part
Medical quality (Legal aspects)	vs	Service quality (Complaints)
Clinical Outcome (for providers)	vs	Behavioural problem (for patients)
Clinical indicators	vs	Productivity indicators
Technical aspect	vs	Behavioural aspect
Doctor's treatment	vs	Service
Care part	vs	Service part

4.2.7 Reflections on Health Care Service Quality

Health care providers clearly bifurcated hospital service quality into technical and functional aspects. This bifurcation was nearly absent from the seekers account of their own experiences. Providers are better able to understand the technical aspects of care which seekers are usually unable to comprehend. This upholds the principle of power dominance in the health care service quality (Fochsen, Deshpande, & Thorson, 2006). Seekers alternatively see hospital service quality from the functional aspects which are more or less effecting their psychological well-being. Gronroos (1984) conceptualization of hospital service quality into technical and functional aspects was well echoed from the interviewee responses.

4.2.8 Seeker as Layman

Traditionally hospital service seekers are considered as layman because of their innate inability to evaluate medical knowledge and expertise that any service provider possess. Further, health care being a high credence service requires service seeker to believe into what is informed to them. To balance out information asymmetry and power dominance in the professional exchanges service seekers looks for alternate ways of evaluating service quality. Relatively easy to evaluate measures of service like process of delivery and physical infrastructure takes center stage in the hospital service quality evaluation. This was clearly visible in the lived experiences of some respondents in public health facilities, where inspite of having equally qualified and at times more experienced health care providers, these facilities were looked down upon when compared to private health facilities (see Table 4-3 below).

Table 4-3: Seeker as Layman (Example Quotes)

Patient doesn't know technical aspect of the treatment, so patient see infrastructure, behaviour etc. (Provider)
It is very difficult to judge the quality because you do not know what has actually happened. (Seeker)
it is very difficult to tell what is the quality in the care as we do not know what is happening inside the body. (Seeker)
Once everything is done doctor would not provide medicine. We being a layman do not have idea about medical terms and medicines etc. (On role of paramedics) (Seeker)

4.2.9 Patient's Expectations

Table 4-4: Views in Patients' Expectations

From doctors the expectation is very simple that there is good diagnosis and good treatment and from the staff it is expected that the time patient or their attendants are there in the hospital that time is managed properly. (Seeker)
For the first time when we visited we didn't have any expectations. If you are already experienced or visited in the past the expectations would be different. (Seeker)
It is important to judge patient's expectations. (Provider)
We should move according to the patients. Patient want to get care in their own way. It is important to judge patient's expectations. (Provider)
Every patient expect that the doctor should put stethoscope and examine him. (Provider)
Doctor don't treat disease, they treat patients. Every patient is different and with different expectations. Everyone want a different environment and treatment. Some give importance to cleanliness, some to doctor's behaviour and some give importance to quick response from doctor. (Provider)
Sometimes patient comes with great expectations that he will get ok inspite of his problem may be irreversible. In that case he may be dissatisfied. (Provider)
If patient is not improved, he will not assess it right. (Provider)

Health care seekers have well-being as the top most expectations on priority amongst others. Providers also believe that health care seekers do have many expectations despite having anxiety. However, they were of a belief that these expectations vary among health care seekers. Providers believed that knowing health care seekers expectations is also part of their job as seekers judge them on the basis of these expectations. Many health care providers believed that there exists a gap in assessing health care seekers' expectations (see Table 4-4 above).

4.2.10 Commonalities in Themes

Service providers and seekers gave certain views which were very compelling and explicit in nature. Repetitive occurrence of these viewpoints was recorded in many interviews. Health care seekers heavily relied upon the professional knowledge, skills and competencies of health care providers including doctors, nursing and para-medical staff. This attribute entrusts service providers with dominance in their professional interpersonal exchanges taking place during the service delivery. The decision making related to treatment protocol for care is thus at the helm of service provider as seekers of care have no other option but to trust and have faith upon them. Further seekers and providers of care believed that professional knowledge, skills and competence of doctors and nursing staff have linkages with correct diagnosis and treatment.

Health care seekers believed that providers do not discuss the diagnosis and treatment protocol with them. However, providers believed that unlike other services such as consultation, legal services or eating out at a restaurant, certain patients need immediate attention and the treatment need to be started instantly especially in case cardiac attacks, strokes and emergency. This does not allow much scope and greater extent of medical communication with the health care seekers, especially their attendants. Seekers still believe that providers, many a times are unwilling to discuss and share medical information with them. The conventional view of the seekers is challenged by the providers and they reiterated that due to growing consumerism they partake information with them. Medical communication, i.e., information related to disease, its diagnosis and possible treatment is shared with health care seekers for informed decision making on their part.

Apart from medical communication a lot of interpersonal communication takes place with seekers of care. Beginning from taking an appointment till the discharge of patient, health care seekers come across a myriad set of individuals. Across the patient journey personnel behaviour of individuals turn out to be highly important

in-service quality evaluations. Providers were of the view that good interpersonal skills, apart from professional knowledge are must for them. Regular training and grooming of interpersonal skills are quintessential for health care seekers' satisfaction.

Mass-production of health care services is not possible. Further, capacity constraints and unpredictable demand of health care services makes it vulnerable for delays in service delivery. The delays create a lot of waiting time for availing service, which is a common concern for both health care seekers and providers. Waiting time not only effects efficiency of providers but also impacts the time to get treatment consequently affecting the wellbeing of health care seekers. Availability of helpdesk in the health facility will ease the anxiety in moving around in unfamiliar physical setting. Further, in health care services not only the seekers of care but also the providers are both physically and psychologically stressed.

4.2.11 Recurrent Themes

This section will provide compilation of certain prominent perspectives arising out of seekers and providers respectively. Most of the providers stressed the need of patient safety, effort exerted, and patient's characteristics affecting service quality evaluation. Alternatively, seekers believed that process of care, cost of care, and amenities & physical infrastructure affect service quality evaluations.

Patient Safety: Seekers find faults in the service if the outcome of service is not as per their desire and/or something goes wrong. For health care seekers hygiene and avoidable instances such as medical negligence and hospital acquired infections & injuries are indicators of patient safety. Hospitals follow several protocols related to treatment and patient care which are not evident to seekers and are difficult to evaluate. Reference to theses protocols were made many a times by the service providers in their interviews, conversely, no health care seeker talked about them.

This oversight can be attributed to healthcare seekers being in a state of anxiety who look for ends rather the means of care.

Effort: Doctors need to do multitasking in a multispecialty hospital as they have to take care of both the admitted, new and repeat patients. Skewed rush and under staffing lead a greater number of patients being taken care of in limited available time. Providers were of a view that investing more time with patients definitely results in quality treatment and patient compliance to treatment. Providers believed that consultation time is crucial to effective service delivery. However, providers echoed this perspective more than seekers in the rounds of interview.

Patient Characteristics: Doctors stated that they treat patients rather the disease itself. Therefore, patients' characteristics including their demographics, education background, socio-economic standing and frequency and familiarity with the health care settings has a bearing upon service quality evaluations. A well-educated urbanite is likely to understand treatment well as compared a lessor educated ruralite. Patients who are visiting the health care facility for referral or second opinion have better understanding of the disease and possible treatments, which improves the quality of medical communication in the professional exchanges. A repeat or follow-up patient is acclimatized with the health care facility and doctors have better understanding of the technical aspects of care that needs to delivered to the patient. For providers of care, service quality evaluations are more directed towards the treatment rather than the functional aspects. Patients' own perception of illness affects the level of service demanded from the service providers. Patients who stay longer in the hospital are more likely to consider staff behaviour as a critical to their care. Providers believed that disease severity and staging along with comorbid conditions affects the outcome of care. Therefore, providers believed that they need to take patients characteristics as well in designing treatment protocols.

Process of Care: Patients and their attendants pass through various touchpoints in their wellness journey. Starting from taking appointments and registration in the hospital, health care seekers participate in lot of processes till they are discharged. Process of care emerged as most talked about theme in the verbal accounts of the health care seekers. Admitted patients during their stay seek guidance and help from the service providers in many ways, especially in terms of timely investigations and generation of reports. Longer waits cause physical and psychological discomfort. Waiting time at pharmacy and billing counters is another aspect that seekers rate as a part of service quality evaluations. Besides this ease and transparency in billing is also a matter of concern.

Cost of Care: Longer stay in the hospital is associated with direct expenses incurred in the process of care. This is besides the opportunity cost in terms of loss of earnings for the period of illness. Quality and cost have deep rooted linkages in the mind of health care seekers. They believe that hospitals charging higher fees are relatively clean, have better infrastructure, ensure physical privacy of patients and employs helpful staff. Before availing the service customers usually make up their mind pertaining to expenses that they will incur for the care. Nonetheless, a few seekers believed that hospitals charge higher fees for the investigations when done internally as compared to getting them externally from private laboratories and diagnostic facilities.

Amenities and Physical Infrastructure: Health care seekers believe that private multispecialty hospitals have better amenities and physical infrastructure as compared to public health facilities. They believe that this difference is attributed to the nominal fees charged by public health facilities. A well-maintained health facility affects the psychological wellbeing of the patients. Public health facilities usually have bare minimum amenities and physical infrastructure which should be present. However, private health care facilities have improved amenities and physical infrastructure which customers believe must be there in a hospital.

The interview rounds resulted in identification of the several statements related to service quality variables. Finally, 101 statements of health care seekers and 82 statements of health care providers were selected from transcribed text for generation of initial item pool. Linguistic check was conducted on the statements yet ensuring that the meaning should not get distorted. All statements were aggregated and 141 divergent statements emerged after removing 40 similar statements. 93 statements were finalized out of lot which had clear denotation and connotation. Selected statements along with the aggregated statements were verified by a health care service provider and service seeker. 14 statements of SERVQUAL questionnaire which could not find place in the list of items emerging out of interview were added to the item pool. This resulted in development of initial 107 item inventory pool which was subjected for analysis in the next phase.

4.3 QUALITATIVE PHASE (SCALE CONSTRUCTION)

4.3.1 Initial Construction of Item Pool

Semi-structured interviews resulted in identification of statements which were indicative of service quality evaluation. The pool of statements identified in the previous phase were classified under three attributes based upon PCP Model (Philip & Hazlett, 1997). The three attributes were reflective of fourteen dimensions of hospital service quality using Template Analysis (TA) (Brooks & King, 2012). Dimensions classified under Pivotal theme (end product of outcome) were diagnosis and treatment, medical infrastructure, need management, patient safety and privacy, professional knowledge skills and competence. Core theme which is an indicator of people. Process and organisational structure had dimensions of admission, discharge, medical communication, personal behaviour and process. The incidental extras and frills around the service, also termed as Peripheral theme had dimensions of amenities and physical infrastructure, charges and payment arrangement, image, quality of room and food.

4.3.2 Statistical Method: Modified Delphi

The distinguishing features of Delphi from other techniques are (i) the ability of the group to refine and modify the information provided earlier (ii) and the anonymity of the participants eliminating undesirable psychological effects (Lindstone, Turoff, & Helmer, 2002). All the items were presented again to the panelist for reviewing their ratings with respect to the median rating of the group computed in the round one.

4.3.2.1 Panel Selection

Expert Selection: Since the dimensions of service quality have already been identified from the literature, the initial round of the classical Delphi becomes redundant. This calls for use of modified Delphi with a heterogeneous panel (Keeney, Hasson, & McKenna, 2011). Participants in this step of Delphi include both health care seekers who have recently availed services of any multispecialty hospital, and health care providers who have worked in such hospitals. Purposive sampling was done for identification of panelist who can give valuable insights (Etikan, 2016). The expert panel constituted twenty-six participants who were being explained the purpose of this study and their role as a participant in the Delphi process (see Table 4-5 below). An informed consent was taken from all participants and they were assured of their anonymity, an essential precondition of Delphi process

.

Data Collection: A paper survey was designed to be circulated to all the panelists. Each panelist was briefed about the guidelines and process of filling the survey. Complete survey was conducted during the period of Aug-Oct 2019. Twenty-three panelist returned the survey after first reminder. Three participants wished to leave the survey due to their engagements in other activities. The panelist who participated in this round of survey constitutes three academicians, ten health care providers and ten health care seekers. Credibility of the panel members was

established using authoritative coefficient (Cr>0.7) (Tan et al., 2007; Zhao, Cheng, Xu, Hou, & Richardus, 2015) (see Table 4-5 below). Authoritative coefficient is a product of the expert judgement (Ca) and familiarity (Cs) ratings. Expert judgment and familiarity with topic/subject are measured on an ordinal scale of 1, 0.8, 0.6, 0.4, 0.2, 0 where one being the highest and zero being lowest. Expert judgement indicators are hierarchically arranged in the categories namely; theoretical analysis, practical analysis, understanding from others, intuition, and do not know. Familiarity with the subject, topic is classified as extremely, very, somewhat, slightly, and not at all.

Table 4-5: Panelist Profile and Authoritative Coefficient in Modified Delphi*

	Health Care Practitioners	Patients/Attendants	Academicians
Number of Panelists (N=23)	10	10	3
Age Group (in Years)			
20-30	3	1	
31-40	5	5	3
41-50	2	4	
Educational Qualification			
Diploma	1		
Graduate	3	2	
Masters	6	2	
Doctorate		6	3
Avg Work Experience	8.4 yrs (sd. 5.44)	***	13 yrs (sd. 7.22)
Recency of Hospital Visit			
<3months	***	4	***
4-6 months	***	4	***
> 6 months	***	2	***
Authoritatative Coefficient	0.804	0.688	0.8

*(Upadhyai et al., 2021)

4.3.2.2 Data Collection Round 1

Panelists were asked to share their degree of agreement with each statement in the item pool. A five-point Likert scale ranging from strongly disagree to strongly agree is good measure to gauge the level of agreement in such studies (Giannarou & Zervas, 2014; Hayes, Fitzgerald, Doherty, & Walsh, 2015; Howell et al., 2017;

Shariff, 2015). Round 1 of Delphi resulted in 88% response rate with twenty-three out of the twenty-six panelists participating the survey. The authoritative coefficient of the panel was calculated to be good (Mean Cr = 0.79, sd. 0.06) (see Table 4-5 above). Median rating of each statement was calculated which was carried over to the round two. Only 22 items had median rating and ICVI above 3 and 0.79 respectively.

4.3.3 Data Collection Round 2

4.3.3.1 Determining Consensus

The median rating of each statement was displayed against each statement to the panelist in the second round. Panelist could also see their own rating of each statement along with the median rating. Each panelist was given a chance to modify previous rating considering the aggregated response of the group. In case of no change in the rating, previous rating was considered to be the final in this round else the panelist has an option of changing the rating. All twenty-three-panelist participated in the second round of Delhi. Items having a median rating of 4 or more and were retained in this round (Rodrigues, Adachi, Beattie, & MacDermid, 2017). Passing the criteria for selection, forty-nine items were initially considered to be included in a scale measuring hospital service quality. Content validity of the forty-nine-item scale was calculated.

4.3.3.2 Representativeness of Items in Scale:

In round 2 panelists were also asked to rate relevance of each item on a decisive four-point ordinal scale where 1 being not relevant, 2=somewhat relevant, 3=quite relevant and 4 being highly relevant. Relevance ratings of having values of 3 and 4 were considered content valid (Grant & Davis, 1997; Lynn, 1986; Polit & Beck, 2006). Item Content Validity (I-CVI) values greater than 0.79 establishes the relevance of the item of statement in the scale. An Average Scale Content Validity

value of greater than 0.9 is considered to be excellent (Rodrigues et al., 2017). S-CVI/Ave of our scale was 0.9095 (sd. 0.0531), which is classified as excellent. The values of ICVI and S-CVI/Ave established the representativeness of forty-nine items in the scale measuring hospital service quality (see Table 4-6 below).

Table 4-6: Items Reaching Consensus after Round 2 of Delphi

S No.	Statement	I-CVI
1	It doesn't take much time to get appointment with Doctor	0.8261
2	The process of admission is convenient for patient/attendant	0.913
3	Hospital staff provides assistance in handling patients	0.8696
4	Doctor(s) are available in the hospital whenever needed	0.8261
5	Doctor(s) are available in the hospital	0.8696
6	Doctor(s) and nursing staff behaviour builds trust (belief and faith) in patient/attendant	0.9565
7	Doctor(s) provide hope to the patient/attendant	0.9565
8	Doctor(s) and nursing staff speak in the language that patient/attendant can understand	0.913
9	Hospital ensures convenient billing and payment process	0.8261
10	Hospital ensures transparency in billing process	0.8261
11	Hospital has payment arrangement with insurance companies and institutions	0.913
12	Doctor(s) diagnose the disease correctly	0.8696
13	Doctor(s) starts the treatment in time	0.8261
14	Doctor(s) recommend timely investigations	0.9565
15	Hospital inform Do's and Don'ts to patients/attendants at the time of discharge	0.8261
16	At the time of discharge hospital provides proper prescription which patient/attendant can understand	0.9565
17	Hospital informs follow-up date at the time of discharge	0.9565
18	Amenities and physical infrastructure provides a sense of comfort to the patients	0.8261
19	Amenities and physical infrastructure at the hospital are clean	0.9565
20	Hospital uses disinfectants for cleanliness	0.9565
21	Hospital has decent quality rooms	0.8696
22	Hospital rooms are well ventilated	0.913
23	Hospital uses clean bed sheets	0.9565
24	Hospital has in-house medical laboratories and diagnostic facilities	1
25	Hospital has in-house pharmacy	0.913
26	Hospital has modern / latest medical equipment and instruments	0.913
27	Doctor(s) has/have reasonable experience in dealing with patient's medical condition	0.9565
28	Hospital has fairly good experience handling operative cases.	0.913
29	Hospital has good success rate in treating patients	0.8696
30	Hospital has renowned Doctors on its panel	0.8261
31	Nursing staff and attendant(s) show professional integrity towards their work	0.9565
32	Hospital has internal coordination within various departments	0.8696
33	Personnel at the hospital are neat in appearance	0.9565
34	Hospital has proper waste disposal facility/process	0.9565
35	Doctor(s) has/have professional knowledge, skills and competence	0.9565
36	Nursing and para-medical staff have professional knowledge, skills and competence	0.9565
37	Doctor(s) explain the possible complication(s)/side effect(s) of treatment to patient/attendant	0.913
38	Doctor(s) explain the time to get good outcome of treatment to patient/attendant	0.8696
39	Doctor(s) communicate the real condition to the patient/attendant	0.9565
40	Doctor(s) explain the disease and its treatment to the patient/attendant	0.9565
41	Hospital ensures physical privacy for the patient	0.9565
42	Hospital ensures that the patient information is kept private	1
43	Doctor's prescription carries all necessary details	0.8696
44	Doctor(s) and nursing staff follow hygiene during the process of care	0.913
45	Hospital minimizes the chance of Hospital Acquired Infections and Injuries to patients	0.8261
46	Hospital conducts timely medical investigations	0.9565
47	Hospital timely generates the investigation reports	0.9565
48	It doesn't take much time to fill the consent form for the medical procedures to be carried out	0.8696
49	Patient is given immediate medical attention whenever needed	0.913
	S-CVI$_{(AVE)}$	**0.9095**

4.3.3.3 Inter-Rater Reliability

Stability of the responses was calculated using multi-rater Kappa coefficient, which is a measure of degree of agreement beyond chance amongst the panelist (Rodrigues et al., 2017; Zamanzadeh et al., 2015). The inter-rated reliability was calculated using Fleiss's Kappa (Fleiss, 1971). The kappa-coefficient (k) value can range between -1 to +1. The positive direction with higher magnitude of k value indicates substantial agreement between the panelists (Landis & Koch, 1977; McHugh, 2012). The results indicate ($k= 0.63$, $p<0.05$) that agreement amongst the panelists was not by chance.

4.4 QUANTITATIVE PHASE (SCALE VALIDATION)

4.4.1 Statistical Method: Confirmatory Factor Analysis

Forty-Nine items scale made in the Delphi round was administered to health care providers and seekers. Data were collected through self-administered questionnaire using convenience sampling. To avoid common method bias responses were collected through both online and pen & paper mode. Confirmatory factor analysis (CFA) was done to check the psychometric properties of the questionnaire (Duggirala et al., 2008). Scale reliability was established on basis of Cronbach alpha values, which should be above 0.7 (Joseph F Hair, Black, Babin, Anderson, & Tatham, 2006). Composite reliability of constructs (CR>0.7) and Average Variance Explained (AVE>0.5) was checked (Joseph F Hair et al., 2006). Comparative Fit Index (CFI>0.9) was used to check Unidimensionality of each construct (Byrne, 2013; Joe F. Hair, Ringle, & Sarstedt, 2011; Joseph F Hair et al., 2006).

4.4.1.1 Constructs of Health Care of Service Quality Dimensions

A forty-nine-item questionnaire was circulated in the month of November 2019. A total of 487 respondents returned the questionnaire after one reminder. 84 responses were dropped from analysis as they have last visited the multispecialty hospital

more than one year back. Post initial check 403 responses qualify for the analysis. 288 respondents filled the online questionnaire, and 115 responses were collected from the physical questionnaires circulated through purposive sampling. Data collected from 10 respondents were dropped due to significant missing information. 6 respondents gave unique combination of values across all variables and hence were considered outliers and dropped from analysis (Joseph F Hair et al., 2006). This resulted in 387 usable responses which could be subjected to Confirmatory Factor Analysis (CFA). The respondent profile is given in Table 4-7 below.

Table 4-7: Respondent Profile for CFA Phase

Classification	Nos.
Gender	
Male	242
Female	145
Age Group	
<20 yrs	29
21-30 yrs	119
31-40 yrs	131
41-50 yrs	89
51-60 yrs	14
>60 yrs	5
Highest Qualification	
Post-Graduate	121
Graduate	249
Intermediate	27
Emplyment Status	
Self Employed	97
Salaried	190
Homemaker	19
Student	67
Retired	8
Others	6
Work Profile	
Health Care Provider	71
Others	316
Repondent Status (Others)	
Patient	221
Attendant	70
Donor	1
As visitor	24
Time of Last Visit	
Withing last 3 months	134
4-6 months back	152
7-12 months back	101

All forty-nine variables were kept under the respective dimension of service quality construct in the CFA model prepared in AMOS 23 software. Values of absolute, relative and non-centrality-based indices were calculated to check the model fit. The modification indices of question 31 was very high with the Process (PROC) construct. We could see significant improvement in the CFI, which increased to 0.955 from 0.924 when we moved item 31 from Personal Behaviour (PB) to Process (PROC) construct. This also resulted in improvement of composite reliability (CR) of Process construct. All other items which met recommended limits were retained in the CFA model. Items numbered Q1, Q2, Q3, Q8, Q11, Q32, Q43 and Q48 did not contribute significantly to the model and hence were removed from the model and the questionnaire. However, items numbered Q34 and Q49 were retained in the questionnaire due to high Item Content Validity Index (I-CVI) values in the previous Delphi round, (i.e., 0.9565 and 0.9130 respectively) despite having low AVE in the model.

The values of different absolute, relative and non-centrality based fit indices shown in surpassed the recommended threshold values of all the dimensions in the three attributes. The Scale Content Validity Index Average (S-CVI/Ave) value of the 41 items scale improved to 0.9151 from S-CVI/Ave value of 0.9095 after CFA rounds, indicating better content validity (Table 4-10). Composite reliability (CR) of all dimensions in the 41 items scale were above 0.7 (Joseph F Hair et al., 2006) establishing the construct reliability with a minor deviation in the charges and payment construct (CPA).

Table 4-8: Goodness of Fit Indices*

Fit Index	Limit*	Values in PIVOTAL ATTRIBUTES		CORE ATTRIBUTES		PERIPHERAL ATTRIBUTES	
		No. of Items before CFA	No. of Items after CFA	No. of Items before CFA	No. of Items after CFA	No. of Items before CFA	No. of Items after CFA
		15 items	**15 items**	**20 items**	**14 items**	**14 items**	**12 items**
Absolute Fit Indices							
χ^2		191.673	**191.673**	641.638	**188.699**	237.964	**111.209**
df		79	**79**	160	**71**	71	**48**
p value	>0.05	0	**0**	0	**0**	0	**0**
χ^2 / df	1.00-5.00	2.426	**2.426**	4.01	**2.658**	3.352	**2.317**
RMR	<0.08	0.059	**0.059**	0.086	**0.052**	0.078	**0.053**
GFI	>0.90	0.939	**0.939**	0.86	**0.935**	0.923	**0.955**
AGFI	>0.80	0.907	**0.907**	0.817	**0.904**	0.885	**0.926**
Relative Fit Indices							
NFI	>0.80	0.936	**0.936**	0.834	**0.931**	0.916	**0.955**
PNFI	>0.50	0.704	**0.704**	0.703	**0.726**	0.715	**0.694**
IFI	>0.90	0.961	**0.961**	0.87	**0.956**	0.939	**0.974**
TLI	>0.90	0.948	**0.948**	0.845	**0.943**	0.922	**0.964**
Non Centrality- based indices							
CFI	>0.90	0.961	**0.961**	0.869	**0.955**	0.939	**0.974**
PGFI	>0.50	0.618	**0.618**	0.655	**0.722**	0.624	**0.588**
RMSEA	<0.08	0.061	**0.061**	0.088	**0.066**	0.078	**0.058**

(χ2 / df) (Joseph F Hair et al., 2006); RMR (Hu & Bentler, 1999); GFI, AGFI (Joe F. Hair et al., 2011)

NFI, P NFI (Bentler & Bonett, 1980); IFI (Bollen, 1990); TLI (Tucker & Lewis, 1973); CFI (Joseph F Hair et al., 2006); PGFI, RMSEA (Steiger, 1990)

*(Upadhyai et al., 2021)

4.4.1.2 Construct Validity

Further, AVE of all the constructs were greater than 0.50 indicating good convergent validity as shown inTable 4-9 below.

Table 4-9: Convergent Validity Parameters

Attributes	Construct	Items	Factor Loading (Above 0.5)	Composite Reliability (Above 0.7)	AVE (above 0.5)
PIVOTAL	DT	Q12	0.80	0.785	0.553
		Q13	0.81		
		Q14	0.60		
	MI	Q24	0.76	0.764	0.521
		Q25	0.64		
		Q26	0.76		
	NM	Q4	0.76	0.704	0.544
		Q5	0.71		
	PSP	Q41	0.74	0.864	0.616
		Q42	0.68		
		Q44	0.88		
		Q45	0.84		
	PKSC	Q27	0.73	0.789	0.555
		Q35	0.75		
		Q36	0.76		
CORE	DIS	Q15	0.74	0.793	0.541
		Q16	0.76		
		Q17	0.74		
	MC	Q37	0.77	0.870	0.626
		Q38	0.86		
		Q39	0.75		
	PB	Q40	0.79	0.733	0.578
		Q6	0.75		
		Q7	0.77		
	PROC	Q31	0.68	0.854	0.541
		Q34	0.67		
		Q46	0.84		
		Q47	0.80		
		Q49	0.67		
PERIPHERAL	API	Q34	0.67	0.800	0.575
		Q18	0.62		
		Q19	0.86		
	CPA	Q20	0.77	0.682	0.518
		Q9	0.76		
		Q10	0.68		
	IMG	Q28	0.84	0.858	0.602
		Q29	0.80		
		Q30	0.79		
	QRF	Q33	0.67	0.874	0.698
		Q21	0.87		
		Q22	0.84		
		Q23	0.80		

Items in Question 34 and 49 were retained in the questionnaire due to high I-CVI values in the previous Delphi round despite having low AVE in the model. All the items which were meeting the recommended limits were kept in the CFA model in alignment with the Delphi method (see

Figure 4:2, Figure 4:3, Figure 4:4), and remaining items Q1, Q2, Q3, Q8, Q11, Q32, Q43 and Q48 which did not contribute significantly to the model were removed from the questionnaire.

Table 4-10: Content Validation Index of Statements in Questionnaire

Attribute / Dimension and Item Code	Statement	I-CVI
A.1 Pivotal: Diagnosis and Treatment (DT)		
Q12	Doctor(s) diagnose the disease correctly	0.8696
Q13	Doctor(s) starts the treatment in time	0.8261
Q14	Doctor(s) recommend timely investigations	0.9565
A.2 Pivotal: Medical Infrastructure(MI)		
Q24	Hospital has in-house medical laboratories and diagnostic facilities	1.0000
Q25	Hospital has in-house pharmacy	0.9130
Q26	Hospital has modern / latest medical equipment and instruments	0.9130
A.3 Pivotal: Need Management (NM)		
Q4	Doctor(s) are available in the hospital whenever needed	0.8261
Q5	Doctor(s) are available in the hospital	0.8696
A.4 Pivotal: Patient Safety and Privacy(PSP)		
Q41	Hospital ensures physical privacy for the patient	0.9565
Q42	Hospital ensures that the patient information is kept private	1.0000
Q44	Doctor(s) and nursing staff follow hygiene during the process of care	0.9130
Q45	Hospital minimizes the chance of Hospital Acquired Infections and Injuries to patients	0.8261
A.5 Pivotal: Professional Knowledge, Skills and Competence (PKSP)		
Q27	Doctor(s) has/have reasonable experience in dealing with patient's medical condition	0.9565
Q35	Doctor(s) has/have professional knowledge, skills and competence	0.9565
Q36	Nursing and para-medical staff have professional knowledge, skills and competence	0.9565
B.1 Core: Discharge (DIS)		
Q15	Hospital inform Do's and Don'ts to patients/attendants at the time of discharge	0.8261
Q16	At the time of discharge hospital provides proper prescription which patient/attendant can understand	0.9565
Q17	Hospital informs follow-up date at the time of discharge	0.9565
B.2 Core: Medical Communication (MC)		
Q37	Doctor(s) explain the possible complication(s)/side effect(s) of treatment to patient/attendant	0.9130
Q38	Doctor(s) explain the time to get good outcome of treatment to patient/attendant	0.8696
Q39	Doctor(s) communicate the real condition to the patient/attendant	0.9565
Q40	Doctor(s) explain the disease and its treatment to the patient/attendant	0.9565
B.3 Core: Personal Behaviour (PB)		
Q6	Doctor(s) and nursing staff behaviour builds trust (belief and faith) in patient/attendant	0.9565
Q7	Doctor(s) provide hope to the patient/attendant	0.9565
B.4 Core: Process (PROC)		
Q31	Nursing staff and attendant(s) show professional integrity towards their work	0.9565
Q34	Hospital has proper waste disposal facility/process	0.9565
Q46	Hospital conducts timely medical investigations	0.9565
Q47	Hospital timely generates the investigation reports	0.9565
Q49	Patient is given immediate medical attention whenever needed	0.9130
C.1 Peripheral: Amenities and Physical Infrastructure (API)		
Q18	Amenities and physical infrastructure provides a sense of comfort to the patients	0.8261
Q19	Amenities and physical infrastructure at the hospital are clean	0.9565
Q20	Hospital uses disinfectants for cleanliness	0.9565
C.2 Peripheral: Charges and Payment Arrangement (CPA)		
Q10	Hospital ensures transparency in billing process	0.8261
Q9	Hospital ensures convenient billing and payment process	0.8261
C.3 Peripheral: Image (IMG)		
Q28	Hospital has fairly good experience handling operative cases.	0.9130
Q29	Hospital has good success rate in treating patients	0.8696
Q30	Hospital has renowned Doctors on its panel	0.8261
Q33	Personnel at the hospital are neat in appearance	0.9565
C.4 Peripheral: Quality of Room and Food (QRF)		
Q21	Hospital has decent quality rooms	0.8696
Q22	Hospital rooms are well ventilated	0.9130
Q23	Hospital uses clean bed sheets	0.9565
	Scale Content Validity ($SCVI/_{AVE}$)	0.9176

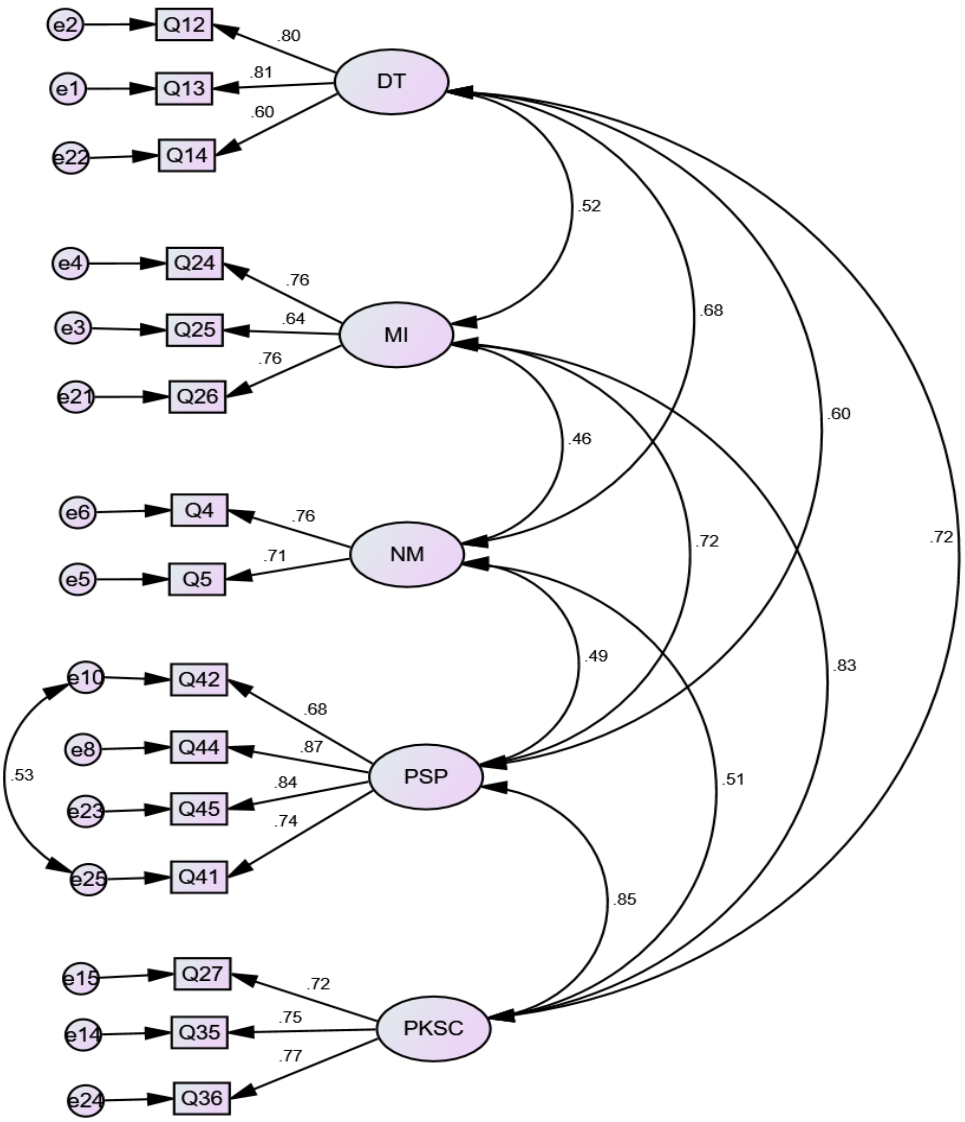

Figure 4:2: Model of HSQ Dimensions under Pivotal Attributes

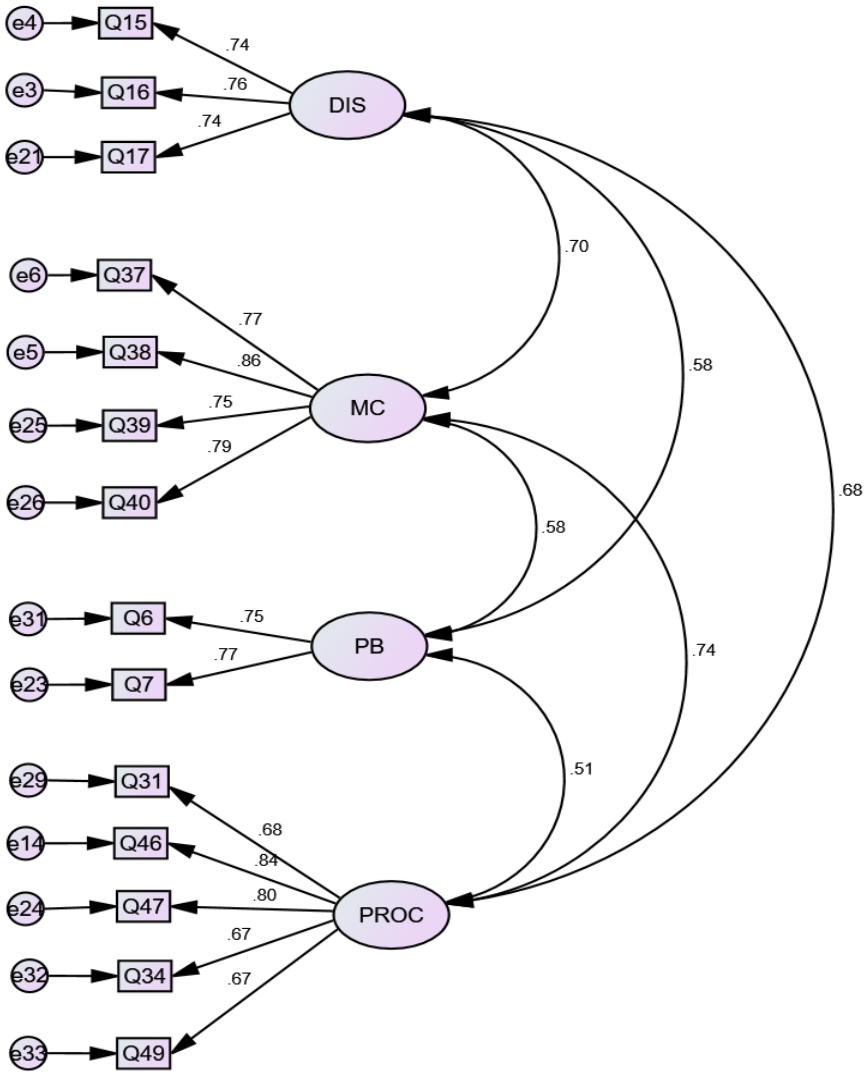

Figure 4:3: Model of HSQ dimensions under Core Attributes

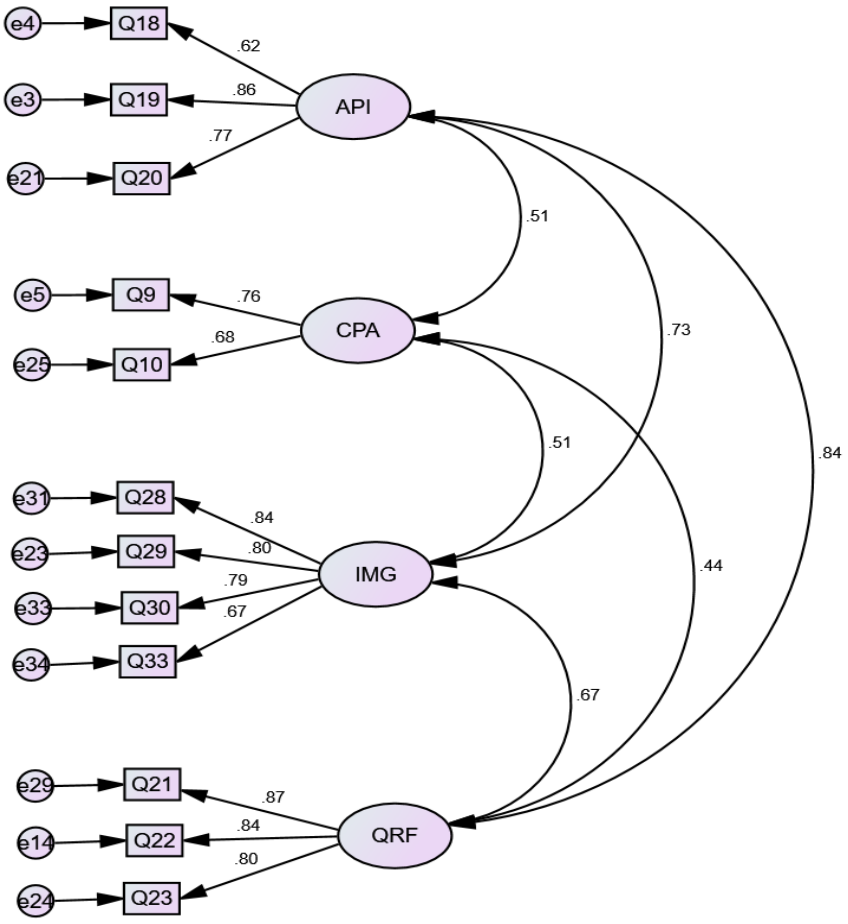

Figure 4:4: Model of HSQ dimension under Peripheral attributes

4.4.1.3 Scale Reliability

Widely used measure of reliability coefficient Cronbach's Alpha of the complete scale with 41 items was found to be 0.963. The 15 items pivotal attribute, 14 items core attribute and 12 items peripheral attribute has reliability values of 0.907, 0.910 and 0.891 surpassing the threshold values (>0.7). Very high values of Cronbach alpha call for testing multicollinearity between the variables.

Inter-item correlation was calculated between the variables of three individual sub-scales i.e., pivotal, core and peripheral attributes. In Pivotal attribute question numbers 41-42, and question numbers 44-45 were correlated having correlation values marginally exceeding 0.7 (0.765 and 0.740 respectively). Similarly, variables indicated by question numbers 46-47 in core attributes and question numbers 21-22 in peripheral attributes were also correlated having correlation values marginally higher than 0.7 (0.723 and 0.728 respectively).

In pivotal attributes firstly, we reviewed the question numbers 41 and 42 which dealt with respondents' view related to patients' physical and information privacy, respectively. Question 41 which had lower ICVI between the two was deleted. CFA was run on the data which indicated improvements in the model fit indices. The Cronbach alpha of the 14-item scale came to 0.897. Between the second set of questions 44-45 question number 45, having lower ICVI was deleted. CFA was run on the data set which resulted in decrease in model fit value of CFI (0.962 to .959) and an increase in RMSEA (0.06 to 0.064). Critical examination of the two questions was done and it was realized that the hygiene, as indicated in question 45 and hospital acquired infection and injuries as indicated in question 46 have differing meaning. From the patient's perspective the two questions might be perceived to be slightly similar, but have differing meaning from the hospital service providers' perspectives. Further, ICVI values also supports for the inclusion of both the questions which were above 0.8 for both the questions. Nonetheless, the Cronbach alpha value of 14 item scale (with deletion of question 41) i.e., 0.897 (a decrease from 0.907) is not a major cause of concern.

Question numbers 46-47 in the core attributes had slightly higher inter-item correlation. Careful consideration of the two items indicated that outcome of medical investigations in form of reports (question 47) is linked to timely collection of patient's samples and/or investigations (question 46). Further, I-CVI values of both items in the scale is same 0.965, thus, we chose to delete question 46 and tested model fit values using CFA. The results indicated improvement in the model fit values including CFI increasing to 0.964 from 0.955 and RMSEA decreasing to 0.060 from 0.066. The Cronbach alpha of 13 item scale came out to be 0.895.

In case of peripheral attribute, question numbers 21-22 have slightly higher inter-item correlation. Question number 21 pertain to the quality of room, while question number 22 talks about the ventilation in the room. Question 21 having lower ICVI value between the two was deleted. Apart from this, ventilation in room is more objective measure as compared to asking about the quality of room. CFA was carried out again to test the model fit values. The model fit was better with values of CFI improving to 0.978 from 0.974 and RMSEA decreasing to 0.054 from 0.058 apart from other improved fit indices. This resulted in new Cronbach alpha value 0.877 for the revised 11 item scale.

4.4.1.4 Final Questionnaire

Dyadic Instrument of Service Quality Evaluation (DISQE) for multispecialty hospitals in presented in this section. The improvements in the model, model fit values, Scale content validity and convergent validity are shown in (Table 4-11, Table 4-12, Table 4-13,

Table 4-11: Final Content Validation Index of Statements in Questionnaire*

Attribute / Dimension and Item Code	Statement	I-CVI
A.1 Pivotal: Diagnosis and Treatment (DT)		
Q12	Doctor(s) diagnose the disease correctly	0.8696
Q13	Doctor(s) starts the treatment in time	0.8261
Q14	Doctor(s) recommend timely investigations	0.9565
A.2 Pivotal: Medical Infrastructure(MI)		
Q24	Hospital has in-house medical laboratories and diagnostic facilities	1.0000
Q25	Hospital has in-house pharmacy	0.9130
Q26	Hospital has modern / latest medical equipment and instruments	0.9130
A.3 Pivotal: Need Management (NM)		
Q4	Doctor(s) are available in the hospital whenever needed	0.8261
Q5	Doctor(s) are available in the hospital	0.8696
A.4 Pivotal: Patient Safety and Privacy(PSP)		
Q42	Hospital ensures that the patient information is kept private	1.0000
Q44	Doctor(s) and nursing staff follow hygiene during the process of care	0.9130
Q45	Hospital minimizes the chance of Hospital Acquired Infections and Injuries to patients	0.8261
A.5 Pivotal: Professional Knowledge, Skills and Competence (PKSP)		
Q27	Doctor(s) has/have reasonable experience in dealing with patient's medical condition	0.9565
Q35	Doctor(s) has/have professional knowledge, skills and competence	0.9565
Q36	Nursing and para-medical staff have professional knowledge, skills and competence	0.9565
B.1 Core: Discharge (DIS)		
Q15	Hospital inform Do's and Don'ts to patients/attendants at the time of discharge	0.8261
Q16	At the time of discharge hospital provides proper prescription which patient/attendant	0.9565
Q17	Hospital informs follow-up date at the time of discharge	0.9565
B.2 Core: Medical Communication (MC)		
Q37	Doctor(s) explain the possible complication(s)/side effect(s) of treatment to	0.9130
Q38	Doctor(s) explain the time to get good outcome of treatment to patient/attendant	0.8696
Q39	Doctor(s) communicate the real condition to the patient/attendant	0.9565
Q40	Doctor(s) explain the disease and its treatment to the patient/attendant	0.9565
B.3 Core: Personal Behaviour (PB)		
Q6	Doctor(s) and nursing staff behaviour builds trust (belief and faith) in patient/attendant	0.9565
Q7	Doctor(s) provide hope to the patient/attendant	0.9565
B.4 Core: Process (PROC)		
Q31	Nursing staff and attendant(s) show professional integrity towards their work	0.9565
Q34	Hospital has proper waste disposal facility/process	0.9565
Q47	Hospital timely generates the investigation reports	0.9565
Q49	Patient is given immediate medical attention whenever needed	0.9130
C.1 Peripheral: Amenities and Physical Infrastructure (API)		
Q18	Amenities and physical infrastructure provides a sense of comfort to the patients	0.8261
Q19	Amenities and physical infrastructure at the hospital are clean	0.9565
Q20	Hospital uses disinfectants for cleanliness	0.9565
C.2 Peripheral: Charges and Payment Arrangement (CPA)		
Q10	Hospital ensures transparency in billing process	0.8261
Q9	Hospital ensures convenient billing and payment process	0.8261
C.3 Peripheral: Image (IMG)		
Q28	Hospital has fairly good experience handling operative cases.	0.9130
Q29	Hospital has good success rate in treating patients	0.8696
Q30	Hospital has renowned Doctors on its panel	0.8261
Q33	Personnel at the hospital are neat in appearance	0.9565
C.4 Peripheral: Quality of Room and Food (QRF)		
Q22	Hospital rooms are well ventilated	0.9130
Q23	Hospital uses clean bed sheets	0.9565
	Scale Content Validity ($SCVI/_{AVE}$)	0.9168

*(Upadhyai et al., 2021)

Table 4-12: Final Goodness of Fit Indices

Fit Index	Limit	Values in PIVOTAL ATTRIBUTES			CORE ATTRIBUTES			PERIPHERAL ATTRIBUTES		
		No. of Items before CFA	No. of Items after CFA	No. of Items after Revised	No. of Items before CFA	No. of Items after CFA	No. of Items after Revised	No. of Items before CFA	No. of Items after CFA	No. of Items after Revised
		15 items	**15 items**	**14 items**	**20 items**	**14 items**	**13 items**	**14 items**	**12 items**	**11 items**
Absolute Fit Indices										
χ^2		191.673	191.673	160.007	641.638	188.699	141.341	237.964	111.209	80.989
df		79	79	67	160	71	59	71	48	38
p value	>0.05	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
χ^2 / df	1.00-5.00	2.426	2.426	2.388	4.01	2.658	2.396	3.352	2.317	2.131
RMR	<0.08	0.059	0.059	0.58	0.086	0.052	0.46	0.078	0.053	0.05
GFI	>0.90	0.939	0.939	0.943	0.86	0.935	0.948	0.923	0.955	0.963
AGFI	>0.80	0.907	0.907	0.911	0.817	0.904	0.919	0.885	0.926	**0.936**
Relative Fit Indices										
NFI	>0.80	0.936	0.936	0.937	0.834	0.931	0.94	0.916	0.955	0.960
PNFI	>0.50	0.704	0.704	0.69	0.703	0.726	0.711	0.715	0.694	0.663
IFI	>0.90	0.961	0.961	0.962	0.87	0.956	0.964	0.939	0.974	0.978
TLI	>0.90	0.948	0.948	0.948	0.845	0.943	0.952	0.922	0.964	0.961
Noncentrality- based indices										
CFI	>0.90	0.961	0.961	0.962	0.869	0.955	0.964	0.939	0.974	0.978
PGFI	>0.50	0.618	0.618	0.602	0.655	0.722	0.614	0.624	0.588	0.555
RMSEA	<0.08	0.061	0.061	0.06	0.088	0.066	0.060	0.078	0.058	0.054

(χ2 / df) (Joseph F Hair et al., 2006); RMR (Hu & Bentler, 1999); GFI, AGFI (Joe F. Hair et al., 2011)

NFI, P NFI (Bentler & Bonett, 1980); IFI (Bollen, 1990); TLI (Tucker & Lewis, 1973); CFI

(Joseph F Hair et al., 2006); PGFI, RMSEA (Steiger, 1990)

Table 4-13: Final Convergent Validity Parameters *

Attributes	Construct	Items	Factor Loading (Above 0.5)	Composite Reliability (Above 0.7)	AVE (above 0.5)
PIVOTAL	DT	Q12	0.80	0.785	0.553
		Q13	0.81		
		Q14	0.60		
	MI	Q24	0.76	0.764	0.521
		Q25	0.64		
		Q26	0.76		
	NM	Q4	0.76	0.704	0.544
		Q5	0.71		
	PSP	Q42	0.68	0.841	0.641
		Q44	0.88		
		Q45	0.84		
	PKSC	Q27	0.73	0.789	0.555
		Q35	0.75		
		Q36	0.76		
CORE	DIS	Q15	0.74	0.733	0.578
		Q16	0.77		
		Q17	0.74		
	MC	Q37	0.77	0.870	0.626
		Q38	0.85		
		Q39	0.75		
		Q40	0.79		
	PB	Q6	0.75	0.733	0.578
		Q7	0.77		
	PROC	Q31	0.70	0.798	0.497
		Q34	0.71		
		Q47	0.73		
		Q49	0.68		
PERIPHERAL	API	Q18	0.62	0.800	0.576
		Q19	0.88		
		Q20	0.76		
	CPA	Q9	0.76	0.682	0.518
		Q10	0.68		
	IMG	Q28	0.84	0.857	0.602
		Q29	0.80		
		Q30	0.79		
	QRF	Q33	0.67	0.821	0.696
		Q22	0.85		
		Q23	0.82		

* (Upadhyai et al., 2021)

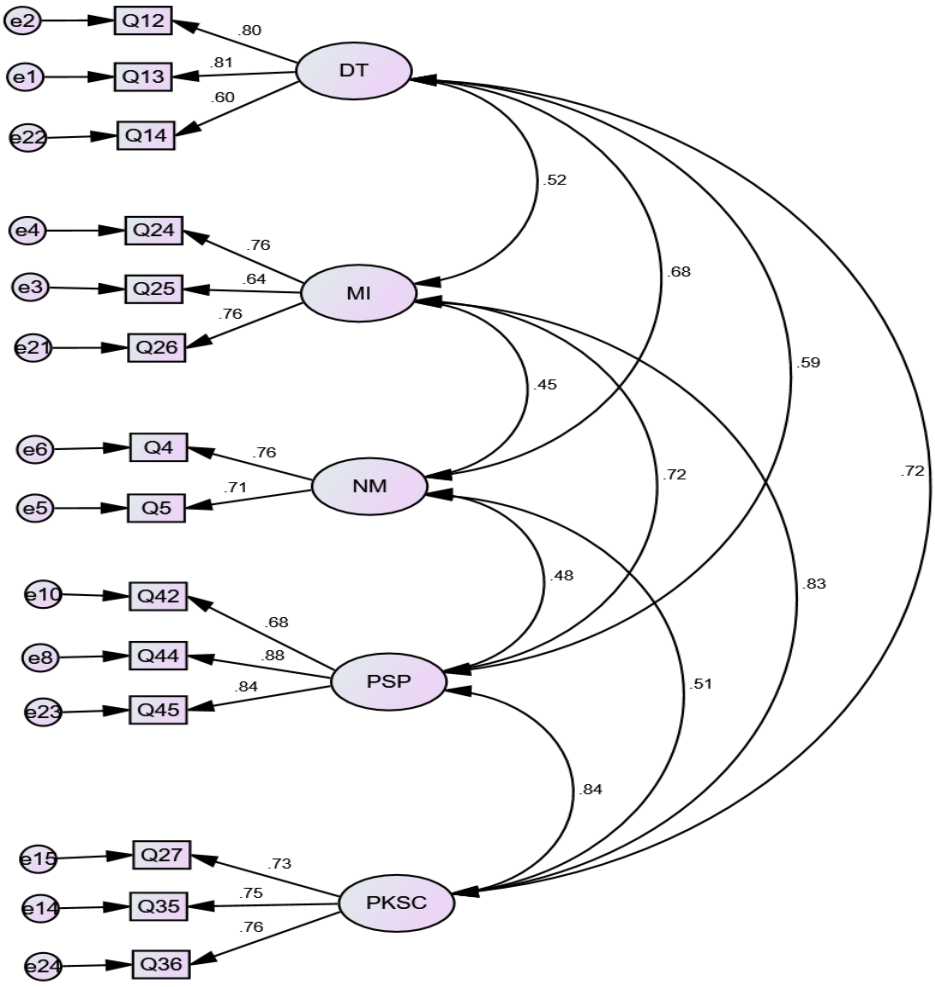

Figure 4:5: Final Model of HSQ Dimensions under Pivotal Attributes

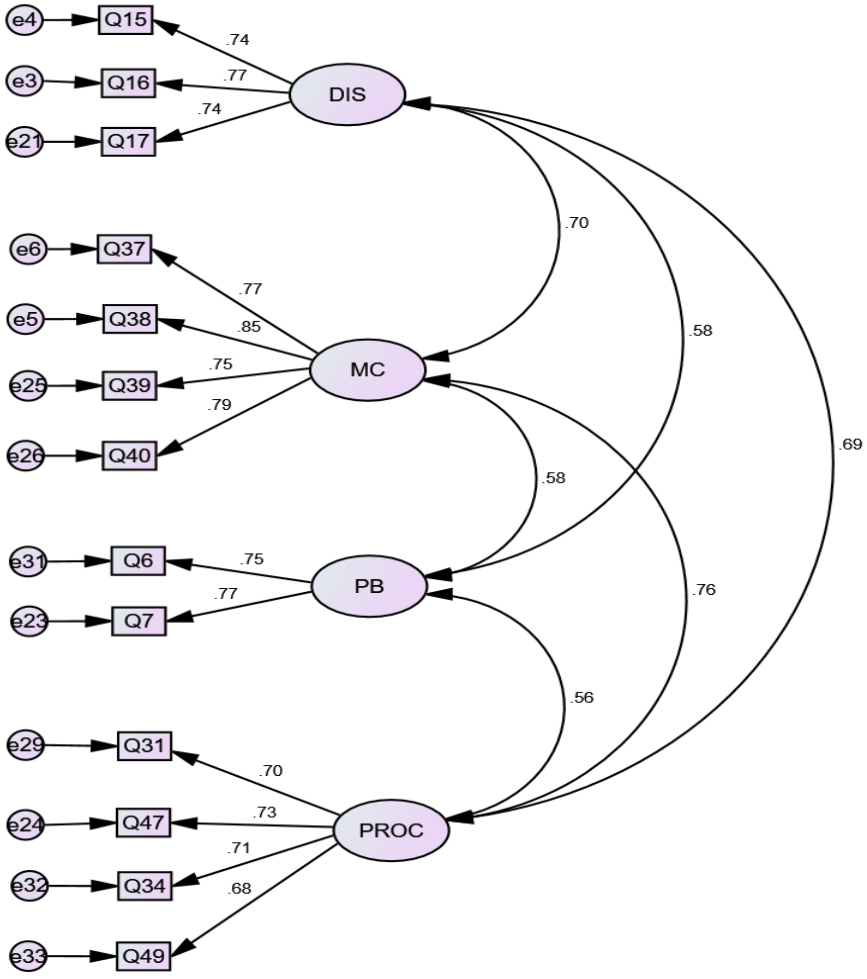

Figure 4:6: Final Model of HSQ Dimension under Core Attributes

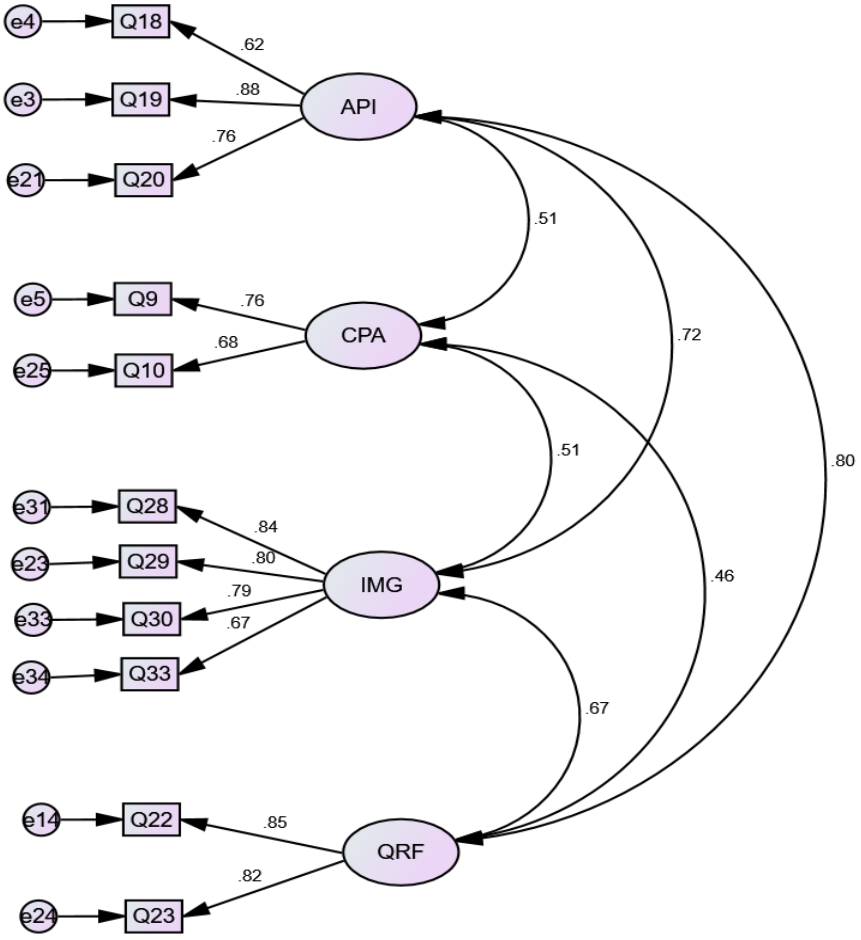

Figure 4:7: Final Model of HSQ Dimensions under Peripheral Attributes

4.5 QUANTITATIVE PHASE (MEASUREMENT AND ANALYSIS OF HOSPITAL SERVICE QUALITY)

4.5.1 Respondent Profile

A corporate chain of multispecialty hospitals was purposefully chosen for collecting data from the health care seekers and health care providers. This corporate chain has employed uniform service quality policy across its hospitals in India. The chain has well established internal service quality standards and protocols for measuring and evaluating service quality. We attempted to measure Hospital Service Quality of this Multispecialty Hospital using Dyadic Approach with the help of thirty-eight item questionnaire developed in the previous phase or research. Based in convenience sampling three hospitals, one in Tier I city and other two in Tier II cities in India were selected serving the purpose this study.

Hospital employees were approached through mutual acquaintances and were clarified the purpose of this study. They were assured of complete anonymity of health care providers and seekers. The survey was non-binding and respondent can participate in the survey on their own will. The participants were informed the purpose of this study and were assured that data is collected purely for the research purpose. Physical questionnaire was distributed to the participants of the survey during three months' period of January to March, 2020. Equal number of responses from health care seekers and health care providers were collected from hospitals in three different cities. A total of 60, 70 and 70 set of responses were collected from Tier I city, Tier II city I and Tier II city II respectively. The responses of health care seekers and health care providers with a sample of 200 respondents each were aggregated to give a complete picture of the chain of multispecialty hospital. The data was tabulated and analyzed using MS-Excel, 2016. The respondent profile for this phase has been shown in Table 4-14.

Table 4-14: Respondent Profile for GAP Analysis Phase

Classification	Health Care Service Seeker	Health Care Service Provider
Gender		
Male	131	60
Female	69	140
Age Group		
<20 yrs	13	6
21-30 yrs	31	126
31-40 yrs	68	41
41-50 yrs	46	26
51-60 yrs	37	1
>60 yrs	5	0
Highest Qualification		
Post-Graduate	63	76
Graduate	125	124
Intermediate	12	0
Employment Status		
Self Employed	53	***
Salaried	94	***
Homemaker	10	***
Student	25	***
Retired	15	***
Others	3	***
Role in Hospital		
Doctor	***	55
Nursing Staff	***	120
Para-Medical Staff	***	22
Hospital Manager/Administrator	***	3
Total Work Experience		
less than 5 years	***	68
6-10 years	***	72
11-15 years	***	40
greater than 15 years	***	20
Purpose of Hospital Visit		
Patient	109	***
Attendant	84	***
Donor	0	***
As visitor	7	***
Time of Last Visit		
Withing last 3 months	176	***
4-6 months back	19	***
7-12 months back	5	***

4.5.2 Gaps in Service Quality

The magnitude and direction of the measures of service quality are shown in the Table 4-15. Higher the magnitude of value written against the service quality dimension, higher in the gap in service quality. A negative value in quality dimension is a shortfall leading to inferior service. More negative values in the service quality dimension are greater cause of concern.

Table 4-15: Gaps in Service Quality Dmensions

Service Quality Dimensions	Service Quality Gap	Knowledge Gap	Perception Gap
Diagnosis and Treatment	-0.908	-0.040	-0.107
Medical Infrastructure	0.655	0.318	0.680
Need Management	0.393	0.498	0.630
Patient Safety and Privacy	-0.940	-0.145	-0.925
Professional Knowledge, Skills and Competence	-0.990	-0.453	-0.425
Discharge	0.228	0.462	-0.267
Medical Communication	-1.134	0.405	-1.090
Personnel Behaviour	-0.450	0.693	-0.773
Process	-1.538	0.418	-1.558
Amenities and Physical Infrastructure	-0.956	0.263	-1.345
Charges and Payment arrangement	-0.255	0.385	-0.510
Image	-0.520	0.363	-0.588
Quality of Room & Food	-0.718	-0.067	-0.568

4.5.3 Service Quality Gap

From health care seekers' perspective Service Quality Gap is calculated as a difference between the customer expectations and customer perception of service (see Figure 4:8). A negative value indicates inferior performance of the service as compared to the expectations. Performance of hospital on three dimensions of the service quality namely Medical Infrastructure (0.655), Need Management (0.393) and Discharge (0.228) met the expectations of the health care seekers. Process (-1.538), Medical Communication (-1.134) and Patient Safety & Privacy (-1.115) are three major areas of concern where the hospital performance fell short of expectations.

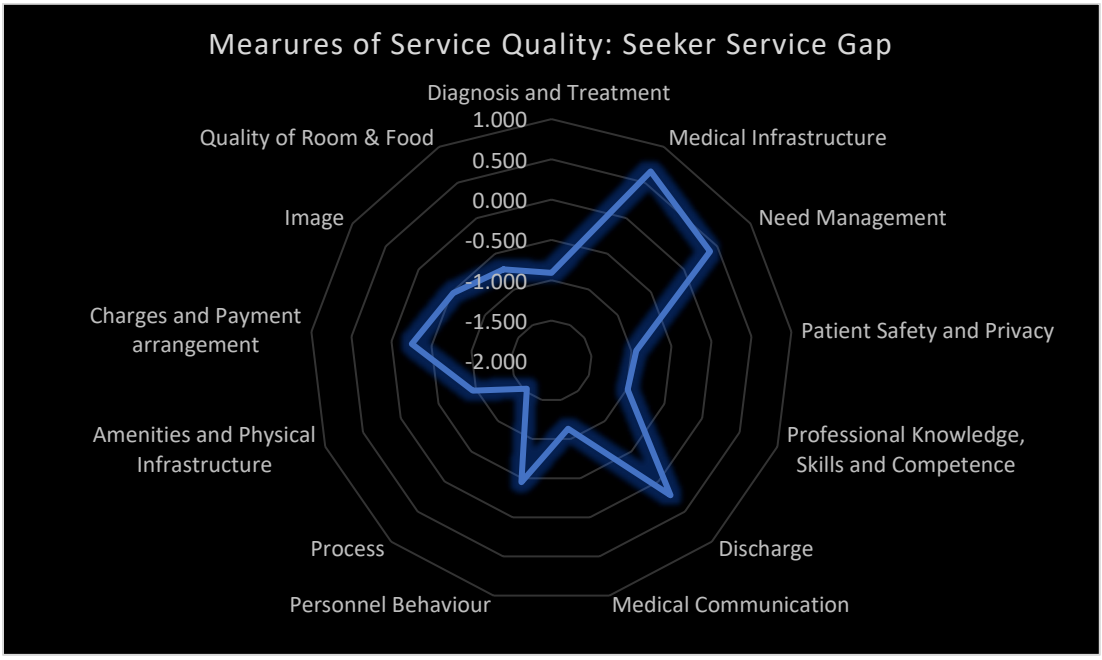

Figure 4:8: Measures of Service Quality (Seeker Side)

4.5.4 Knowledge Gap

Knowledge Gap is computed as a difference between customer expectations and management perception of customer expectations (see Figure 4:9). Professional knowledge, skills & competence (-0.453), Quality of room and food (-0.067), and Diagnosis and Treatment (-0.040) are major areas of concern for the hospital where health care providers' perception of patient's expectations falls short in terms of knowledge gaps. Dimensions like Personal behaviour (0.693), Need Management (0.498), and Process (0.418) had little knowledge gaps.

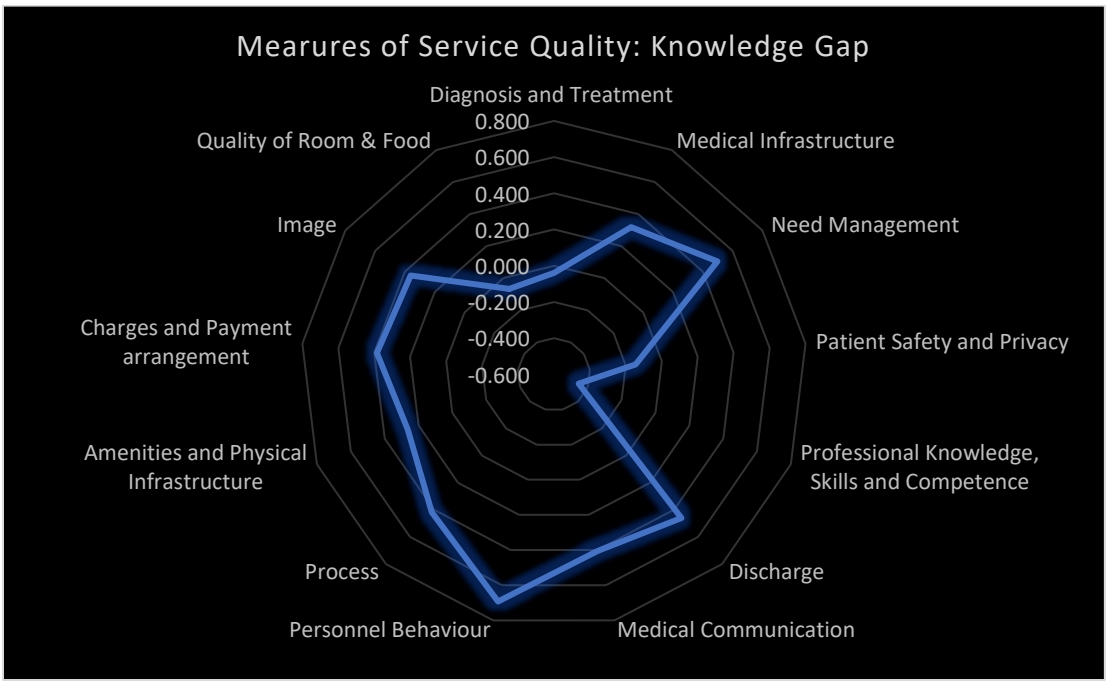

Figure 4:9: Measures of Service Quality (Knowledge Gap)

4.5.5 Perception Gap

Perception Gap is the difference between customer experiences and management perception of customer experiences (see Figure 4:10). Only two dimensions of service quality namely Medical infrastructure (0.680) and Need Management (0.630) had positive values for perception gap indicating little gap. Process (-1.558), Amenities & physical infrastructure (-1.345) and medical communication (-1.090) are three major areas of concern for the hospital among others.

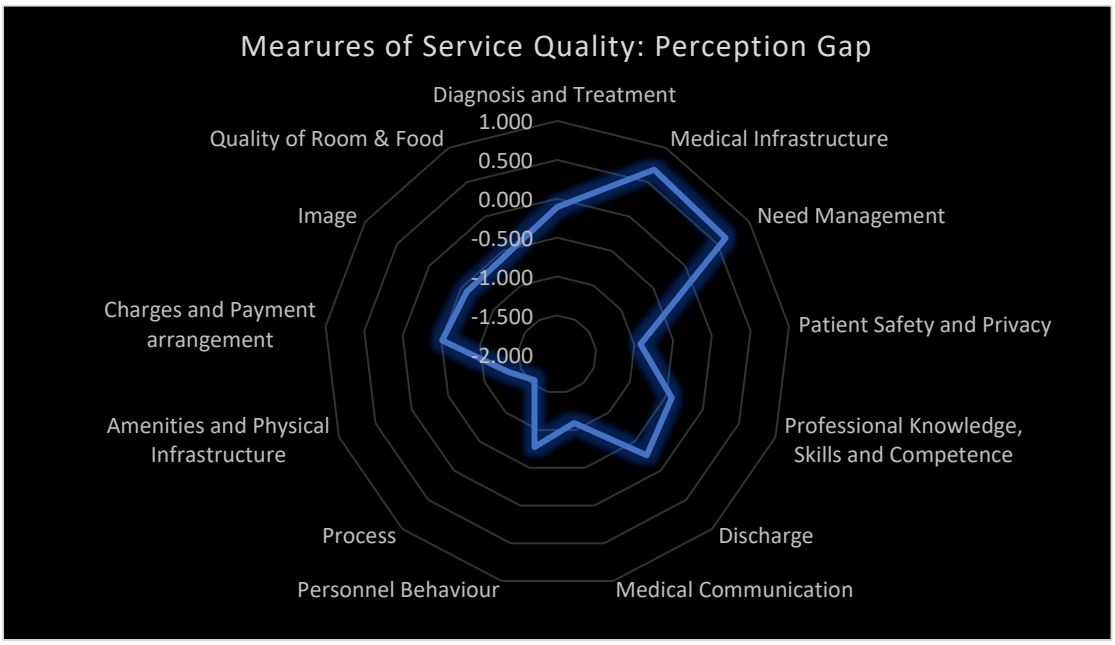

Figure 4:10: Measures of Service Quality (Perception Gap)

4.6 NEW PERSPECTIVE OF SERVICE QUALITY GAP (DYADIC APPROACH)

This section proposes a dyadic approach to measuring service quality in multispecialty hospitals in India. Gaps between consumer expectations and perception of performance is considered as an indicator of service quality. Gap model of service quality presents this as service gap. The magnitude and the direction of this gap is termed as service quality gap. Hospital services are professional services and require close interaction of health care seeker with both functional and technical aspects of care. The limited ability of the health care seeker to comprehend to these aspects and prejudiced customers' manifestation of what they have heard, believed and/or experienced, may lead to unrealistic picture of service quality gaps.

Service providers' perspective of what they think that health care seeker is expecting will affect the service design. It becomes equally important to understand nuances of quality from the supply side perspective i.e., providers of health care. Providers of care can understand and visualize which quality dimensions are needed based upon their assessment of pivotal attributes, which form the service itself. The gap between the service providers' perception of the customers' expectations and the customers' expectations will reveal the knowledge gap.

Health care seekers encounter service performance at each step of their wellness journey. The summation of these experiences leads to formation of perception of the service delivered. They will compare the perception of performance of the service providers based on the prior expectations that they had before availing the service. For an effective service delivery system there should not be any gap between the customer experiences and providers' perception of customer experiences. Perception gap will provide a chance to investigate delivery component of the service, when measured as a difference between perception of

health care seeker's experiences and health care providers' perception of service delivered.

The customer centric approach of the service quality evaluation will see quality from the health care seekers' perspective alone. Provider dominant hospital services leads to customer being a reluctant co-producer of service. Health seeker resorts to trust the care giver and adheres to protocol because of weak knowledge and understanding of the technical aspects of care. Inspite of knowing what customer expects on the thirteen dimensions of our instrument, a health care provider may not deliver the upon them. This will lead to failed or nearly indistinct improvement in the service quality in hospitals. The gap between knowing what is expected by the customers and self-perception of service delivery by the providers is a dominant logic, which has little literature support especially in health care. Therefore, service quality gap needs to be seen from the seekers and providers 'perspectives. Therefore, we propose a dyadic approach to measure hospital service quality (see Figure 4:11).

Consequently, to measure these gaps, an instrument incorporating the service quality dimensions from the viewpoint of health care seekers and providers is needed. We propose a thirty-eight-item single Dyadic Instrument of Service Quality Evaluation (DISQE) which can be used to measure and investigate service, knowledge, and perception gaps.

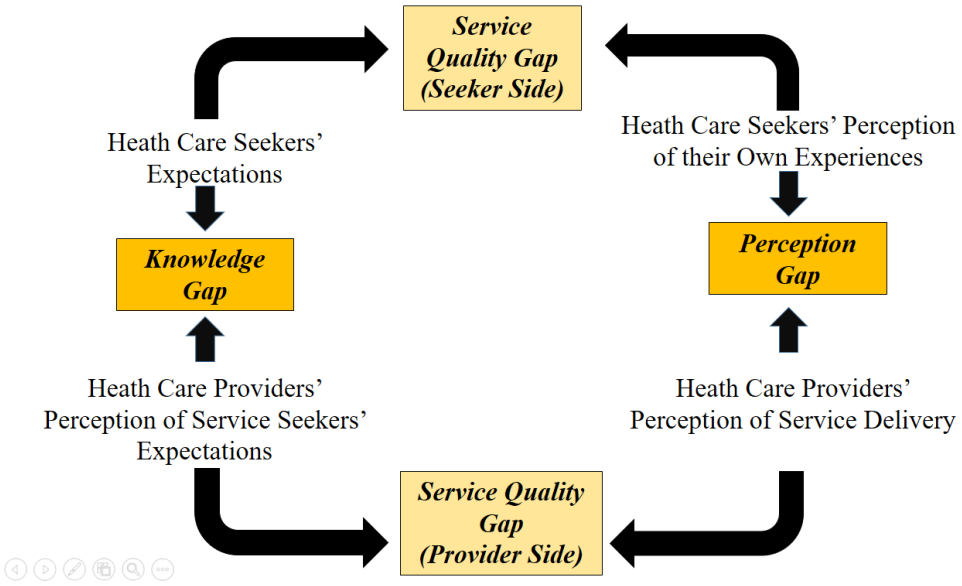

Figure 4:11: Dyadic Approach to Measure Hospital Service Quality

To apply dyadic approach, we need to measure Service Quality Gap from health care providers' perspective (see Figure 4:12). It is the difference between provider's perception of health care seeker's expectations and the providers' perception of health care seekers' experiences. From the figure, the major causes of concern are the dimensions of Diagnosis & Treatment (-0.762), Need Management (-0.735), and Medical communication (-0.449). Service Quality Dimension related to Discharge (0.033), Professional Knowledge Sills and Competence (-0.112), Patient Safety & Privacy (-0.121). and Amenities and physical infrastructure (0.126) are the areas of major concern.

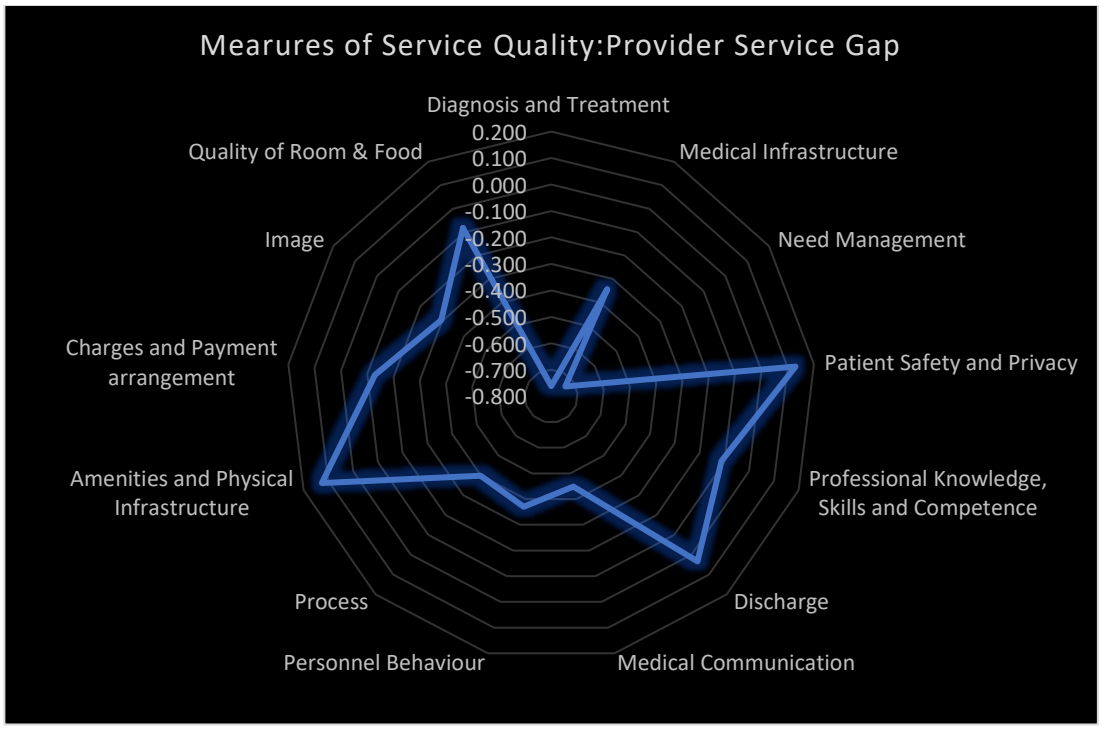

Figure 4:12:Measures of Service Quality Gap (Provider Side)

Figure 4:13 contrasts the differing perspectives of service quality from the health care seekers and providers' side. The inconsonant measures from two perspectives on the similar dimensions of service challenges only user-based evaluation of service quality. This supports our view that health care service quality evaluations require a dyadic approach rather than prevalent user-based perspective for measuring it. Significant gaps can be seen in dimensions of Need management, Medical infrastructure, Process, and Amenities & Physical Infrastructure.

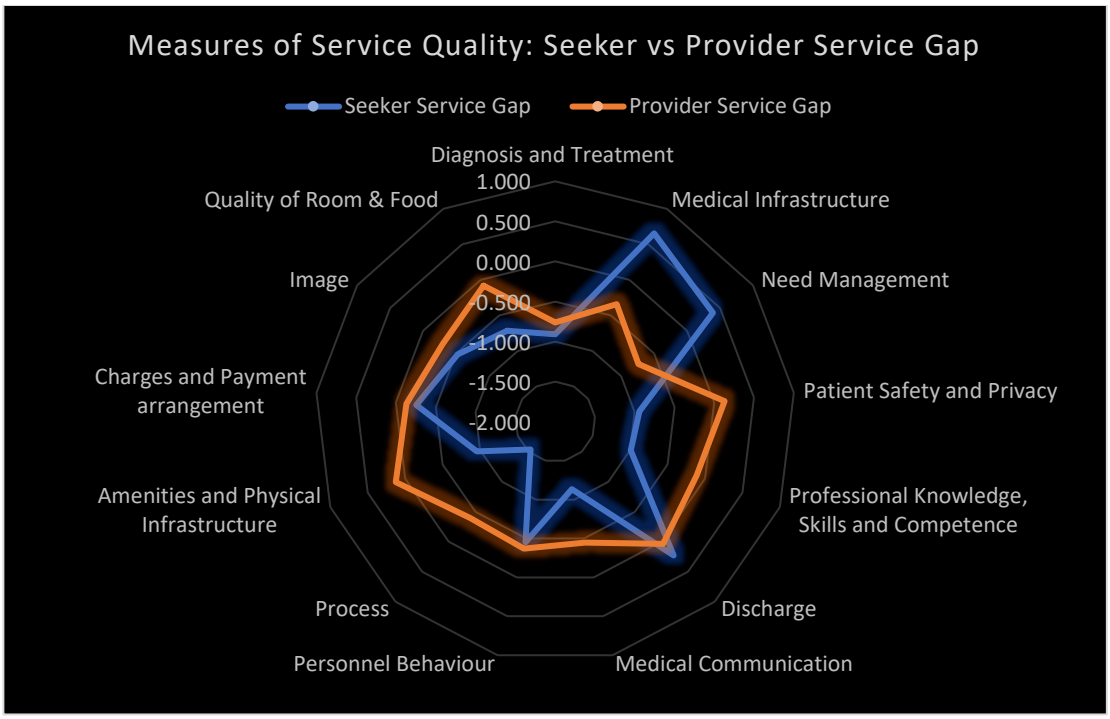

Figure 4:13: Measures of Service Quality Gap (Seeker vs Provider)

Consequentially, I propose the measures of service quality should not be considered as shown in Table 4-15, but as shown in Table 4-16.

Table 4-16:Dyadic Measures of Hospital Service Quality

Service Quality Dimensions	Service Quality Gap (Seeker Side)	Service Quality Gap (Provider Side)	Knowledge Gap	Perception Gap
Diagnosis and Treatment	-0.908	-0.762	-0.040	-0.107
Medical Infrastructure	0.655	-0.343	0.318	0.680
Need Management	0.393	-0.735	0.498	0.630
Patient Safety and Privacy	-0.940	0.130	-0.145	-0.925
Professional Knowledge, Skills and Competence	-0.990	-0.112	-0.453	-0.425
Discharge	0.228	0.033	0.462	-0.267
Medical Communication	-1.134	-0.449	0.405	-1.090
Personnel Behaviour	-0.450	-0.370	0.693	-0.773
Process	-1.538	-0.398	0.418	-1.558
Amenities and Physical Infrastructure	-0.956	0.126	0.263	-1.345
Charges and Payment arrangement	-0.255	-0.130	0.385	-0.510
Image	-0.520	-0.295	0.363	-0.588
Quality of Room & Food	-0.718	-0.083	-0.067	-0.568

5 CHAPTER 5: CONCLUSIONS

5.1 INTRODUCTION

This chapter addresses the take away from this research work by addressing the research problem and consequently the business problem in hand. The chapter begins with how this research adds value in measuring hospital service quality. It suggests how barriers in delivering service quality can be addressed for betterment of service production and delivery processes. Academic literature has been benefitted by this research by contribution to theory building, methodology adopted and methods applied in measuring hospital service quality. Towards the end of this chapter caution for interpretation of the results has been addressed for academicians and researchers. The penitential areas emanating out of this work, which warrant further research has been talked about.

5.2 INTERPRETATION OF MAJOR FINDINGS

People processing service like healthcare require simultaneous production and delivery of service. The service standards, settings and environment are source of value creation in multispecialty hospitals. Hospital service providers drives this value creation process. Service seeker on the other hand assess the value created in terms of service experiences. Simultaneous value creation and consumption emphasizes that both service providers and seekers must have shared perspective of care. Therefore, dyadic approach in measuring hospital service quality including viewpoints of both the service provider and seekers has been proposed as an outcome this research.

Now knowing the service expectations of hospital service seekers lead to value destruction. Hospital service seekers are usually layman who is usually unaware about what they are going to experience. Further, technical complexity of

healthcare service delivery and their inherent mental impalpability makes it difficult for hospital service seeker to assess the service properly. Therefore, quality assessments by hospital service seekers rely on either outcomes and/or other easy to evaluate surrogate measures. Service quality assessment only in terms of outcomes makes service providers vulnerable. However, service seekers' assessment of service quality on surrogate measures including amenities and physical infrastructure, image of hospital etc. is also flawed.

Supremacy of service provider in terms of production and delivery of service gives them an upper hand in evaluating quality. Traditionally, audits of patient records, adherence to protocols and procedures and various aspects of care including outcome in terms of mortality rates etc. are well established quality measurement methods. The mechanistic view of service lacks humanness in care. Need management and understanding customer expectations calls for taking deviations in service standards and design. This research attempts of bring together the discordant perspectives to a common understanding of what constitutes hospital service quality and how it can be measured using a dyadic approach.

From the organisation perspective better hospital service quality not only adds to profitability of private hospitals but also is a source of competitive advantage. The dyadic approach proposed in this research gives managerial insights in identifying gaps in the service from both service seekers and providers perspective. This study attempts to develop a questionnaire for measuring hospital service quality in Indian context and propose a dyadic approach for measuring service, knowledge and perception gaps. However, it must be understood that service quality dimensions are context specific and may vary with the hospital settings.

This study proposes thirteen dimensions on which hospital service quality can be measured from a dyadic perspective. The end product or the outcome of health care services is highly impacted by the quality dimensions of diagnosis and treatment,

medical infrastructure, need management, patient safety and privacy, and professional knowledge, skills and competence. Any health care system cannot operate without people, process and organisational structure. These dimensions form the core of such a delivery system. Medical communication, personal behaviour, process of service delivery and discharge are the important dimensions which fall under core attributes of hospital services. The pivotal and core attributes add value to the services however to differentiate one service from another the incidental extras or frills needed. These peripheral attributes in hospital services include amenities and physical infrastructure, charges and payment arrangements, image, and quality of room and food.

5.3 CONTRIBUTION TO LITERATURE

The contribution of any study is insignificant if it does not (i) expand theoretical horizons of measuring service quality (ii) improves upon the existing methodology or research adopted (iii) and adopts novel methods to understand the problem in hand. Due to high degree of intangibility and variability it is not easy to evaluate hospital service quality. Hospitals being a people-processing service industry, participation of both the service provider and service seeker is indispensable. Considering only customer centric view of quality will lead to evaluations which downplay the importance of provider's knowledge, competence and skills, treatment protocols and procedural guidelines. Humane aspects of care such as need management, physical privacy, empathy etc. are overlooked in the production-centric view of service quality showcasing providers' perspective. The diametrically opposite viewpoints of customers and providers in the professional exchanges need to be stitched together to provide a coherent view of hospital service quality.

5.3.1.1 Contribution to Theory

The conventional dimensions of hospital service quality have been debated a lot in literature. It seems that consonance on what constitutes hospital service quality is likely not to achieved in near future. Till then, it is widely being accepted that hospital service quality is context specific and may have differing meaning for the various stakeholders. Further, need from services differ among individuals including care givers and receivers. Given that the hospital services are provider dominant performances, concern arises for including of care receivers view in evaluation of service quality. Limited understanding of patients and their attendants about the medical aspects of care leads them to evaluate surrogate measures of service quality. These surrogate measures include people, processes, organisational structure and the frills associated with the hospital services. Customer emphasis on non-medical aspects of care softens the role of medical aspects of care. These service quality dimensions primarily deal with service quality variables related to output of care.

This study embraces the professional dyadic exchanges taking place between health care seekers and providers. Consequently, incorporating proposed thirteen dimensions of service quality establishes a comprehensive view of hospital service quality from the seeker and provider perspectives. This study contributes to theory by proposing classification of identified, all-inclusive thirteen dimensions of hospital service quality, segregated under three attributes pertaining to output of care; people, process, organisational structure; and incidental extras attached to the service.

5.3.1.2 Methodological Contributions:

Most of the previous studies lacks depth in involving views of both care givers and care seekers in identifying hospital service quality dimensions. The subtle psychology of individuals can only be uncovered qualitatively. This includes

individuals sharing their lived experiences with the researcher who derives meanings out it. There is a dearth of studies adopting qualitative methodology in understanding the feelings and experiences of the health care service seekers and providers related to service quality evaluations. Consequently, many researchers adopted survey-based approach, focused on replication of similar and repetitive hospital service quality dimensions from the service seekers' perspective.

On the other hand, this study uses exploratory sequential mixed method research design to develop an instrument for measuring hospital service quality incorporating dyadic perspective to measure it. The methodology adopted takes care of consonance is collective understanding and the agreement on the metrics for measuring the service quality between the care givers and receivers. Serving this objective, we conducted semi-structured interviews with the patients and attendants as well as doctors, nurses, para-medical staff, hospital administrators and managers. Template analysis was used to analyze textual data. The identified items on several dimensions of the hospital service quality were presented to the panel of comprising of health care seekers and providers. The underlying dimensions of the hospital service quality are identified from the stakeholders themselves i.e., the seekers and providers of care. Semi-structured interviews conducted with the patients and attendants reflect the view of seekers of care who are customers of hospital services. On the other hand, doctors, nurses, para-medical staff, hospital managers and administrators were approached to take a view from the providers' perspective. This study used Modified Delphi approach which includes an authoritative panel comprising of both the providers and seekers of care. The qualitative findings were subsequently validated by use of Confirmatory Factor Analysis to test the fit of the variables generated in the previous steps under thirteen dimension of hospital service quality.

5.3.1.3 Contribution to Method Applied

The orthodox approach of measuring a gap between customer expectations and perception of hospital service is commonly known as service quality gap. This logic falls short of including perspectives of the providers who are also participants in the service delivery process. The novel method of measuring service quality, referred to as dyadic approach, proposes to view hospital service quality from not only demand side but also from the supply side as well.

Service providers' understanding of the customer expectations is crucial for the effective delivery of hospital care. Measuring gap between the two will detect poor understanding of the patients' need. Service quality gap arising out of this, commonly known as knowledge gap, focusses on the demand side of service. Administering the instrument proposed in this study will help in knowing customer expectations in advance and understanding of these expectations by the service providers. Knowledge gap thus measured by use of this instrument will lead hospital managers and administrators to plug them by appropriate means before the service is delivered. On the other hand, measuring perception of customer experiences during their wellness journey and service providers' perception of their own performance concentrates on outcome measures of services. This gap commonly known as perception gap, diagnoses the quality issues in the performance of service. The sub-scales measuring knowledge gap and perception gap will also help to fill the void which has not been explained in the gaps model of service quality, as to how these gaps can be measured.

The professional exchanges taking place between the hospital service providers and receivers require a different paradigm. This approach includes measurement of not only conventional service quality gap but also the knowledge gap and perception gap. Further, dyadic approach not only looks at the service quality gaps from the patient's perspectives but also from the provider's perspective. From the supply side i.e., hospital service providers, there may be a gap between what care givers

know about customer expectations and contrasting it with their perception of their own performance. This gap indicates excess/shortfall in the effort exerted by the service providers in their performance. The end-to-end closure of all four gaps i.e., service quality gap (customer side and provider side), knowledge gap, and perception gap will encompass dyadic approach of service quality evaluation.

The proposed thirty-eight-item Dyadic Instrument of Service Quality Evaluation (DISQE) not only investigates service quality gaps in their breath but also identifies fail points in service delivery from supply and demand side of hospital services. Therefore, dyadic approach method gives better insight to the practitioners in analyzing service quality gaps.

5.4 LIMITATIONS OF THE STUDY

It is prudent to express the context in which this study may be seen, analyzed and replicated. The participants in our study expressed their views, beliefs, and feelings in context to multi-specialty hospitals and that too restricted to India. The generalization of the study to similar or relatively similar settings of providers in the India or abroad may be done with a caution. However, the data collected in our study at various stages have passed the established criteria of reliability and validity.

We cannot completely contradict the chances of respondent bias which could arise in qualitative and quantitative data collection phases. Although, we have ensured adequacy of sample size as per procedural and statistical guidelines, yet biasness in responses cannot be ruled out. The analysis techniques have their own pros and cons which can cause biasness in the outcomes; however, it has been ensured that the assumptions of the analysis techniques applied have been met.

The proposed dyadic approach of measuring service quality includes measurement of customer expectations and service providers' perception of these expectations (knowledge gap). Customer expectations may vary in context of the classification

of hospitals. Same patient visiting a public hospital, a charitable hospital or a private hospital may have differing expectations. Consequently, comparison of hospitals is not recommended based on consumer expectations using this instrument. However, patients' experiences in such hospitals and providers' perception of their own performances can be compared using the proposed questionnaire.

5.5 SCOPE FOR FUTURE RESEARCH

India witnesses a huge disparity in health seeking behaviour of individuals. Care seekers on one side faces awareness, accessibility, and affordability as challenge, while on the other hand health care system lack accountability and absence of skilled manpower. Significant work has been done in a couple of years to address these challenges, but still these areas need a lot of attention. Further, addressing know-do gap and the amount of effort exerted in the health care delivery system is a major challenge.

Universal health coverage in form of Aayushman Bharat scheme by GOI has been introduced for masses. This takes away a lot of financial burden from the health care seekers. Nonetheless, reports on widespread corruption in the health services is causing unnecessary financial burden on the revenues of GOI and thus compromising the efficiency and efficacy of such schemes. A fail proof system which avoids funneling out of money for needy could possibly be an answer to better health care system.

Control of drug prices, equipment and procedures by the government and quasi-governmental institutions is leading to drop in the revenue generated from the hospitals. Reports suggest that hospitals return are far less than the cost of capital employed. What could be possible impact of price regulation on the earnings of these hospitals? The debate on the profit motive and profiteering need to be taken up in rationally and mechanism could be evolved for secured earnings and affordable care.

6 CHAPTER 6: RELEVANT PUBLICATIONS FROM RESEARCH WORK

Publication 1:

Upadhyai, R, Jain A.K., Roy, H., Pant, V., (2017), **Decoding Healthcare Service Quality**, Conference proceedings in *International Conference on Management of Infrastructure*, in UPES, Dehradun, pp41-77. ISBN: 978-1-63535-614-4

Brief: The preliminary review of available published literature was carried out in this study. The paper concludes that the hospital service quality has significant bearing upon patient satisfaction and loyalty. There are many hospital service quality dimensions, however, five-dimensional construct proposed in the SERVQUAL instrument is most used and adapted. Only customer centric evaluation of health care service quality is very prominent in evaluating service quality with no emphasis on providers perspective.

Publication 2:

Upadhyai, R, Jain A.K., Roy, H., Pant, V., (2019) **A Review of Healthcare Service Quality Dimensions and their Measurement**, *Journal of Health Management*, Vol 21, Issue 1, pp 102-127 (SCOPUS, UGC Care II)

Brief: Classification of major healthcare service attributes identified in available published literature into medical and non-medical aspects of care is a foremost contribution of this research. It appeared that patient satisfaction may not be the right indicator of measuring service quality and further quality can be assessed in advance while satisfaction can only be measured after service performance. Additionally, hospital service quality requires dyadic perspective as both the

stakeholders include service providers and service seekers are involved in professional exchanges. Moreover, there is no gold standard available in measuring service quality that too when it should be measured from both the perspective.

Publication 3:

Upadhyai, R, Jain A.K., Roy, H., Pant, V., (2020) **Participants' Perspectives on Healthcare Service Quality In Multispecialty Hospitals: A Qualitative Approach**., *Journal of Health Management,* Vol 22, Issue 3, 1-20 (SCOPUS, UGC Care II)

Brief: Discordant perspective of care emerged prominently in this study. Healthcare practitioners and administrators believed that technical aspects of care are different from the service related or behavioural aspects of care. Several themes of hospital service quality emerged from the practitioners and patients/attendants' perspectives. Inspite of conflicting views this study reports the commonalities of service quality themes between the two and recurrent themes within. Several hospital service quality themes were classified under three attributes of service based on their degree of importance namely, pivotal, core and peripheral.

Publication 4:

Upadhyai, R, Upadhyai, N., Jain A.K., Roy, H., Pant, V., (2020) **Health Care Service Quality: A Journey So Far.**, *Benchmarking: An International Journal,* Vol 27, Issue 6, 1893-1927 (ABDC/B, Web of Science, SCOPUS, UGC Care II)

Brief: This study challenges the notion of assessing hospital service quality from the user-centric perspective. It states that the professional exchanges taking place in the hospital services requires a dyadic approach for measurement of service quality. The comprehensive literature review identifies determinants of healthcare service quality. Further, it explores various methodology, methods and models used

in measuring service quality in myriad settings. This study proposes to measure knowledge gap and perception gap apart from service gap in assessing end-to-end plugging of quality gaps.

Publication 5:

Upadhyai, R, Upadhyai, N., Jain A.K., Chopra, G., Roy, H., Pant, V., (2020) **Development and Validation of a Scale for Measuring Hospital Service Quality: A Dyadic Approach**, *Journal of Health Research,* (DOI 10.1108/JHR-08-2020-0329) (SCOPUS, UGC Care II)

Brief: In continuation, this paper builds upon the finding of the previous research studies to prepare a scale for measuring hospital service quality. The dimensions borrowed from the qualitative semi structured interviews were refined using Modified Delphi and Confirmatory Factor Analysis. The final instrument with thirteen service quality dimensions spread across thirty-eight statements tested fairly well on various reliability and validity parameters. The proposed Dyadic Instrument of Service Quality Evaluation (DISQUE) for measuring hospital service quality in multispecialty hospital using dyadic approach is the major outcome of this study.

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Appendices:

(i) Appendix A: Interview Protocol for Health Care Providers:

Hello Sir/Madam, I am Raghav Upadhyai. I am a PhD research scholar with University of Petroleum & Energy Studies. I am conducting an academic research on measurement of service quality in multispecialty hospitals.

We are meeting here today because of your experience working with multispecialty hosp am thankful that you have agreed for this interview to share your thoughts and perspective

I'll appreciate your full participation to help me understand the dimensions of service quality at your workplace. However, you may choose, not to respond, to any question during the course of this interview.

I assure you that everything that you will tell me today will be kept confidential and will be aggregated with other interviews conducted by me. No name or identifying information will be associated to the responses or appear on any presentation or report.

I will be using a recording device in this interview to ensure that I preserve your valuable opinions and perspectives.

Do you have any questions?

(In case of recording consent is not given: "*I will rely on note taking exclusively during this interview"*)

(Respondent's Demographic will be noted before the commencement of the interview)

Demographics:

Name:
Age Group: 20-30; 31-40; 41-50; >51

Highest Qualification:

Specialization (if any):

Respondent Profile
What is your role in this hospital?
Are you salaried of part owner in this hospital?
How long have you been working here?
How many years of work experience you have in this profession?
Quality in Care
Tell me about your experiences of working with this hospital.

Probe:

Share some incidents which you would like me to know.

What according to you is quality in healthcare?

How can quality be delivered in the process of care?

Tell me about some healthcare quality related protocols and initiatives taken by your hospital

To what extent these initiatives have been successfully implemented in your hospital

Probe:

Share some incidents which you would like me to know.

Given an opportunity, what else can be done related to quality?

Would you like to share your experiences of healthcare related protocols and initiative taken in your previous organizations?

Would you like to share some salient differences (if any) in the healthcare quality related protocols and initiatives in your current and previous organizations?

Aspects of Care

What are your views on knowledge, skills and judgment of medical practitioners in delivering care?

What quality parameters can be used to assess the outcome of care?

Tell me about the effect of information exchange, friendliness, attentiveness and developing understanding and collaboration with the patient, on quality of care.

Tell me something about the facilities and physical environment of the healthcare setting on the quality of care given.

Share your views regarding effect of various processes like making appointments, admission, billing, discharge etc. on the quality of care.

How quality of care and financial affordability related to each other?

What are your views regarding linkage of basic human needs like cleanliness, privacy, confidentiality, good amenities with quality of care?

Assessment of care

What according to you are or should be indicators for measurement of service quality in healthcare?

On a scale of 1-10 (1 being the least and 10 being the highest) how will you rate contemporary multispecialty hospitals in terms of healthcare service quality?

On a scale of 1-10 (1 being the least and 10 being the highest) do you believe that poor service quality in multispecialty hospitals leads to low customer satisfaction?

On a scale of 1-10 (1 being the least and 10 being the highest) how good enough “patient satisfaction” is an indicator of service quality in healthcare?

Gap

What according to you are the expectations of patients and their attendants from the caregivers?

On a scale of 1-10 (1 being the least and 10 being the highest) do you think care givers are able to assess the needs of the patients?

On a scale of 1-10 (1 being the least and 10 being the highest) do you think patients' experiences the care in the same way as intended by the care givers?

Is there anything else you would like me to know that might be helpful to me?

Do you have anything that you would like to know?

Thank you, sir/madam, for sparing your time, and sharing your views with me.

(ii) Appendix B: Interview Protocol for Health Care Seekers

Hello Sir/Madam, I am Raghav Upadhyai. I am a PhD research scholar with University of Petroleum & Energy Studies. I am conducting an academic research on measurement of service quality in multispecialty hospitals.

We are meeting here today to understand your experiences with multispecialty hospital. I am thankful that you have agreed for this interview to share your thoughts and perspectives.

I'll appreciate your full participation to help me understand the dimensions of service quality at multispecialty hospital. However, you may choose, not to respond, to any question during the course of this interview.

I assure you that everything that you will tell me today will be kept confidential and will be aggregated with other interviews conducted by me. No name or identifying information will be associated to the responses or appear on any presentation or report.

I will be using a recording device in this interview to ensure that I preserve your valuable opinions and perspectives.

Do you have any questions?

(In case of recording consent is not given: "*I will rely on note taking exclusively during this interview"*)

(Respondent's Demographic will be noted before the commencement of the interview)

Demographics:

Name:
Age Group: 20-30; 31-40; 41-50; >51

Profession: Salaried/Self Employed/Homemaker/Others

Highest Qualification:

Last visit to multispecialty hospital: <3 months; <6 months; <1 year; > 1year

Purpose of Visit: Self Diagnostic/Medication/Operative; As Attendant with patient

(If Self Diagnostic/Medication/Operative) Department Visited: OPD / IPD

Specialty Consulted: Medicine /Skin /ENT /Ortho /G & Obs. /Gastro /Neuro /Surgery /ICU / Others (Pls. specify)

Quality in Care

Tell me about your experiences of visiting a multispecialty hospital.

Probe:

Share some incidents which you would like me to know.

What according to you is quality in healthcare?

How can quality be delivered in the process of care?

Tell me about some healthcare quality related initiatives taken by the multispecialty hospital you had visited.

Probe:

Share some incidents which you would like me to know.

Given an opportunity, what else can be done related to quality in this multispecialty hospital?

Would you like to share your experiences of healthcare related initiatives taken in any other multispecialty hospital you had visited?

Would you like to share some salient differences (if any) in the healthcare quality related initiatives in the last visited and any other multispecialty hospital?

Aspects of Care

1. What are your views on knowledge, skills and judgment of medical practitioners in delivering care?

What quality parameters can be used to assess the outcome of care?

Tell me about the effect of information exchange, friendliness, attentiveness and developing understanding and collaboration with the patient, on quality of care.

Tell me something about the facilities and physical environment of the healthcare setting on the quality of care given.

Share your views regarding effect of various processes like making appointments, admission, billing, discharge etc. on the quality of care.

How quality of care and financial affordability related to each other?

What are your views regarding linkage of basic human needs like cleanliness, privacy, confidentiality, good amenities with quality of care?

Assessment of care

What according to you are or should be indicators for measurement of service quality in healthcare?

On a scale of 1-10 (1 being the least and 10 being the highest) how will you rate current multispecialty hospitals in terms of healthcare service quality?

On a scale of 1-10 (1 being the least and 10 being the highest) do you believe that poor service quality in multispecialty hospitals leads to low customer satisfaction?

On a scale of 1-10 (1 being the least and 10 being the highest) how good enough “patient satisfaction” is an indicator of service quality in healthcare?

Gap

What according to you are expectations of patients and their attendants from the caregivers?

On a scale of 1-10 (1 being the least and 10 being the highest) do you think care givers are able to assess the needs of the patients?

On a scale of 1-10 (1 being the least and 10 being the highest) do you think patients' experiences the care in the same way as intended by the care givers?

Is there anything else you would like me to know that might be helpful to me?

Do you have anything that you would like to know?

Thank you, sir/madam, for sparing your time, and sharing your views with me.

(iii) Appendix C: Questionnaire for Delphi Round 1

This Round of Delphi list down some statements identified from available studies and face-to-face interviews conducted by me with patients, attendants and healthcare professionals on Service Quality in Multispecialty Hospitals. You will see a scale beside each statement. The scale is numbered 1 to 5 where 1 being 'strongly disagree' (*Insignificantly relevant, Low priority, has little impact, not a determining factor to major issue*) and 5 being 'strongly agree' (*A most relevant point, first order priority, Has direct bearing on major issues*).
Please rate by **circling any number (1-5)** against each statement which you feel that it describes *Service Quality in Multispecialty Hospitals in India.*

S No.	**Statement**	**Rating**				
	State your level of agreement/disagreement with each statement by circling the appropriate number mentioned against each statement	**Strongly Disagree**	**Disagree**	**Don't Know**	**Agree**	**Strongly Agree**
A1	It doesn't take much time to get appointment with Doctor	1	2	3	4	5
A2	The process of admission is convenient for patient/attendant	1	2	3	4	5
A3	Appointment in the hospital can be taken over phone	1	2	3	4	5
A4	It is easy to take appointment with the doctor	1	2	3	4	5
A5	The hospital has operating hours convenient to all its patients	1	2	3	4	5
B1	Hospital layout map is displayed at convenient locations for guidance of patient/attendant	1	2	3	4	5
B2	Hospital staff make patient/attendant understand the prescription	1	2	3	4	5
B3	Hospital staff provides assistance in handling patients	1	2	3	4	5
B4	Hospital staff provides guidance in the process of care to the patient/attendant	1	2	3	4	5
C1	Doctor(s) are available in the hospital whenever needed	1	2	3	4	5
C2	Doctor(s) are available in the hospital	1	2	3	4	5
C3	Doctor(s) visit the patient whenever called	1	2	3	4	5
C4	Hospital services are available to the patients all the time	1	2	3	4	5
C5	Patient/attendant can check the availability of the Doctor in the Hospital	1	2	3	4	5
D1	Doctor(s) and nursing staff are caring	1	2	3	4	5
D2	When you have a problem, the hospital shows a sincere interest in solving it	1	2	3	4	5
D3	The hospital has personnel who give you personal attention	1	2	3	4	5
D4	The personnel of the hospital understand patient's specific needs	1	2	3	4	5

D5	The administrative and support staff responds quickly to the patient/attendant	1	2	3	4	5
D6	Doctor(s) and nursing staff are friendly in their behaviour	1	2	3	4	5
D7	Personnel in the hospital are consistently courteous with you	1	2	3	4	5
D8	Doctor(s) and nursing staff behaviour builds trust (belief and faith) in patient/attendant	1	2	3	4	5
D9	Doctor(s) provide hope to the patient/attendant	1	2	3	4	5
D10	The behaviour of personnel in the hospital instils confidence in you	1	2	3	4	5
D11	You feel safe in your dealings with the hospital	1	2	3	4	5
D12	Doctor(s) and nursing staff listens with an open mind	1	2	3	4	5
D13	Doctor(s) and nursing staff speak in the language that patient/attendant can understand	1	2	3	4	5
D14	Doctors(s) counsel(s) by providing clarity about the medical condition	1	2	3	4	5
D15	Doctor(s) and nursing staff are attentive when patient/attendant talks with them	1	2	3	4	5
D16	Doctor(s) and Nursing staff addresses all queries raised by patient/attendant	1	2	3	4	5
D17	Doctor(s) and Nursing staff addresses anxiety of patient/attendant	1	2	3	4	5
E1	Hospital ensures convenient billing and payment process	1	2	3	4	5
E2	Hospital ensures transparency in billing process	1	2	3	4	5
E3	Hospital has payment arrangement with insurance companies and institutions	1	2	3	4	5
E4	Hospital has provision of credit back facility in bill for unutilized articles of patient	1	2	3	4	5
F1	Doctor(s) diagnose the disease correctly	1	2	3	4	5
F2	Doctor(s) diagnose the causes of disease in reasonable time	1	2	3	4	5
F3	Doctor(s) prescribe right treatment for the disease diagnosed	1	2	3	4	5
F4	Doctor(s) starts the treatment in time	1	2	3	4	5
F5	Doctor(s) recommend timely investigations	1	2	3	4	5
G1	Hospital inform Do's and Don’ts to patients/attendants at the time of discharge	1	2	3	4	5
G2	At the time of discharge hospital provides proper prescription which patient/attendant can understand	1	2	3	4	5
G3	Hospital informs follow-up date at the time of discharge	1	2	3	4	5
H1	Amenities and physical infrastructure provide a sense of comfort to the patients	1	2	3	4	5
H2	Amenities and physical infrastructure at the hospital are clean	1	2	3	4	5

H3	Hospital uses disinfectants for cleanliness	1	2	3	4	5
H4	Materials associated with service (such as pamphlets or statements) are visually appealing	1	2	3	4	5
H5	Adequate number of beds are available to accommodate each patient's attendant	1	2	3	4	5
H6	Hospital has adequate sitting arrangement for the patients/attendants	1	2	3	4	5
I1	Hospital has in-house canteen for attendants	1	2	3	4	5
I2	Hospital provides customized food to the patients	1	2	3	4	5
I3	Hospital provides quality food to its patients	1	2	3	4	5
J1	Hospital has decent quality rooms	1	2	3	4	5
J2	Hospital rooms are well ventilated	1	2	3	4	5
J3	Hospital uses clean bed sheets	1	2	3	4	5
K1	Hospital has in-house medical laboratories and diagnostic facilities	1	2	3	4	5
K2	Hospital has in-house pharmacy	1	2	3	4	5
K3	Hospital has modern / latest medical equipment and instruments	1	2	3	4	5
L1	Doctor(s) has/have reasonable experience in dealing with patient's medical condition	1	2	3	4	5
L2	Doctor(s) has/have strong reputation	1	2	3	4	5
L3	Doctor(s) at this hospital has/have credible image	1	2	3	4	5
M1	Hospital has fairly good experience handling operative cases.	1	2	3	4	5
M2	Hospital has good patient reviews and ratings	1	2	3	4	5
M3	Hospital has good success rate in treating patients	1	2	3	4	5
M4	Hospital has renowned Doctors on its panel	1	2	3	4	5
N1	Hospital charges no/reasonable fees from needy patients	1	2	3	4	5
N2	Hospital provides care at justifiable cost	1	2	3	4	5
O1	Nursing staff and attendant(s) show professional integrity towards their work	1	2	3	4	5
O2	Hospital encourages peer learning	1	2	3	4	5
O3	Hospital has provision of employee training	1	2	3	4	5
O4	Hospital provides the facility of an interpreter	1	2	3	4	5
O5	The hospital gets things right the first time	1	2	3	4	5
O6	The hospital insists on error-free records	1	2	3	4	5

O7	Hospital has internal coordination within various departments	1	2	3	4	5
O8	Personnel at the hospital are neat in appearance	1	2	3	4	5
O9	Hospital has proper waste disposal facility/process	1	2	3	4	5
O10	Hospital has received quality accreditation	1	2	3	4	5
P1	Doctor(s) has/have professional knowledge, skills and competence	1	2	3	4	5
P2	Nursing and para-medical staff have professional knowledge, skills and competence	1	2	3	4	5
Q1	Doctor(s) explain the possible complication(s)/side effect(s) of treatment to patient/attendant	1	2	3	4	5
Q2	Doctor(s) explain the time to get good outcome of treatment to patient/attendant	1	2	3	4	5
Q3	Doctor(s) communicate the real condition to the patient/attendant	1	2	3	4	5
Q4	Doctor(s) explain the disease and its treatment to the patient/attendant	1	2	3	4	5
R1	The treatment leads to signs of early healing / recovery	1	2	3	4	5
S1	Hospital ensures physical privacy for the patient	1	2	3	4	5
S2	Hospital ensures that the patient information is kept private	1	2	3	4	5
T1	Doctor(s) give reasonable consultation time to patients	1	2	3	4	5
T2	Doctor's prescription carries all necessary details	1	2	3	4	5
T3	Doctor(s) do not prescribe unnecessary medication	1	2	3	4	5
T4	Doctor(s) do not recommend unnecessary medical investigations	1	2	3	4	5
T5	Waiting time at billing counter is less	1	2	3	4	5
T6	Waiting time for collection of medicines and other articles at Pharmacy is less	1	2	3	4	5
T7	Doctor(s) and nursing staff follow hygiene during the process of care	1	2	3	4	5
T8	Hospital minimizes the chance of Hospital Acquired Infections and Injuries to patients	1	2	3	4	5
T9	Patient Safety is at the heart of the Hospital	1	2	3	4	5
T10	Doctors and Nursing staff at the hospital are not overloaded with patients	1	2	3	4	5
U2	Personnel in the hospital give you prompt services	1	2	3	4	5
U3	The hospital provides medical and associated services at the time it promises to do so	1	2	3	4	5
U4	Hospital conducts timely medical investigations	1	2	3	4	5
U5	Hospital timely generates the investigation reports	1	2	3	4	5

U6	It doesn't take much time to fill the consent form for the medical procedures to be carried out	1	2	3	4	5
U7	Patient is given immediate medical attention whenever needed	1	2	3	4	5
U8	The process of discharge does not take much time	1	2	3	4	5
V1	Hospital ensures silence in the waiting areas	1	2	3	4	5
V2	There is less crowding at the waiting area	1	2	3	4	5
V3	There is separate waiting area for patients and for their attendants	1	2	3	4	5
V4	Waiting area is large enough to accommodate all patients and attendants	1	2	3	4	5

(iv) Appendix D: Cover Letter Delphi Round 2

Round 2

Thank you for returning the previous round of Delphi questionnaire. You will now find enclosed the next round of Delphi Questionnaire which includes details on the research topics that you have been involved in identifying and rating in relation to importance. Please read the instructions carefully and complete the Delphi Questionnaire as fully as you can.

You will see some columns beside each statement.

Column one shows your own individual response (Your Rating) given in round 1 against each statement.

Column two shows the group response (Group Median Rating) to the statement.

Column three is blank and is provided as an opportunity for you to reconsider your original response (Revised Rating if any) in the context of the group response to each statement. Please note that you do not have to change your original response if you do not wish to.

If you wish to change your response, please check the option which you feel best describes how important the statement is for ensuring Service Quality in Multispecialty Hospitals in India. This will appear as a number which corresponds the same scale used in previous round as outlined below.

Not at all Important

Slightly Important

Somewhat Important

Very Important

Extremely Important

Column four require you to select whether the statement directly relates to measurement of health care service quality in multispecialty hospitals.

Column five require you to select whether the statement is essential for measurement of health care service quality in multispecialty hospitals.

(v) Appendix E: Questionnaire for CFA Round

Hospital Service Quality Questionnaire

This survey is a part of my research work on Hospital Service Quality. The purpose of this survey is to prepare a questionnaire that can measure health care service quality in multi-specialty hospitals in India. The data collected from this survey will be used purely for academic purpose. The responses collected from you will be aggregated with other responses and complete anonymity of respondents will be ensured. This questionnaire is not binding upon you and you may opt out of this survey at any point of tine. It will take not more that 15-20 minutes to completely fill the questionnaire. I will be thankful to you for sparing your valuable time filling this questionnaire. In case of any doubt/query I will be pleased to offer assistance over phone.

Thanks !

Raghav Upadhyai (8126631301)

THE FOLLOWING SET OF PREVIOUSLY IDENTIFIED STATEMENTS THAT MAY RELATE TO SERVICE QUALITY MEASUREMENT IN MULTI-SPECIALTY HOSPITALS.

(I) A RATING of 1 will indicate that this statement CAN NOT MEASURE Health Care Service Quality.

(ii) A RATING of 7 will indicate that this statement CAN MEASURE Health Care Service Quality.

(iii) You may indicate your choice anywhere between 1 to 7

Section A

Statements	(Statement **Can Not Measure** Health Care Service Quality ←						(Statement **Can Measure** Health Care Service Quality →
1 It doesn't take much time to get appointment with Doctor	1	2	3	4	5	6	7
2 The process of admission is convenient for patient/attendant	1	2	3	4	5	6	7
3 Hospital staff provides assistance in handling patients	1	2	3	4	5	6	7
4 Doctor(s) are available in the hospital whenever needed	1	2	3	4	5	6	7
5 Doctor(s) are available in the hospital	1	2	3	4	5	6	7
6 Doctor(s) and nursing staff behaviour builds trust (belief and faith) in patient/attendant	1	2	3	4	5	6	7
7 Doctor(s) provide hope to the patient/attendant	1	2	3	4	5	6	7
8 Doctor(s) and nursing staff speak in the language that patient/attendant can understand	1	2	3	4	5	6	7
9 Hospital ensures convenient billing and payment process	1	2	3	4	5	6	7
10 Hospital ensures transparency in billing process	1	2	3	4	5	6	7
11 Hospital has payment arrangement with insurance companies and institutions	1	2	3	4	5	6	7

12 Doctor(s) diagnose the disease correctly	1	2	3	4	5	6	7
13 Doctor(s) starts the treatment in time	1	2	3	4	5	6	7
14 Doctor(s) recommend timely investigations	1	2	3	4	5	6	7
15 Hospital inform Do's and Don'ts to patients/attendants at the time of discharge	1	2	3	4	5	6	7
16 At the time of discharge hospital provides proper prescription which patient/attendant can understand	1	2	3	4	5	6	7
17 Hospital informs follow-up date at the time of discharge	1	2	3	4	5	6	7
18 Amenities and physical infrastructure provides a sense of comfort to the patients	1	2	3	4	5	6	7
19 Amenities and physical infrastructure at the hospital are clean	1	2	3	4	5	6	7
20 Hospital uses disinfectants for cleanliness	1	2	3	4	5	6	7
21 Hospital has decent quality rooms	1	2	3	4	5	6	7
22 Hospital rooms are well ventilated	1	2	3	4	5	6	7
23 Hospital uses clean bed sheets	1	2	3	4	5	6	7
24 Hospital has in-house medical laboratories and diagnostic facilities	1	2	3	4	5	6	7
25 Hospital has in-house pharmacy	1	2	3	4	5	6	7
26 Hospital has modern / latest medical equipment and instruments	1	2	3	4	5	6	7
27 Doctor(s) has/have reasonable experience in dealing with patient's medical condition	1	2	3	4	5	6	7
28 Hospital has fairly good experience handling operative cases.	1	2	3	4	5	6	7
29 Hospital has good success rate in treating patients	1	2	3	4	5	6	7
30 Hospital has renowned Doctors on its panel	1	2	3	4	5	6	7
31 Nursing staff and attendant(s) show professional integrity (obligation to and respect for rules and standards) towards their work	1	2	3	4	5	6	7
32 Hospital has internal coordination within various departments	1	2	3	4	5	6	7
33 Personnel at the hospital are neat in appearance	1	2	3	4	5	6	7
34 Hospital has proper waste disposal facility/process	1	2	3	4	5	6	7
35 Doctor(s) has/have professional knowledge, skills and competence	1	2	3	4	5	6	7
36 Nursing and para-medical staff have professional knowledge, skills and competence	1	2	3	4	5	6	7
37 Doctor(s) explain the possible complication(s)/side effect(s) of treatment to patient/attendant	1	2	3	4	5	6	7
38 Doctor(s) explain the time to get good outcome of treatment to patient/attendant	1	2	3	4	5	6	7
39 Doctor(s) communicate the real condition to the patient/attendant	1	2	3	4	5	6	7
40 Doctor(s) explain the disease and its treatment to the patient/attendant	1	2	3	4	5	6	7

41 Hospital ensures physical privacy for the patient	1	2	3	4	5	6	7
42 Hospital ensures that the patient information is kept private	1	2	3	4	5	6	7
43 Doctor's prescription carries all necessary details	1	2	3	4	5	6	7
44 Doctor(s) and nursing staff follow hygiene during the process of care	1	2	3	4	5	6	7
45 Hospital minimizes the chance infection and injuries while hospitalized.	1	2	3	4	5	6	7
46 Hospital conducts timely medical investigations	1	2	3	4	5	6	7
47 Hospital timely generates the investigation reports	1	2	3	4	5	6	7
48 It doesn't take much time to fill the consent form for the medical procedures to be carried out	1	2	3	4	5	6	7
49 Patient is given immediate medical attention whenever needed	1	2	3	4	5	6	7

50 Are you working/associated with a hospital?	Yes	No
	(Please answer Questions in Section C Only)	(Please answer Questions in Section B Only)

Section B

S1 When was the last time you visited a Multi-Specialty hospital?	<3months back	4-6 months back	6-12 months back	> 12months back		
S2 You visited the Multi-Specialty Hospital	As a Patient	As an Attendant	As a visitor to meet a patient			
S3 Name of the City where you had visited Multi-Specialty Hospital						
S4 Age Group in which you belong to	<20 yrs.	21-30 yrs.	31-40 yrs.	41-50 yrs.	51-60 yrs.	>60 yrs.
S5 Your Occupation	Salaried	Self Employed	Homemaker	Retired	Student	Others
S6 Your Highest Qualification						

Section C

P1 Associated/Working in hospital as	Doctor	Para-Medical Staff	Hospital Management / Administration	Other
P2 Your Department/Area/Field of Specialization (In case of Doctors and Para-Medical staff only) (Please mention "NA" is not applicable to you)				
P3 Your total years of professional work experience				
P4 Name of the city where the Multi-Specialty Hospital in which you are working is located.				

P5 Age Group in which you belong to	<20 yrs.	21-30 yrs.	31-40 yrs.	41-50 yrs.	51-60 yrs.	>60 yrs.

P6 Your Highest Qualification

Your Email id

_____

Thank you for filling up this Questionnaire.

(vi) **Appendix F: Health Care Seekers' Questionnaire**

Think about the kind of multispecialty hospital in which you would like to receive treatment. Please show the extent to which you think such a multispecialty would possess the feature described by each statement. If you feel a feature is not at all essential for excellent hospitals/clinics such as the one you have in mind, circle the number 1. If you feel a feature is absolutely essential for excellent hospitals/clinics, circle 7. If your feelings are less strong, circle one of the numbers in between.

The following set of statements relate to your feelings about the multispecialty hospital you have attended. For each statement, please show the extent to which you believe the multispecialty hospital has the feature described by the statement. Once again, circling a 1 means that you strongly disagree that the multispecialty hospital you have attended has this feature and circling a 7 means that you strongly agree. If your feelings are less strong, circle one of the numbers in between

Id No.	Statement	Your Expectation Score							Your Perception of Service Experience						
1	Doctor(s) diagnose the disease correctly	1	2	3	4	5	6	7	1	2	3	4	5	6	7
2	Doctor(s) starts the treatment in time	1	2	3	4	5	6	7	1	2	3	4	5	6	7
3	Doctor(s) recommend timely investigations	1	2	3	4	5	6	7	1	2	3	4	5	6	7
4	Hospital has in-house medical laboratories and diagnostic facilities	1	2	3	4	5	6	7	1	2	3	4	5	6	7
5	Hospital has in-house pharmacy	1	2	3	4	5	6	7	1	2	3	4	5	6	7
6	Hospital has modern / latest medical equipment and instruments	1	2	3	4	5	6	7	1	2	3	4	5	6	7
7	Doctor(s) are available in the hospital whenever needed	1	2	3	4	5	6	7	1	2	3	4	5	6	7
8	Doctor(s) are available in the hospital	1	2	3	4	5	6	7	1	2	3	4	5	6	7
9	Hospital ensures that the patient information is kept private	1	2	3	4	5	6	7	1	2	3	4	5	6	7
10	Doctor(s) and nursing staff follow hygiene during the process of care	1	2	3	4	5	6	7	1	2	3	4	5	6	7
11	Hospital minimizes the chance of infection and injuries while hospitalized	1	2	3	4	5	6	7	1	2	3	4	5	6	7
12	Doctor(s) has/have reasonable experience in dealing with patient's medical condition	1	2	3	4	5	6	7	1	2	3	4	5	6	7
13	Doctor(s) has/have professional knowledge, skills and competence	1	2	3	4	5	6	7	1	2	3	4	5	6	7
14	Nursing and para-medical staff have professional knowledge, skills and competence	1	2	3	4	5	6	7	1	2	3	4	5	6	7
15	Hospital inform Do's and Don'ts to patients/attendants at the time of discharge	1	2	3	4	5	6	7	1	2	3	4	5	6	7
16	At the time of discharge hospital provides proper prescription which patient/attendant can understand	1	2	3	4	5	6	7	1	2	3	4	5	6	7
17	Hospital informs follow-up date at the time of discharge	1	2	3	4	5	6	7	1	2	3	4	5	6	7
18	Doctor(s) explain the possible complication(s)/side effect(s) of treatment to patient/attendant	1	2	3	4	5	6	7	1	2	3	4	5	6	7
19	Doctor(s) explain the time to get good outcome of treatment to patient/attendant	1	2	3	4	5	6	7	1	2	3	4	5	6	7
20	Doctor(s) communicate the real condition to the patient/attendant	1	2	3	4	5	6	7	1	2	3	4	5	6	7
21	Doctor(s) explain the disease and its treatment to the patient/attendant	1	2	3	4	5	6	7	1	2	3	4	5	6	7
22	Nursing staff and attendant(s) show professional integrity towards their work	1	2	3	4	5	6	7	1	2	3	4	5	6	7

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23	Doctor(s) and nursing staff behaviour builds trust (belief and faith) in patient/attendant	1	2	3	4	5	6	7	1	2	3	4	5	6	7
24	Doctor(s) provide hope to the patient/attendant	1	2	3	4	5	6	7	1	2	3	4	5	6	7
25	Hospital has proper waste disposal facility/process	1	2	3	4	5	6	7	1	2	3	4	5	6	7
26	Hospital timely generates the investigation reports	1	2	3	4	5	6	7	1	2	3	4	5	6	7
27	Patient is given immediate medical attention whenever needed	1	2	3	4	5	6	7	1	2	3	4	5	6	7
28	Amenities and physical infrastructure provides a sense of comfort to the patients	1	2	3	4	5	6	7	1	2	3	4	5	6	7
29	Amenities and physical infrastructure at the hospital are clean	1	2	3	4	5	6	7	1	2	3	4	5	6	7
30	Hospital uses disinfectants for cleanliness	1	2	3	4	5	6	7	1	2	3	4	5	6	7
31	Hospital ensures transparency in billing process	1	2	3	4	5	6	7	1	2	3	4	5	6	7
32	Hospital ensures convenient billing and payment process	1	2	3	4	5	6	7	1	2	3	4	5	6	7
33	Hospital has fairly good experience handling operative cases.	1	2	3	4	5	6	7	1	2	3	4	5	6	7
34	Hospital has good success rate in treating patients	1	2	3	4	5	6	7	1	2	3	4	5	6	7
35	Hospital has renowned Doctors on its panel	1	2	3	4	5	6	7	1	2	3	4	5	6	7
36	Personnel at the hospital are neat in appearance	1	2	3	4	5	6	7	1	2	3	4	5	6	7
37	Hospital rooms are well ventilated	1	2	3	4	5	6	7	1	2	3	4	5	6	7
38	Hospital uses clean bed sheets	1	2	3	4	5	6	7	1	2	3	4	5	6	7

Gender	Male_____	Female_____					
Age Group	<20 yrs_____	21-30 yrs_____	31-40 yrs_____	41-50 yrs_____	51-60 yrs_____	>60 yrs_____	
Your Highest Qualification	Intermediate_____	Graduate_____	Post Graduate_____				
Employment Status	Self Employed_____	Salaried_____	Homemaker_____	Student_____	Retired_____	Others_____	

FOR PATIENTS / ATTENDANTS / VISITORS

What your Purpose of Hospital Visit to THIS hospital? (Please Tick)	As Patient_____	As Attendant_____	As Donor_____	As Visitor_____
When do you Last visited THIS Hospital? (Please Tick)	within 3 months_____	4-6 months back_____	7-12 months back_____	
Whether admitted in THIS hospital for more than 24 hours? (Please Tick)	Yes_____	No_____		

(vii) Appendix G: Health Care Providers' Questionnaire

Think about the kind of multispecialty hospital like this, in which the type of patients that you handle, would like to receive treatment. Please show the extent to which you think such a multispecialty would possess the feature described by each statement. If you feel a feature is not at all essential for excellent hospitals/clinics like this hospital in which you are working , circle the number 1. If you feel a feature is absolutely essential for excellent hospitals/clinics like this hopital, circle 7. If your feelings are less strong, circle one of the numbers in between.

The following set of statements relate to your feelings about the multispecialty hospital like this in which you work. For each statement, please show the extent to which you believe this multispecialty hospital deliver the service described by the statement. Once again, circling a 1. means that you strongly disagree that the multispecialty hospital like this in which you work has this feature and circling a 7. means that you strongly agree. If your feelings are less strong, circle one of the numbers in between

		Your Perception of Health Care Seekers' Expectation							Your Perception of Service Delivery						
Id No.	Statement	1	2	3	4	5	6	7	1	2	3	4	5	6	7
1	Doctor(s) diagnose the disease correctly	1	2	3	4	5	6	7	1	2	3	4	5	6	7
2	Doctor(s) starts the treatment in time	1	2	3	4	5	6	7	1	2	3	4	5	6	7
3	Doctor(s) recommend timely investigations	1	2	3	4	5	6	7	1	2	3	4	5	6	7
4	Hospital has in-house medical laboratories and diagnostic facilities	1	2	3	4	5	6	7	1	2	3	4	5	6	7
5	Hospital has in-house pharmacy	1	2	3	4	5	6	7	1	2	3	4	5	6	7
6	Hospital has modern / latest medical equipment and instruments	1	2	3	4	5	6	7	1	2	3	4	5	6	7
7	Doctor(s) are available in the hospital whenever needed	1	2	3	4	5	6	7	1	2	3	4	5	6	7
8	Doctor(s) are available in the hospital	1	2	3	4	5	6	7	1	2	3	4	5	6	7
9	Hospital ensures that the patient information is kept private	1	2	3	4	5	6	7	1	2	3	4	5	6	7
10	Doctor(s) and nursing staff follow hygiene during the process of care	1	2	3	4	5	6	7	1	2	3	4	5	6	7
11	Hospital minimizes the chance of infection and injuries while hospitalized	1	2	3	4	5	6	7	1	2	3	4	5	6	7
12	Doctor(s) has/have reasonable experience in dealing with patient's medical condition	1	2	3	4	5	6	7	1	2	3	4	5	6	7
13	Doctor(s) has/have professional knowledge, skills and competence	1	2	3	4	5	6	7	1	2	3	4	5	6	7
14	Nursing and para-medical staff have professional knowledge, skills and competence	1	2	3	4	5	6	7	1	2	3	4	5	6	7
15	Hospital inform Do's and Don'ts to patients/attendants at the time of discharge	1	2	3	4	5	6	7	1	2	3	4	5	6	7
16	At the time of discharge hospital provides proper prescription which patient/attendant can understand	1	2	3	4	5	6	7	1	2	3	4	5	6	7
17	Hospital informs follow-up date at the time of discharge	1	2	3	4	5	6	7	1	2	3	4	5	6	7
18	Doctor(s) explain the possible complication(s)/side effect(s) of treatment to patient/attendant	1	2	3	4	5	6	7	1	2	3	4	5	6	7
19	Doctor(s) explain the time to get good outcome of treatment to patient/attendant	1	2	3	4	5	6	7	1	2	3	4	5	6	7
20	Doctor(s) communicate the real condition to the patient/attendant	1	2	3	4	5	6	7	1	2	3	4	5	6	7
21	Doctor(s) explain the disease and its treatment to the patient/attendant	1	2	3	4	5	6	7	1	2	3	4	5	6	7
22	Nursing staff and attendant(s) show professional integrity towards their work	1	2	3	4	5	6	7	1	2	3	4	5	6	7

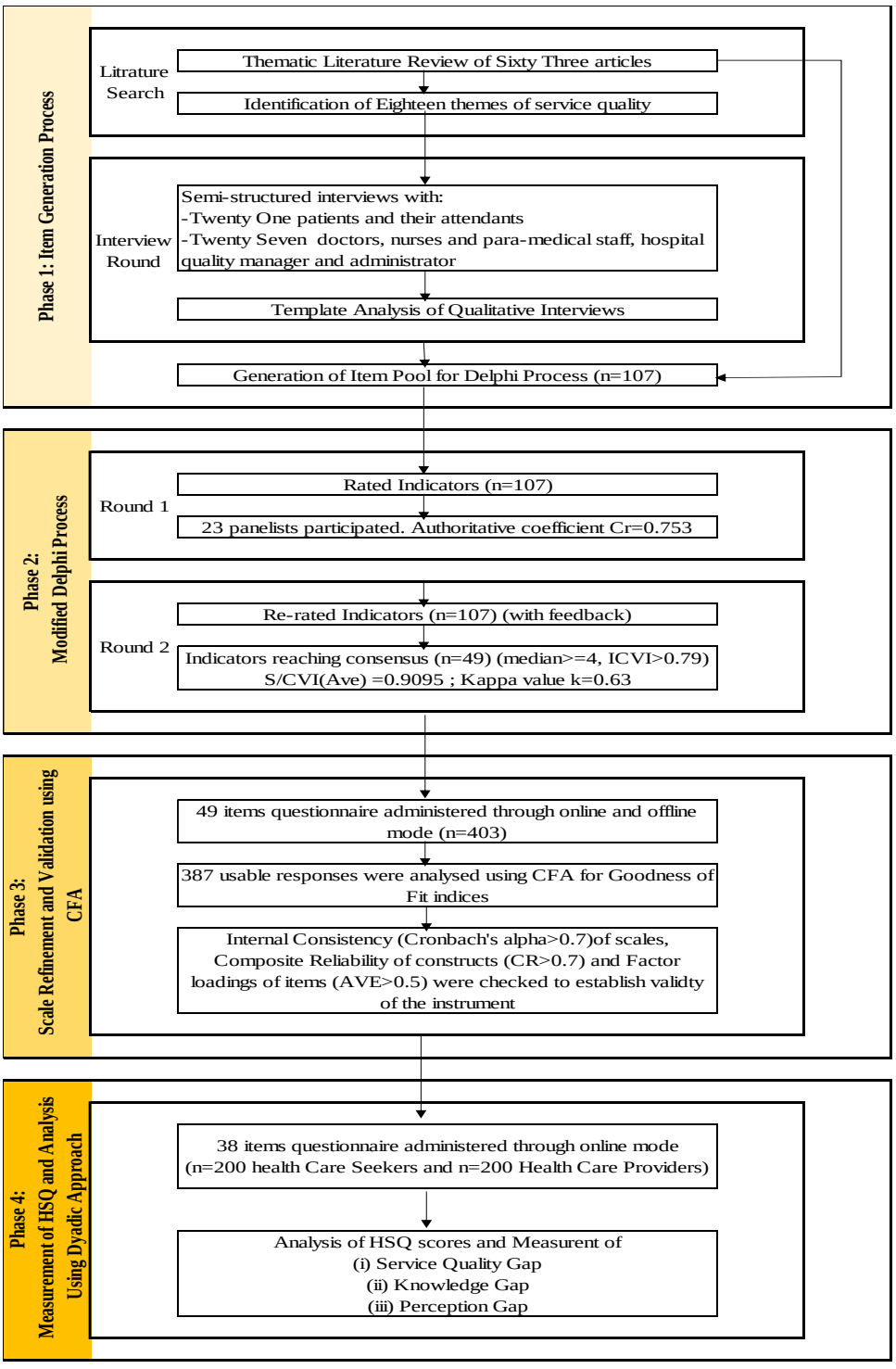
23	Doctor(s) and nursing staff behaviour builds trust (belief and faith) in patient/attendant	1	2	3	4	5	6	7	1	2	3	4	5	6	7
24	Doctor(s) provide hope to the patient/attendant	1	2	3	4	5	6	7	1	2	3	4	5	6	7
25	Hospital has proper waste disposal facility/process	1	2	3	4	5	6	7	1	2	3	4	5	6	7
26	Hospital timely generates the investigation reports	1	2	3	4	5	6	7	1	2	3	4	5	6	7
27	Patient is given immediate medical attention whenever needed	1	2	3	4	5	6	7	1	2	3	4	5	6	7
28	Amenities and physical infrastructure provides a sense of comfort to the patients	1	2	3	4	5	6	7	1	2	3	4	5	6	7
29	Amenities and physical infrastructure at the hospital are clean	1	2	3	4	5	6	7	1	2	3	4	5	6	7
30	Hospital uses disinfectants for cleanliness	1	2	3	4	5	6	7	1	2	3	4	5	6	7
31	Hospital ensures transparency in billing process	1	2	3	4	5	6	7	1	2	3	4	5	6	7
32	Hospital ensures convenient billing and payment process	1	2	3	4	5	6	7	1	2	3	4	5	6	7
33	Hospital has fairly good experience handling operative cases.	1	2	3	4	5	6	7	1	2	3	4	5	6	7
34	Hospital has good success rate in treating patients	1	2	3	4	5	6	7	1	2	3	4	5	6	7
35	Hospital has renowned Doctors on its panel	1	2	3	4	5	6	7	1	2	3	4	5	6	7
36	Personnel at the hospital are neat in appearance	1	2	3	4	5	6	7	1	2	3	4	5	6	7
37	Hospital rooms are well ventilated	1	2	3	4	5	6	7	1	2	3	4	5	6	7
38	Hospital uses clean bed sheets	1	2	3	4	5	6	7	1	2	3	4	5	6	7

Gender	Male_____	Female_____					
Age Group	<20 yrs_____	21-30 yrs_____	31-40 yrs_____	41-50 yrs_____	51-60 yrs_____	>60 yrs_____	
Your Highest Qualification	Intermediate_____	Graduate_____	Post Graduate_____				
Employment Status	Self Employed_____	Salaried_____	Homemaker_____	Student_____	Retired_____	Others_____	

FOR HOSPITAL STAFF

If you are working in THIS Hospital please tick your role in the hospital	Doctor _____	Nursing Staff_____	Para-Medical Staff_____	Hospital Management / Administration_____
Total Work Experience (Please Tick)	less than 5 years_____	6-10 years_____	11-15 years_____	greater than 15 yrs_____

(viii) Appendix H: Schema of Complete Research Process



Schema of Complete Research Process

Dissemination:

(i) Publications:

1. Upadhyai, R, Upadhyai, N., Jain A.K., Chopra, G., Roy, H., Pant, V., (2020) Development and Validation of a Scale for Measuring Hospital Service Quality: A Dyadic Approach, *Journal of Health Research,* (DOI 10.1108/JHR-08-2020-0329)
(SCOPUS, UGC Care II)

2. Upadhyai, R, Jain A.K., Roy, H., Pant, V., (2020) Participants' Perspectives on Healthcare Service Quality In Multispecialty Hospitals: A Qualitative Approach., *Journal of Health Management,* Vol 22, Issue 3, 1-20
(SCOPUS, UGC Care II)

3. Upadhyai, R, Upadhyai, N., Jain A.K., Roy, H., Pant, V., (2020) Health Care Service Quality: A Journey So Far., *Benchmarking: An International Journal,* Vol 27, Issue 6, 1893-1927
(ABDC/B, Web of Science, SCOPUS, UGC Care II)

4. Upadhyai, R, Jain A.K., Roy, H., Pant, V., (2019) A Review of Healthcare Service Quality Dimensions and their Measurement, *Journal of Health Management,* Vol 21, Issue 1, pp 102-127
(SCOPUS, UGC Care II)

5. Upadhyai, R, Jain A.K., Roy, H., Pant, V., (2017), *Decoding Healthcare Service Quality*, Conference proceedings in International Conference on Management of Infrastructure, in UPES, Dehradun, pp41-77. ISBN: 978-1-63535-614-4

(ii) Paper Presentation International / National Conferences

1. Decoding Healthcare Service Quality, *International Conference on Management of Infrastructure,* UPES, Dehradun, Feb, 2017

(iii) Domian Specific Certification Courses Done:

1. "Leading Healthcare Quality and Safety", Coursera, The George Washington University, 5 Weeks, Apr, 10, 2020

2. "Data Analysis for Social Science Teachers", NPTEL Online Certification, University of Hyderabad, 16 weeks, Jan-Apr, 2020

3. "Economics of Health and Health Care", NPTEL Online Certification, IIT-Kanpur, 8 weeks, Jul-Sep, 2019

Author's Biography

Mr. Raghav Upadhyai is an Assistant Professor (Marketing) having a rich and diversified Teaching and Corporate experience of 21 years. During this tenure he has effectively handled academic and administrative responsibilities in eminent institutions. Prior to pursuing a career in academics, he has worked with reputed organisations like Frito Lay India, Whirlpool of India Ltd, ICICI Bank Ltd. and Reliance Capital Ltd. He is MBA, PGDBM, B.Sc. (Comp. Science) and UGC (NET) qualified and is currently pursuing Ph.D. in Management from UPES, Dehradun. He has published seven papers in peer-reviewed national and international journals which includes the ones that are indexed in SCOPUS, Web of Science and ABDC (Australian Business Deans Council) "Category-B" journal. Apart from attending and presenting papers in National and International conferences Mr. Upadhyai has completed certification courses in Economics of Health and Health Care, Leading Healthcare Quality and Safety, Data Analysis for Social Science Teachers and Successful Negotiations: Essential Strategies and Skills. His areas of teaching include Services Marketing, Salesforce Management, Distribution Management and Consumer Behaviour. Health Care Service Quality and Digital Addictions & Disorders are some of the research areas that interest him.

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SA	**Notes.docx** Document Notes.docx (D27141502)	8
W	URL: https://www.researchgate.net/publication/318666775_Equating_the_expected_and_perceived_service_quality_A_comparison_between_public_and_private_healthcare_service_providers Fetched: 11/14/2019 4:32:17 PM	4
SA	**A Review of Healthcare Service Quality Dimensions and their Measurement.docx** Document A Review of Healthcare Service Quality Dimensions and their Measurement.docx (D48991105)	5
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SA	**RP_Decoding Healthcare Service Quality.docx** Document RP_Decoding Healthcare Service Quality.docx (D27000663)	11
W	URL: https://academic.oup.com/intqhc/advance-article/doi/10.1093/intqhc/mzy125/5037014 Fetched: 9/25/2019 5:29:41 PM	2
SA	**A Review of Healthcare Service Quality Dimensions and their Measurement.docx** Document A Review of Healthcare Service Quality Dimensions and their Measurement.docx (D27323167)	2
SA	**RP_A Review of Healthcare Service Quality Dimensions and their Measurement.docx** Document RP_A Review of Healthcare Service Quality Dimensions and their Measurement.docx (D40143873)	4