A Critical Review of the Service Quality And its Measurement in Indian Healthcare Sector

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Abstract: *The objective of this paper is to critically review the established various studies conducted across the India on the subject of health care service quality dimensions and measured. The Studies collected from literature databases such as Emerald Insight, EBSCO, and Google scholar. The review of thirty studies shows that the number of service quality dimensions differs from study to study. Self-administered questionnaire technique mostly used for collecting the data in the various studies. The sample size ranged from 50 to 2,480 respondents in self-administered questionnaires. The range of the scores of the scale used in the studies begins from two to seven-point likert scale. A twelve studies applied descriptive analysis; seven studies have used factor analysis; three studies employed exploratory factor analysis (EFA); one study conducted structural equation modeling (SEM); a confirmatory factor analysis (CFA) was applied by five studies; and eight studies applied gap scores. In the most commonly for measuring the reliability of the scale researchers were conducting the Cronbach's alpha. The review of several studies finds that the SERVQUAL scale was widely adopted or modified by the researchers to measure the health care service quality. The paper highlights that there is no general agreement on the number and the types of service quality dimensions in the Indian health care sector, but there are some common dimensions are used by most of the studies.*

Keywords: *Hospital service quality, Patients' perceptions, Health services, Measurement, SERVQUAL, India.*

I.   INTRODUCTION

India is one of the largest developing countries in terms of population and area. To provide a healthcare service with a good level of quality to a large population is a major challenge. The main problem of healthcare service is a measure of the quality of services. There are a few service quality measurement scales are developed, but they are based on other countries not based in India. A few studies had conducted on healthcare service quality measurement in India. Hence there is a need for conducting a research in developing a measuring scale to evaluate the Indian health care service quality. (Akhade, Jaju, & Lakhe, 2016). The health care quality concept has been defined by many authors; The American Medical Association, defined the health care quality such as care which consistently contributes to the improvement or maintenance of quality and/ or duration of life (Piligrimiene & Buciuniene, 2011). Health care is a scarce service that the people need (Berry & Bendapudi, 2007).As we know that the patient comes to hospital with collection of sickness, worry, soreness, scare and under the stress that need to be treated (Bendapudi, Berry, Frey, Parish, & Rayburn, 2006). The health care service providers and managers should realize that they deliver health care service with an appropriate quality to the needs of the customer most important for the success of the business. Many researchers have developed, modified or adapted a scale to measure the quality of health care service for various types of hospital in different countries. (Parasuraman, Zeithaml, & Berry, 1988) were developed a measurement scale which called SERVQUAL to examine the service quality. A SERVQUAL has included five dimensions which namely: reliability, responsiveness, assurance, empathy and tangibility. A SERVQUAL is found consistently important for the evaluation of various types of service setting by modifying the service quality attributes according to (Parasuraman, Zeithaml, & Berry, 1991). The service quality of health care is widely measured through the SERVQUAL instrument. Continuously assessing the health care service quality and understanding the needs of patients completely leads to improving the hospital service quality, enhance the satisfied and loyal of patients and attract more customers. This paper undertakes a comprehensive review of the current state of knowledge regarding quality dimensions of Indian health care service and its measurement.

II.   METHODS

A critical review based on searches of the empirical studies and previous reviews of health care service quality and its measurement from the literature databases Emerald Insight, EBSCO, and Google scholar by using many keywords example; quality of health care, dimensions of health care service quality, SERVQUAL,

hospital service quality, and Indian public health care. Our review contains about thirty studies conducted in various states of India; about 33 percent (ten studies) of the studies were conducted in the state of Tamil Nadu. The methodological issues identified in this paper can be summarized as: research objective, research methods, types of respondent, types of providers, sample methods and size, method of data collection, survey administration, items of the scale, validity and reliability of the scale which used in the studies.

III.   THE REVIEW

3.1the Categories Of The Studies

The studies which contained in our paper can be classified into five classes according to the purpose of the studies; first, the studies which aimed to compare the level of quality of health care service among the health care providers, such as the studies which done by (Irulappan, 2014; Karekar, Tiwari, & Agrawal, 2015; Mahapatra, 2013; and Pramanik, 2016). Second, the studies which aimed to apply the SERVQUAL to the healthcare sector, such as the studies which conducted by (Brahmbhatt, Baser, &Joshi, 2011; and Gerald, & Panchanatham, 2013). Third, studies which aimed to identify and evaluate the dimensions of service quality of the healthcare sector, such as the studies which done by (Amjeriya & Malviya, 2012; Chakraborty, & Majumdar, 2013; Kavita, 2012; Rathee, Rajain, & Isha, 2015; and Umath, Marwah, & Soni, 2015). Fourth, the studies which aimed to develop a new scale for assessing the service quality of the healthcare sector, such as the studies which conducted by (Aagja, & Garg, 2010; Itumalla, Acharyulu, & Shekhar, 2014). And the last one, studies which aimed to measure the relationship between service quality and other aspects like patient satisfaction, trust, behavior intention, and loyalty such as the studies which done by (Dave, & Dave, 2014; Dheepa, Gayathri, & Karthikeyan, 2015; Padma, Rajendran, & Sai Lokachari, 2010; and Puri, Gupta, Aggarwal, & Kaushal, 2012).

3.2dimensional Structure Of The Healthcare Service Qualityin The Studies

Table 1: summarizes the final number of service quality dimensions in the Indian health care sector that conducted in the study. The dimensions, number starts from four (Puri, Gupta, Aggarwal, & Kaushal, 2012); five (Pramanik, 2016); sex (Thangaraj, & Chandrasekar, 2016); seven (Aiswarya, 2015); eight (Padma, Rajendran, & Sai Lokachari, 2010); twelve (Amjeriya, & Malviya, 2012). About twenty studies (66 percent) are found with five dimensions; two researchers used four dimensions; two studies with six dimensions; four researchers employed seven dimensions; one study with eight dimensions; and one study with twelve dimensions. The five dimensions of the SERVQUAL instrument most widely used by many researchers in the questionnaire or reported in some other form. From the thirty studies, we observed that the SERVQUAL instrument widely adopted or modified by the researchers to measure the health care service quality, A SERVQUAL as an instrument used in twenty-four studies, about (80 percent). Some studies have found that the SERVQUAL scale is not much sufficient to assess the quality of health care service. Few researchers had developed their own scale for measuring the quality of health care service; (Itumalla, Acharyulu, & Shekhar, 2014) has been developed a scale of (HospitalQual) for measuring the in-patient service, (Aagja, & Garg, 2010) developed a scale which called (PubHosQual) to measuring the quality of the public hospital service in the Indian context. The researchers depending on the culture, environment, awareness, and other factors which influence the perception of patients have used new dimensions, like the study which done by. (Padma, et al., 2010) added hospital image and trustworthiness of the hospital.Several researchers have added new dimensions to their studies. (Padma, Rajendran, & Sai, 2009) reported that one of the criticisms on SERVQUAL was it focused only on the functional aspects of the service but not on the technical aspects. From several studies on Indian health care service quality dimensions and measurement which reviewed in this paper, it found that there is no general agreement on the number and the types of service quality dimensions in the health care sector but there are some common dimensions are used by most of the studies. All the studies which reviewed in this paper mentioned the number of dimensions range from four to twelve.

Table 1: Summary of Health Care Service Quality Dimensions in the Studies

S.No.	Author, Year,	State	Service Quality Dimensions
1	Itumalla, et al, 2014	Telangana	**Seven dimensions-** Medical, nursing, support, patient safety, administrative services, communication and hospital infrastructure
2	Mahapatra, 2013	Delhi	**Six dimensions-** Tangibles, reliability, responsiveness, assurance, assurance accessibility and affordability
3	Sreenivas, and Bdabu, 2012	Andhra Pradesh	**Seven dimensions-** Admission procedure, physical facilities, diagnostic services, behavior of the staff, cleanliness, dietary services and discharge procedure
4	Thangaraj, and Chandrasekar, 2016	Tamil Nadu	**Six dimensions-** Responsiveness, infrastructure, skilled and trained doctors, advancement of

			technology, quality of treatment, availability
5	Dave, and Dave, 2014	Gujurat	**Five dimensions -**Tangibility, reliability, responsiveness, assurance, empathy
6	Rathee, et al, 2015	Haryana	**Five dimensions -**Tangibility, reliability, responsiveness, assurance, empathy
7	Narang, 2011	Uttar Pradesh	**Five dimensions -**Health care delivery, interpersonal and diagnostic aspect of care, facility, health personnel conduct and drug availability, financial and physical access to care
8	Padma, et al 2010	Tamil Nadu	**Eight Dimensions-** Infrastructure, personnel quality, safety indicators, process of clinical care, administrative procedures, hospital image, social responsibility, trustworthiness of hospital
9	Rao, et al 2006	Uttar Pradesh	**Five dimensions -** Medicine availability, medical information, staff behavior, doctor behavior, infrastructure
10	Kavita, 2012	Tamil Nadu	**Five dimensions** -Tangibility, reliability, responsiveness, assurance, empathy
11	Kumaraswamy, 2012	Tamil Nadu	**Four dimensions -** Physician behavior , supportive staffs , atmospherics, operational performance
12	Rohini, and Mahadevappa, 2006	Karnataka	**Five dimensions -**Tangibility, reliability, responsiveness, assurance, empathy
13	Umath, et al 2015	Madhya Pradesh	**Five dimensions-** Tangibility, reliability, responsiveness, empathy, assurance
14	Amjeriya, and Malviya, 2012	Madhya Pradesh	**Twelve dimensions-** Reliability, responsiveness, assurance, empathy, empathy, access, competence, courtesy, communication, credibility, security, understanding
15	Aagja, and Garg 2010	Gujarat	**Five dimensions-** Admission, medical service, overall service, discharge, social responsibility
16	Gerald, and Panchanatham, 2013	Tamil Nadu	**Five dimensions -**Tangibility, reliability, responsiveness, assurance, empathy
17	Karekar, et al 2015	Mumbai	**Five dimensions -**Empathy, tangibles, assurance, timeliness, assurance
18	Chakraborty, and Majumdar, 2013	West Bengal	**Five dimensions -**Tangibility, reliability, assurance, responsiveness, empathy
19	Sharmil and Krishnan, 2013	Tamil Nadu	**Five dimensions-** Empathy, assurance, tangible, timeliness, responsiveness
20	Dheepa, et al 2015	Tamil Nadu	**Five dimensions -**Tangibility, reliability, assurance, responsiveness, empathy
21	Duggirala, et al 2008	Tamil Nadu	**Seven dimensions-**Infrastructure, personnel quality, process of clinical care, safety indicators, social responsibility, administrative procedures, overall, experience of medical care received
22	Pramanik, 2016	Maharashtra	**Five dimensions -**Tangibility, reliability, assurance, responsiveness, empathy
23	Sangwan, 2012	Delhi	**Five dimensions -** Treatment quality, behavioral aspects, medical information, structural aspects, financial aspects
24	Pandit, 2015	Kolkata and West Bengal	**Five dimensions -**Tangibility, reliability, assurance, responsiveness, empathy
25	Brahmbhatt, et al 2011	Gujarat	**Five dimensions -** Physical aspects, reliability, process, encounters, policy
26	Aiswarya, 2015	Karnataka	**Seven dimensions-** Reliability, assurance, assurance, empathy, responsiveness, accessibility, price
27	Narang, 2010	Uttar Pradesh	**Five dimensions -** Reliability, responsiveness, assurance, empathy, tangibles
28	Narang, et al 2015	Finland , India, Nigeria and China	**Five dimensions -** Employees, drugs and diagnosis, environment and access, atmosphere, outcomes
29	Puri, et al 2012	North India	**Four dimensions-** Prescription quality, availability of facilities, signage display, patient-doctor interaction
30	Irulappan, 2014	Tamil Nadu	**Five dimensions -**Tangibility, reliability, responsiveness, assurance, empathy

1.1. Types Of Research Approaches In The Studies

Table 2: summarizes the types of research approaches which applied in the studies. In general, there are two types of research methods or approaches that used in the previous studies which namely; qualitative method and quantitative method. The majority of the studies which are contained in this paper were used a quantitative method such as (Pramanik, 2016., Narang, Polsa, Soneye, & Fuxiang, 2015; Dheepa, Gayathri, & Karthikeyan,.., 2015; Karekar, Tiwari, & Agrawal, 2015; Umath, Marwah, & Soni, 2015; Rathee, Rajain. & Isha 2015; Pandit, 2015; Aiswarya, 2015; Irulappan, 2014; Dave, & Dave, 2014; Chakraborty, & Majumdar, 2013; Sharmil & Krishnan, 2013;Gerald, & Panchanatham, 2013; Mahapatra, 2013; Sreenivas, &Bdabu, 2012; Kavita, 2012; Kumaraswamy, 2012; Amjeriya, & Malviya, 2012; Puri, et al., 2012; Brahmbhatt, 2011; Padma, et al., 2010). Only two studies had used the qualitative method (Thangaraj, & Chandrasekar, 2016; and Duggirala, Rajendran, & Anantharaman, 2008) and seven studies had mixed between the quantitative and qualitative methods (Itumalla, et al., 2014; Rohini, & Mahadevappa, 2006;Narang, 2011; Narang, 2010;Sangwan & Arora, 2012;Aagja, & Garg 2010;and Rao, Peters, & Bandeen-Roche2006) to identify and measuring the of health care service quality dimensions using. From the studies which included in this paper, we observed that the research methods which used to measure the dimensions of Indian health care service quality had differed from study to study, depending on objective, environment, awareness and other factors that may influence on the patients' perception.

Table 2: Types of Research Methods in the Studies

S.No.	Author	State	Research Methods
1	Itumalla, et al,	Telangana	Qualitative and Quantitative
2	Mahapatra,	Delhi	Quantitative
3	Sreenivas, and Bdabu	Andhra Pradesh	Quantitative
4	Thangaraj, and Chandrasekar	Tamil Nadu	Qualitative
5	Dave, and Dave	Gujurat	Quantitative
6	Rathee	Haryana	Quantitative
7	Narang	Uttar Pradesh	Qualitative and Quantitative
8	Padma, et al	Tamil Nadu	Quantitative
9	Rao, et al	Uttar Pradesh	Qualitative and Quantitative
10	Kavita	Tamil Nadu	Quantitative
11	Kumaraswamy	Tamil Nadu	Quantitative
12	Rohini, and Mahadevappa	Karnataka	Qualitative and Quantitative
13	Umath, et al	Madhya Pradesh	Quantitative
14	Amjeriya, and Malviya	Madhya Pradesh	Quantitative
15	Aagja, and Garg	Gujarat	Qualitative and Quantitative
16	Gerald, and Panchanatham	Tamil Nadu	Quantitative
17	Karekar, et al	Mumbai	Quantitative
18	Chakraborty, and Majumdar	West Bengal	Quantitative
19	Sharmil and Krishnan	Tamil Nadu	Quantitative
20	Dheepa, et al	Tamil Nadu	Quantitative
21	Duggirala, et al	Tamil Nadu	Qualitative
22	Pramanik	Maharashtra	Quantitative
23	Sangwan	Delhi	Qualitative and Quantitative
24	Pandit	Kolkata and West Bengal	Quantitative
25	Brahmbhattet al	Gujarat	Quantitative
26	Aiswarya	Karnataka	Quantitative
27	Narang	Uttar Pradesh	Qualitative and Quantitative
28	Narang, et al	Finland, India, Nigeria and China	Quantitative
29	Puri, et al	North India	Quantitative
30	Irulappan	Tamil Nadu	Quantitative

1.2. Types Of Respondents In The Study

Table 3: summarizes the types of respondents in the studies, the stakeholder of the health care system involves patients, patient's relatives, visitors, doctors, nurses, pharmacists, technicians and not technical staff, administrators and managers of health care systems. The majority of the studies has used variations of respondent, such as (Aiswarya, 2015; Dheepa, et al., 2015; Itumalla, et al., 2014; Mahapatra, 2013; and Sreenivas, & Bdabu, 2012) were used only inpatients perspective to find out the level of health care service quality. (Padma, et al., 2010; and Aagja, & Garg 2010) have employed both patients and their attendants.

Thirteen studies (43 percent) used general patients and not clearly mentioned type of their respondents. One study had mentioned that they mixed between inpatients and outpatients (Rao, et al., 2006); also one study, only used the students who was inpatients during the past six months (Narang, et al., 2015). Narang, (2011) employed the patients who have taken health care services within the period of six months from survey period. Three studies (Sangwan & Arora, 2012; Umath, et al., 2015; and Kavita, 2012) used the perspective of both patients and doctors in their studies to explore the level of service quality in health care sectors. (Rohini, &Mahadevappa, 2006) had used the patients and hospital executives to measure the service quality, (Chakraborty, & Majumdar, 2013) used the patients and nursing homes, (Sharmil, & Krishnan, 2013) employed inpatient and employees, (Pandit, 2015) used patients and visitors in their studies to find out how the health care providers deliver their service with an acceptable level of quality. Some of the studies used the help of physicians, health care professional managers and administrators to collect the data from the inpatients. From the studies which reviewed in this paper, we observed that the right choice of respondents for measuring the health care service quality which delivered by hospitals is the inpatient because inpatients have direct interaction with the entire service provider during their stay in hospital.

Table 3: Types of Respondents in the Studies

S.No.	Author	State	Types of Respondents in the study
1	Itumalla, et al,	Telangana	In-patients
2	Mahapatra,	Delhi	In-patients within six months
3	Sreenivas, and Bdabu	Andhra Pradesh	In-patients
4	Thangaraj, and Chandrasekar	Tamil Nadu	Patients
5	Dave, and Dave	Gujurat	Patients
6	Rathee	Haryana	Patients
7	Narang	Uttar Pradesh	Patients who used Health services in past six months
8	Padma, et al	Tamil Nadu	In-patients and attendants
9	Rao, et al	Uttar Pradesh	In-patients and out-patient
10	Kavita	Tamil Nadu	In-patients, doctors
11	Kumaraswamy	Tamil Nadu	Patients
12	Rohini, and Mahadevappa	Karnataka	Patients and hospital executives
13	Umath, et al	Madhya Pradesh	Patients, doctors, nurses and other staffs
14	Amjeriya, and Malviya	Madhya Pradesh	Patients
15	Aagja, and Garg	Gujarat	Patient and attendants
16	Gerald, and Panchanatham	Tamil Nadu	Patients
17	Karekar, et al	Mumbai	Patients
18	Chakraborty, and Majumdar	West Bengal	Patients and nursing homes
19	Sharmil and Krishnan	Tamil Nadu	In-patient and employees
20	Dheepa, et al	Tamil Nadu	In-patients
21	Duggirala, et al	Tamil Nadu	Patients
22	Pramanik	Maharashtra	Patients
23	Sangwan	Delhi	Patients and doctors
24	Pandit	Kolkata and West Bengal	Patients and visitors
25	Brahmbhattet al	Gujarat	Patients
26	Aiswarya	Karnataka	In-patients
27	Narang	Uttar Pradesh	Patients
28	Narang, et al	Finland , India, Nigeria and China	Students who was inpatients during the past six months
29	Puri, et al	North India	Patients
30	Irulappan	Tamil Nadu	Patients

1.3. Sample Size And Techniques In The Studies

Table 4:summarizes the techniques of sampling and sample size of the studies. Only one study have not clearly reported the techniques of sampling adopted (Thangaraj, & Chandrasekar, 2016); ten studies mentioned random sample sampling method (Sreenivas, & Bdabu, 2012; Narang, 2011; Rohini, & Mahadevappa, 2006; Umath, et al., 2015; Amjeriya, & Malviya, 2012; Karekar, et al., 2015; Chakraborty, & Majumdar, 2013; Sharmil & Krishnan, 2013; Duggirala, et al., 2008; and Irulappan, 2014); five studies have used the purposive sampling technique (Narang, et al., 2015; Aiswarya, 2015; Kumaraswamy, 2012; Narang, 2011; and Itumalla, et al., 2014); eleven studies have used the convenience sampling technique (Mahapatra, 2013; Dave, & Dave, 2014; Padma, et al., 2010; Kavita, 2012; Aagja, & Garg 2010; Dheepa, et al., 2015; Pramanik, 2016; Sangwan & Arora, 2012; Pandit, 2015; Rao, et al., 2006; and Brahmbhatt, 2011); only one study has mentioned the judgment sampling method (Gerald, & Panchanatham, 2013); one study has mentioned the quota sampling method (Rathee, et al., 2015); and only one study carried out multi-stage cluster sampling method (Puri, et al., 2012). The sample size of the studies which reviewed in this paper as presented in the table 4 start from under 50 to above 2,000 respondents. Twenty three studies were employed a sample size of range begins from 100 to

500; followed by three studies used more than 500 and less than 1000; followed by two researches used less than 100; one study used 1000; and one more than 1000 respondents.

Table 4: Sample Method and Size in the Studies

S.No.	Author	State	Sample Size	Sampling Technique
1	Itumalla, et al,	Telangana	246	Purposive sampling
2	Mahapatra,	Delhi	192	Convenience sampling
3	Sreenivas, and Bdabu	Andhra Pradesh	230	Stratified random sampling
4	Thangaraj, and Chandrasekar	Tamil Nadu	50	Non – probability sampling
5	Dave, and Dave	Gujurat	100	Convenience sampling
6	Rathee	Haryana	200	Quota sampling
7	Narang	Uttar Pradesh	500	Random sampling and Purposive sampling
8	Padma, et al	Tamil Nadu	408	Convenience sampling
9	Rao, et al	Uttar Pradesh	2480	Convenience sampling
10	Kavita	Tamil Nadu	450	Convenience sampling
11	Kumaraswamy	Tamil Nadu	200	Purposive sampling
12	Rohini, and Mahadevappa	Karnataka	540	Random sampling
13	Umath, et al	Madhya Pradesh	340	Random sampling
14	Amjeriya, and Malviya	Madhya Pradesh	62	Random sampling
15	Aagja, and Garg	Gujarat	200	Convenience sampling
16	Gerald, and Panchanatham	Tamil Nadu	300	Judgment sampling
17	Karekar, et al	Mumbai	1000	Random sampling
18	Chakraborty, and Majumdar	West Bengal	100	Random sampling
19	Sharmil and Krishnan	Tamil Nadu	320	Random sampling
20	Dheepa, et al	Tamil Nadu	286	Convenience sampling
21	Duggirala, et al	Tamil Nadu	100	Random sampling
22	Pramanik	Maharashtra	368	Convenience sampling
23	Sangwan	Delhi	607	Convenience sampling
24	Pandit	Kolkata and West Bengal	150	Convenience sampling
25	Brahmbhattet al	Gujarat	246	Convenience sampling
26	Aiswarya	Karnataka	875	Purposive sampling
27	Narang	Uttar Pradesh	500	Random sampling
28	Narang, et al	Finland , India, Nigeria and China	315	Purposive sampling
29	Puri, et al	North India	360	Cluster and Random sampling
30	Irulappan	Tamil Nadu	456	Random sampling

1.4. Types Of Providers In The Studies

Table 5:summarizes the types of providers of health care service. In the health care sector, there are many types of providers such as primary health care centers, public or government hospital, private hospitals, general hospitals, medical college and hospitals, clinics, and specialty hospitals. The respondents from all types of health care providers should be used for developing an appropriate scale to measure the health care service quality. Fifteen studies had mixed between public or government hospitals and private hospitals (50 percent studies) for assessing the level quality of service and make a comparison to developing the service quality. The studies which done by (Sharmil & Krishnan, 2013; and Dave, & Dave, 2014) had focused only on private hospitals. The scale which developed based on the data from the only private hospital may not suitable for other types of health care providers because the private hospitals are purely profiting making hospitals. (Itumalla, et al., 2014; Narang, 2011; Aagja, & Garg 2010; Narang, 2010; and Dheepa, et al., 2015) had conducted a study in public or government hospital. Two studies (Amjeriya, & Malviya, 2012; Umath, et al., 2015) have not clearly mentioned the type and number of the hospital. Two studies (Chakraborty, & Majumdar, 2013; and Aiswarya, 2015) had collected the data from the educational medical hospitals. Two studies (Aagja, & Garg 2010; and

Gerald, & Panchanatham, 2013) were conducted in the Multi-specialty hospitals. In primary health care center, the patient does not need to stay more than one day to get the service also; some services cannot judge its quality in one day. In this case, only one study had been taken which conducted by (Rao, et al., 2006). Two studies (Thangaraj, & Chandrasekar, 2016; and Kumaraswamy, 2012) conducted in corporate and non-corporate hospitals. Only one study (Narang, et al., 2015) has done a cross-cultural study, which collected the data from the patients from Finland, India, Nigeria and China.

Table 5: Types of Providers in the Studies

S.No.	Author	State	Types of Providers
1	Itumalla, et al,	Telangana	Public hospital
2	Mahapatra,	Delhi	Private and public hospitals
3	Sreenivas, and Bdabu	Andhra Pradesh	Government general, general, and private hospitals
4	Thangaraj, and Chandrasekar	Tamil Nadu	Corporate hospitals and health care centers
5	Dave, and Dave	Gujurat	Private hospitals
6	Rathee	Haryana	Government and private hospitals
7	Narang	Uttar Pradesh	Public health care centers
8	Padma, et al	Tamil Nadu	Government and private hospitals
9	Rao, et al	Uttar Pradesh	Primary health centers, district hospitals, community health centers, and female district hospitals
10	Kavita	Tamil Nadu	Private and public hospitals
11	Kumaraswamy	Tamil Nadu	Corporate and Non-corporate hospitals
12	Rohini, and Mahadevappa	Karnataka	Specialty private, general missionary, general, private, government, general and multi-specialty Private hospitals
13	Umath, et al	Madhya Pradesh	Hospitals
14	Amjeriya, and Malviya	Madhya Pradesh	Hospitals
15	Aagja, and Garg	Gujarat	Multi-specialty public hospitals
16	Gerald, and Panchanatham	Tamil Nadu	Multispecialty hospitals
17	Karekar, et al	Mumbai	Government and private Hospital
18	Chakraborty, and Majumdar	West Bengal	Government medical college hospitals
19	Sharmil and Krishnan	Tamil Nadu	Private hospitals
20	Dheepa, et al	Tamil Nadu	Government hospitals
21	Duggirala, et al	Tamil Nadu	Government hospitals and private hospitals
22	Pramanik	Maharashtra	Government hospitals and private hospitals
23	Sangwan	Delhi	Private and public hospitals
24	Pandit	Kolkata and West Bengal	Private super-specialty, private general, government medical hospitals
25	Brahmbhattet al	Gujarat	Private and public hospitals
26	Aiswarya	Karnataka	Government, corporate, medical college hospitals
27	Narang	Uttar Pradesh	State medical university, missionary hospitals
28	Narang, et al	Finland, India, Nigeria and China	Private and public hospitals
29	Puri, et al	North India	Private and public hospitals
30	Irulappan	Tamil Nadu	Private and public hospitals

1.5. Data Collection And Analysis In The Studies
Table 6: summarizes the tools and methods of data collection, the number of scale items, and reliability of the scale.

1.5.1.   Method Of Data Collectionin The Studies
        In research methodology, there are several of data collection methods and tools such as an online survey (mail, website), offline survey (postal mail, telephone), focus groups, case study, questionnaire survey and interview depend on the research approach. In the present review, about eighteen studies (60 per cent studies) were used questionnaire survey method for collecting the data. Two studies (Narang, 2010; and Narang, 2011) had collected data through focus group discussions, interview, and questionnaire survey. (Irulappan, 2014; Puri, et al., 2012; Sangwan & Arora, 2012; Aagja, & Garg 2010; Umath, et al., 2015; Rohini, & Mahadevappa, 2006; Kavita, 2012; Rao, et al., 2006; and Itumalla, et al., 2014) were collected data through questionnaire survey and interview. (Thangaraj, & Chandrasekar, 2016) had used direct interview schedule in

corporate hospitals and health care centers for collecting the data. From the reviewed of the studies we found that the response is given higher rate to the face interview based on the survey questionnaire as suitable methods for collecting a proper data. The techniques of data collection and the reason for selecting the particular data collection method should be mentioned by the authors.

1.5.2.   Number Of Itemsin The Studies
All the studies reviewed in this paper mentioned the number of the scale items ranges from 16 items (Rao, et al., 2006) to 86 items (Duggirala, et al., 2008). Most of the studies were adopted the SERVQUAL five dimensions with 22 items.

1.5.3.   Scores Used In The Studies
Nineteen studies (63 percent) adopted the five-point likert scale and seven studies (23percent) adopted the seven-point likert scale. One study (Puri, et al., 2012) used two-point likert scale. One study (Aagja& Garg 2010) has not clearly mentioned the scores of his scale. The scale ranked from two-point (Puri, et al., 2012) to seven points (Pandit, 2015)
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1.5.4.   Analysis Method In The Studies
A total of twelve studies applied descriptive analysis; seven studies have used factor analysis; three studies applied exploratory factor analysis (EFA) for assessing their items and dimensions; only one study, which done by(Sharmil and Krishnan, 2013) carried out structural equation modeling (SEM); eight studies conducted gap scores analysis; and five studies have used confirmatory factor analysis (CFA);. Out of the five studies that used CFA, one study (Duggirala, et al 2008) applied both confirmatory factor analysis (CFA) and exploratory factor analysis (EFA); and other four studies such as (Irulappan, 2014; Aagja, & Garg 2010; Rathee, et al., 2015; and Padma, et al., 2010) carried out only CFA; and a total of eight studies conducted regression analysis.

1.5.5.   Reliability Of The Studies
The scales of the studies which reviewed in this paper had a good reliability with twenty two studies provided the value of Cronbach's alpha, eighteen researches have provided an acceptable value of Cronbach's alpha, begins more than 0.75. Such as, study done by (Narang, et al., 2015) found to be reliable to a great extent with an overall Cronbach alpha value of 0.90; (Puri, et al., 2012) provided an overall Cronbach alpha value of 0.88; (Itumalla, et al., 2014) seven provided a Cronbach alpha value ranging from 0.75 to 0.97; (Padma, et al., 2010); provided an overall Cronbach alpha value of 0.72 and (Amjeriya, & Malviya, 2012) twelve dimensions overall 0.95.

Table 6: Data Collection Tools, Final Number of Items, and Reliability of Scale in the Studies

S.No.	Author, Year,	State	Data Collection Tools and Method of analysis	Number of Items	Reliability
1	Itumalla, et al, 2014	Telangana	Self-administered questionnaire survey of seven point Likert scale and Interview. EFA, factor analysis, multiple regression, ANOVA	59 Items	Ranges from 0.759 to 0.970
2	Mahapatra, 2013	Delhi	Self-administered questionnaire survey of five point Likert scale. Paired t-test	26 Items	Overall Above 0.60
3	Sreenivas, and Bdabu, 2012	Andhra Pradesh	Self-administered questionnaire survey of five point Likert scale. Descriptive analysis	38 Items	Not Reported
4	Thangaraj, and Chandrasekar, 2016	Tamil Nadu	Direct interview schedule. Descriptive analysis	21 Items	Not Reported
5	Dave, and Dave, 2014	Gujurat	Self-administered questionnaire survey of five point Likert scale. Uni – Variety Analysis, Chi-Square test, Paired t-test, ANOVA	21 Items	Not Reported
6	Rathee, et al, 2015	Haryana	Self-administered questionnaire survey of five point Likert scale. CFA	22 Items	Overall = 0.96
7	Narang, 2011	Uttar Pradesh	Six focus group discussions and 12 in-depth interviews, self-administered questionnaire survey of five point Likert scale. factor analysis, ANOVA, t-test,	23 Items	Overall = 0.96
8	Padma, et al 2010	Tamil Nadu	Questionnaire survey of seven point likert scale. CFA, multiple regression analysis	49 Items	Overall = 0.72
9	Rao, et al 2006	Uttar Pradesh	Depth interviews, and questionnaire survey of seven point likert scale. Regression analysis, descriptive analysis, factor analysis	16 Items	Ranges from 0.62 to 0.86

10	Kavita, 2012	Tamil Nadu	Personal interviews and questionnaire survey of seven point likert scale. Gap Scores, t' test	44 Items 22 Items	Overall above 0.70
11	Kumaraswamy, 2012	Tamil Nadu	Questionnaire survey of five point likert scale. t' test regression analysis, descriptive analysis factor analysis	34 Items	Overall = 0.76
12	Rohini, and Mahadevappa, 2006	Karnataka	Personal interviews and questionnaire survey of seven point likert scale. Gap Scores , descriptive analysis	22 Items	Ranges from 0.76 to 0.86
13	Umath, et al 2015	Madhya Pradesh	Personal interviews and questionnaire survey of seven point likert scale. Gap Scores , descriptive analysis, correlation analysis	22 Items	Overall = 0.906
14	Amjeriya, and Malviya, 2012	Madhya Pradesh	Questionnaire survey of five point likert scale. Multiple regression analysis, descriptive analysis, correlation analysis	39 Items	Overall = 0.950
15	Aagja, and Garg 2010	Gujarat	Questionnaire survey and semi-structured interviews. CFA, EFA ANOVA, descriptive analysis, correlation analysis, Delphi method	24 Items	Overall above 0.90
16	Gerald, and Panchanatham, 2013	Tamil Nadu	Questionnaire survey of five point likert scale. ANOVA, descriptive analysis	22 Items	Ranges from 0.31 To 0.82
17	Karekar, et al 2015	Mumbai	Questionnaire survey of five point likert scale. Mean and standard deviation	22 Items	Ranges from 0.58 to 0.89
18	Chakraborty, and Majumdar, 2013	West Bengal	Questionnaire survey of five point likert scale. Factor analysis	22 Items	Not Reported
19	Sharmil and Krishnan, 2013	Tamil Nadu	Questionnaire survey of five-point Likert Scale. SEM, chi-square	22 Items	Not Reported
20	Dheepa, et al 2015	Tamil Nadu	Self-administered questionnaire survey of five point Likert scale. Kaiser-Meyer-Olkin (KMO), correlation, actor analysis	29 Times	Overall = 0.97
21	Duggirala, et al 2008	Tamil Nadu	Questionnaire survey of seven point likert scale. CFA, EFA	86 Items	Overall = 0.83
22	Pramanik, 2016	Maharashtra	Questionnaire survey of five point likert scale. Gap scores descriptive analysis	22 Items	Overall = 0.76
23	Sangwan, 2012	Delhi	In-depth interviews and questionnaire survey of five point likert scale, multiple regression analysis, regression model, correlations, mean scores and descriptive analysis	24 Items	Ranges from 0.77 to 0.90
24	Pandit, 2015	Kolkata and West Bengal	Questionnaire survey of seven point likert scale. ANOVA, gap scores	22 Items	Ranges from 0.72 to 0.86
25	Brahmbhatt,et al 2011	Gujarat	Questionnaire survey of five point likert scale. Gap scores, descriptive analysis	41 Items	Overall = 0.71
26	Aiswarya, 2015	Karnataka	Questionnaire survey of five point likert scale. Regression analysis, MANOVA, discriminant analysis	79 Items	Not Reported
27	Narang, 2010	Uttar Pradesh	Five focus group discussions, ten in-depth interviews, and questionnaire survey of five point likert scale. linear regression analysis	20 Item	Not Reported
28	Narang, et al 2015	Finland, India, Nigeria and China	Questionnaire survey of five point likert scale. Regression analysis, ANOVA, EFA	30 Items	Overall = 0.90
29	Puri, et al 2012	North India	Interviews and questionnaire survey of two point likert scale. Mean scores, t-test, and chi-square test	19 Items	Overall = 0.88
30	Irulappan, 2014	Tamil Nadu	Interviews and questionnaire survey of five point likert scale, t-test, ANOVA, chi-square test, CFA	22 Items	Overall = 0.92

1.5.6. Validity Of The Studies

(Cooper & Schindler, 2003) have been divided validity into three types which namely; face or content validity; criterion validity; and construct validity.

1.5.7. Face Or Content Validity

For measuring the content or face validity of the scale, the authors applied the conceptual and empirical analysis experts reviewed from practitioners and academics, pilot study, and interviews with patients for example the studies which done by (Narang, et al., 2015; Mahapatra, 2013; Itumalla, et al., 2014; Sreenivas, & Bdabu, 2012; Rao, et al., 2006; Rohini, & Mahadevappa, 2006; Padma, et al., 2010; and Aiswarya, 2015).

1.5.8. Criterion Validity

According to (Malhotra, 2004) criterion validity reflects whether a scale performs as expected in relation to other variables selected as meaningful criteria. (Duggirala, et al., 2008) carried out the bivariate correlation analysis for tested the criterion validity. (Padma, et al., 2010) employed the analysis of bivariate correlation, among the entire service quality dimension that has significant positive correlations with the patient satisfaction as well as attendant satisfaction for measure demonstrates concurrent validity.

1.5.9. Construct Validity

The construct validity measure through examining the convergent validity, discriminant and uni-dimensional, validity (O'Leary-Kelly & Vokurka, 1998). The researchers used the statistical tools of exploratory factor analysis (EFA) or confirmatory factor analysis (CFA) for examined the uni-dimensional such as (Duggirala, et al., 2008; Padma, et al.,2010; Aagja, & Garg 2010; Rathee, et al., 2015; and Irulappan, 2014). In convergent validity the studies which done by (Rathee, et al.,2015 and Aagja, & Garg 2010); were examinedthroughthe factor loadings in the confirmatory factor analysis (CFA); (Itumalla, et al.,2014;) was carried out ANOVA; (Sharmil & Krishnan, 2013) was applied structural equation modeling (SEM) test for discriminant validity; (Narang, 2011; Rao, et al., 2006; and Kumaraswamy, 2012) have conducted factor analysis, two studies which done by (Duggirala, et al., 2008; and Padma, et al., 2010) have been applied construct, content, and criterion validity, and. Fourteen studies (46per cent) of the studies mentioned only content validity, six studies reported both content and construct validity, six studies stated construct validity, two studies have not mentioned the validity, and two studies have assessed criterion validity.

IV. CONCULATION

An attempt is created during this paper to review several studies on health care service quality dimensions and measurement in a various states of India. There is a complex on the subject of service quality depends on the environment, time, need of service, type of the service, culture, economics, education, and other factors. It is observed that there are no sufficient scales designed for the health care sector. It is observed that most of the studies were widely adopted or modified a SERVQUAL scale to measure the service quality of health care sector. From the review of the literature, we conclude that:

- Most of the studies were done in the state of Tamil Naue. Therefore, it's needed to conduct more studies in other states.
- There is no general agreement on the number and the types of service quality dimensions in the Indian health care sector, but there are some common dimensions are used by most of the studies.
- The healthcare sector has a different stakeholder but, some of the studies have not clearly mentioned the types of health care providers.
- It is observed that most of the studies were adopting or modifying the SERVQUAL scale for measuring the service quality of Indian health, hence there is a need to develop a new scale for measuring the quality of health care service in Indian context.
- Few studies have been measuring the service quality from the foreigner's patient perspective. Therefore, it's needed to conduct more studies on the foreigner's patient perspective to improve the level of service quality.
- It is observed that a most of the studies were a quantitative studies. Therefore, it's needed to conduct more qualitative studies to gain a better understanding of the patients' needs and deliver a service with a good level of quality.
- It is found that only a few studies have included both inpatient and outpatient as respondents of the study.
- So far there is no current model or scale was developed in India to measure the service quality of the Indian private hospital.Therefore, it's needed to develop a new model which can be measure the service quality of Indian private hospitals.
- The measuring of health care service quality is more important for enhancing the Indian health care service quality improvement and ensuring the patient' perception because the perception of patient in term of service quality may highly influence the choice of hospitals.
- Heath care service quality has been much talked about in the aspects of patient' satisfaction, behavior intention, trust, and loyalty, but there is a limited knowledge exists on the role of service quality in hospital choice.

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