Service Quality in AYUSH Healthcare Sector: A Systematic Review and Meta-Analysis

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Abstract:
Purpose - The purpose of this study is to conduct a comprehensive review of the existing literature on service quality, with a specific focus on the AYUSH healthcare industry. This research seeks to identify and analyse the various dimensions of service quality that are relevant to AYUSH services, exploring the frameworks and criteria used to measure these dimensions. By critically examining previous studies and theoretical models, the study endeavours to highlight both well-established and emerging aspects of service quality within AYUSH healthcare. Furthermore, the study aims to address notable research gaps in the literature, particularly those related to the assessment of different service quality dimensions and their direct and indirect impacts on patient satisfaction. This in-depth understanding will contribute to the development of improved service quality measurement tools and strategies tailored for the AYUSH healthcare sector.

Design/Methodology/Approach - A systematic literature review process was meticulously employed to achieve the study's objectives. The process began with an extensive search of academic databases and other reputable sources to gather a comprehensive pool of research articles related to service quality in the AYUSH healthcare industry. Clearly defined inclusion and exclusion criteria were established to ensure the relevance and quality of the selected studies. These criteria considered factors such as publication date, study design, industry focus, and methodological rigor. Through this rigorous screening and evaluation process, an initial set of 100 research articles was identified. Subsequently, these articles underwent further assessment, and only those that directly addressed the study's research questions and met all quality benchmarks were included in the final analysis. This approach ensured that the literature review was both thorough and focused on the most pertinent and high-quality research available.

Findings - The study identified 44 distinct dimensions used to assess healthcare service quality, highlighting the complexity and multifaceted nature of quality evaluation in the healthcare sector. Among the various tools employed, the SERVQUAL dimensions emerged as the most widely applied framework for measuring service quality, indicating their broad acceptance and relevance in healthcare research and practice. SERVQUAL's focus on aspects such as reliability, assurance, tangibles, empathy, and responsiveness makes it a comprehensive tool for evaluating patient perceptions and expectations, thereby supporting continuous improvement initiatives within healthcare organizations.

Keywords – Healthcare, service quality, systematic review, AYUSH

Originality - The study identified that a majority of researchers concluded there is a strong and positive relationship between SERVQUAL dimensions—such as reliability, assurance, tangibles, empathy, and responsiveness—and the overall quality of healthcare services. This indicates that when these dimensions are effectively addressed, patient satisfaction and perceptions of care quality improve significantly. The study's findings are particularly valuable for AYUSH healthcare executives, as they provide actionable insights for developing targeted and effective strategies. By focusing on these SERVQUAL dimensions, AYUSH organizations can implement tailored improvements that directly

impact patient experiences, foster trust, and ensure the consistent delivery of superior quality healthcare services within the AYUSH system.

1. INTRODUCTION

The quality of healthcare services, particularly in the AYUSH sector, has been a subject of concern for both private and public healthcare service providers in India. According to (Kochhar & Antony, 2024), ensuring patient safety, treatment effectiveness, and overall excellence in Ayush healthcare all depend heavily on providing high-quality healthcare, since quality in healthcare is key to patient safety and effective treatment thus, quality interventions, driven by evidence-based practices and robust systems, play a pivotal role in enhancing the best standard of care. Accreditation serves as a benchmark for the standards of patient safety in Ayush, contributing to the credibility and reliability of these ancient healing methods, since quality in healthcare is key to patient safety and effective treatment, aligning ancient healing with contemporary practices highlights the role of accreditation in establishing a reliable benchmark for patient safety and overall service excellence. Quality monitoring mechanisms are essential for maintaining high standards in AYUSH healthcare. The Ayushman Bharat Health and Wellness Centres (AB-HWCs) highlight the need for standardized checklists to assess medical supplies, infrastructure, and service delivery, ensuring consistent quality across facilities (Jyotsna et al., 2024). Accreditation by the National Accreditation Board for Hospitals and Health-care Providers (NABH) sets benchmarks for patient safety and treatment effectiveness, promoting a culture of quality in AYUSH facilities, (Kochhar & Antony, 2024). Service quality has a significant impact on patient satisfaction in Ayurvedic institutions. Dimensions such as reliability, responsiveness, assurance, and empathy are crucial for enhancing patient satisfaction, although tangible aspects like infrastructure also play a role (Gnanapala et al., 2015). In rural Puducherry, a high percentage of patients reported satisfaction with the facilities and healthcare providers at AYUSH clinics, underscoring the importance of service quality in patient experiences (Boovaragasamy & Narayanan, 2019). The integration of AYUSH with mainstream healthcare is facilitated by adherence to modern standards, which enhances the credibility and reliability of traditional practices. This integration is crucial for a comprehensive, patient-centric approach to wellness (Kochhar & Antony, 2024). The inclusion of AYUSH in preventive medicine addresses lifestyle and mental well-being, aligning with global health priorities and promoting holistic healthcare models (Saxena et al., 2024). Despite the potential benefits, challenges such as limited awareness among modern physicians, lack of standardized protocols, and insufficient research on AYUSH's synergistic effects persist. Addressing these challenges is essential for the successful integration and acceptance of AYUSH in the broader healthcare system (Saxena et al., 2024). The availability and accessibility of AYUSH services are crucial for equitable healthcare. Strategies to improve service distribution and public awareness can empower individuals to make informed healthcare choices. While the focus on service quality in AYUSH healthcare is paramount, it is also important to consider the broader context of healthcare delivery. The integration of service quality with technical competence is essential for achieving positive clinical outcomes. Patients often assess healthcare based on service dimensions they can perceive, such as empathy and responsiveness, rather than technical quality alone. Therefore, enhancing service quality in AYUSH not only improves patient satisfaction but also contributes to the overall effectiveness and sustainability of healthcare systems.

2. METHODOLOGY

The study followed a systematic review process to obtain research articles relevant to the research problem under study. The systematic review process is a structured approach for identifying, evaluating, and interpreting the available literature in a specific area (Kamboj & Rahman, 2015). A systematic literature review is a two-step process. Firstly, the criteria for article inclusion are defined, then secondly, the database and research study are identified (McLean & Antony, 2014)

2.1 Inclusion criteria

1) Research articles related to healthcare service quality and AYUSH healthcare service quality were included in the review process. The criteria were adopted in line with the primary objective of the review process.

2) Empirical and review articles published in journals were considered.

3) Papers in the English language were included

2.2 Database and article selection

The database selected for the literature search included Google Scholar, ResearchGate, Emerald, Elsevier, Sage, and Taylor & Francis. Filters such as sort by relevance were applied to restrict the search results to keywords. The systematic review process is presented in Fig. 1. In stage 1 of the review process, the literature was selected using keywords such as healthcare, AYUSH healthcare services, service quality, and SERVQUAL. The search obtained 100 research articles. The research papers were selected based on relevance to the topic under study. In stage 2, the screening of articles was conducted first based on the title and abstract, and then based on the inclusion criteria. Screening of articles based on the title and abstract resulted in the exclusion of 62 research articles, and the remaining 38 articles were moved to the next level of screening. Then articles were screened by applying inclusion criteria to exclude articles that do not fulfil the above stated criteria. This screening obtained 26 research articles that were finally considered for review, and the rest of the 12 articles were excluded from the study. Finally in stage 3 of the review process, the study provides a summary (publication trend, journal-wise distribution, methodology that includes sampling method and data analysis tools used and key findings) of the 26 articles included in the review.
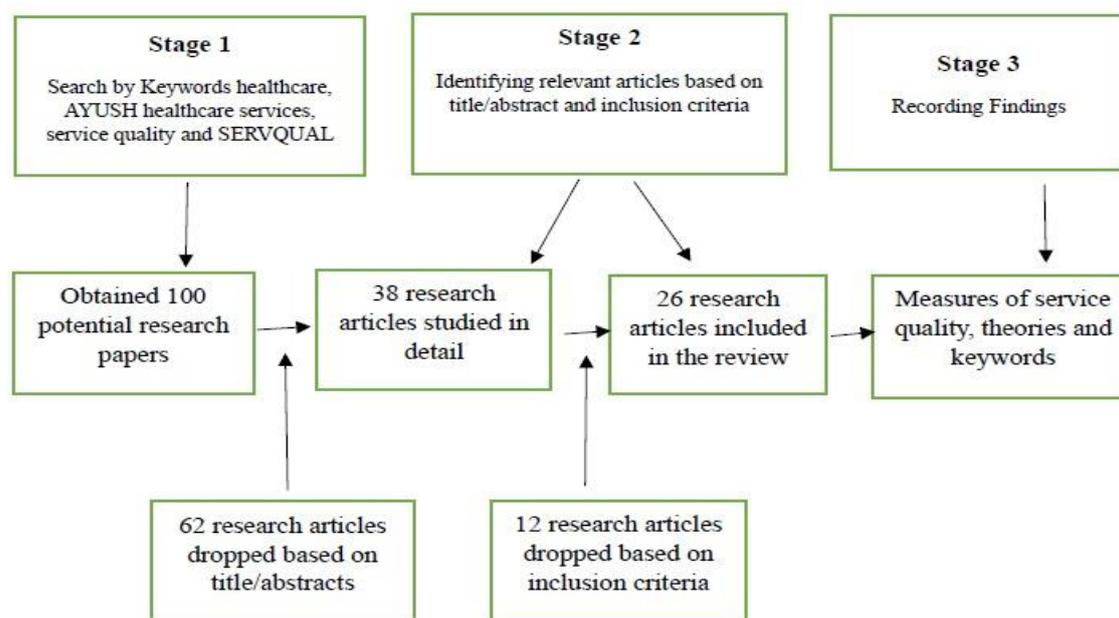

Figure 1: Systematic literature review process

3. Common characteristics of reviewed articles
3.1 Classification of articles by research type and hospital/ Healthcare facilities

Table 1 displays the classification of research articles based on research type and hospital/healthcare facility setting. The research type describes the nature of the research. It indicates that a maximum number of articles were quantitative studies (58%), followed by qualitative studies (38%), and only 4% of the studies were both qualitative and quantitative. A few review articles (38%) were included during the process. The results of the review give evidence that there is a need to conduct more qualitative research in order to get an in-depth understanding of how different service quality dimensions affect the perceived quality of care among patients and the treatment satisfaction level. Qualitative studies can also provide insight into the priorities of patients while receiving medical services.

The classification based on hospital setting yields that more than 57% of the studied articles have purposively chosen a specific hospital setting, and the rest have collected data from respondents in general. Out of total studied articles (58%) those who have chosen specific hospital type purposely among them (67%) have chosen public hospital/healthcare facilities for their study while only (13%) have chosen private hospitals/healthcare facilities for their study and (20%) have chosen both public and private hospitals/healthcare facilities for their study. The direct comparison of healthcare services and perceived service quality among patients was observed as the main motivator in choosing both hospital/healthcare facilities.

Classification	Qualitative	Quantitative	Both	Review Papers
Private		(Hooda, 2017), (Suhail & Srinivasulu, 2021)		
Public	(Chandra & Patwardhan, 2018),(Dehury & Chatterjee, 2016)	(Kumar, Prakash Sharma, Garg, et al., 2013),(Dalui et al., 2020), (Sharma et al., 2019), (Khan et al.,2015), (Senić & Marinković, 2013), (Naaz, 2019), (Ahmad & Itrat, 2020),(Taneja et al., 2025)		(Chandra & Patwardhan, 2018)
Both		(Das, 2020) (Sriram & Khan, 2020), (Vijayan et al., 2020)	(Darzi et al., 2023)	(Darzi et al., 2023)
General	(ay Santarita, 2018), (Endeshaw, 2021)(Chakraborty Ranajit &	(Zeithaml et al., 1993)		(ay Santarita, 2018), (Chakraborty Ranajit & Majumdar Anirban, 2011), (Jauhri & Pathak, 2022),

	Majumdar Anirban, 2011), (Jauhri & Pathak, 2022), (Grossu-Leibovica & Kalkis, 2023), (Javed et al., 2024)			(Grossu-Leibovica & Kalkis, 2023), (Javed et al., 2024)

Table 1: Classification of Articles on Research Type and Hospital Setting

3.2 Data analysis tool

Figure 2 presents the percentage of reviewed articles that utilize various data analysis tools employed by researchers to obtain meaningful results. Many researchers in their studies have used more than one data analysis tool. The examination of selected articles for review revealed that sixteen different analysis techniques have been utilized. Among them (32%) of the studied articles applied the t-test in healthcare service quality, followed by Descriptive statistics (26%) and Regression (26%). It was found that that both t-test and descriptive statistics techniques have been applied in combination because service quality can be obtained by ascertaining the difference between service perception and service expectation of patients using the SERVQUAL model (Ahmad et al. 2008). Other primary techniques preferred by the authors include Structural Equation Modelling (SEM) (21%) followed by Factor analysis, Reliability Test and Systematic Review (16%) each. Moving further to other techniques, Principal Component Analysis (PCA) and Kruskal-Wallis Test (10%). The least preferred techniques for healthcare service quality research include Bartlett's test of sphericity, Correlation analysis, P-Value analysis, ANOVA, Chi-Square, Propensity Score Matching (PSM), and Mann-Whitney U test (5%) each.
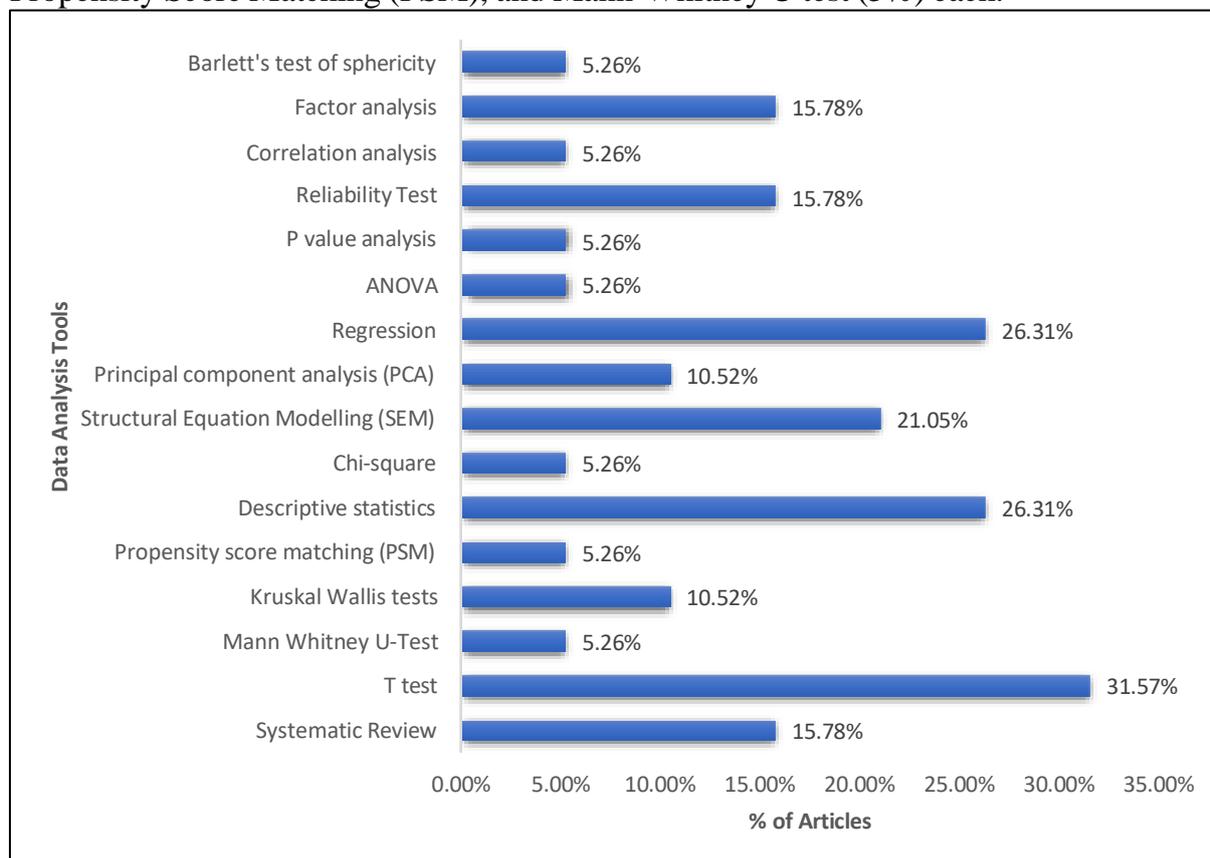

Figure 2: Data Analysis Tools

4. Sampling method

Articles selected in our review depict that both non-probability and probability sampling have been applied for studying healthcare service quality and patient satisfaction. The selected articles have adopted 08 different sampling methods. From non-probability sampling method, convenience sampling is the most widely used sampling technique (73%) followed by purposive sampling technique (27%) which can also be considered as least sampling technique under non-probability sampling method used by the authors/researchers of our selected study articles for review, while in probability sampling multi stage/cluster sampling was the most preferred sampling technique by the researchers (50%) followed by followed by simple random sampling (25%), than goes stratified sampling and multi stage stratified sampling technique (12.5%) each can also be considered as the least used sampling techniques by the authors/researchers of our selected study articles for review.

5. FINDINGS AND DISCUSSIONS

The systematic review of 26 articles has fetched important findings in terms of theories applied in examining healthcare service quality.

5.1 Measures of Healthcare Service Quality

Healthcare service quality, because of its intangible character and subjective nature, is difficult to define and measure. The comprehensive study of research articles about healthcare service quality illustrated that service quality in healthcare is examined by using different measures, primarily related. The study has identified 44 distinctive measures of healthcare service quality (Table 2)

Variables	Source
Transparent Governance & Accountability	(ay Santarita, 2018) (Chandra & Patwardhan, 2018)
Citizen Participation	(Buga ay Santarita, 2018)
Standardization and quality assurance	(ay Santarita, 2018), (Jauhri & Pathak, 2022)
Integrating traditional and modern practices	(Buga ay Santarita, 2018), (Naaz, 2019)
Electronic Platform Use	(Buga ay Santarita, 2018)
Availability and Accessibility	(Chandra & Patwardhan, 2018), (Das, 2020), (Dehury & Chatterjee, 2016), (Hooda, 2017), (Javed et al., 2024)
Staffing and Qualification	(Chandra & Patwardhan, 2018), (Naaz, 2019)
Infrastructure and resources	(Chandra & Patwardhan, 2018), (Das, 2020), (Dehury & Chatterjee, 2016), (Naaz, 2019), (Ahmad & Itrat, 2020), (Khan et al., 2015)
Training, Accountability, and Regulations	(Chandra & Patwardhan, 2018), (Hooda, 2017), (Jauhri & Pathak, 2022), (Javed et al., 2024)
Assessment through knowledge & performance score	(Kumar, Prakash Sharma, Sharma, et al., 2013)
Service delivering and process indicator	(Kumar, Prakash Sharma, Sharma, et al., 2013), (Das, 2020), (Patwardhan & Tillu, 2018)

Implementing service quality measures on policy formation	(Kumar, Prakash Sharma, Sharma, et al., 2013), (Darzi et al., 2023)
Patient Outcome	(Sharma et al., 2019), (Sriram & Khan, 2020), (Hooda, 2017), (Darzi et al., 2023), (Grossu-Leibovica & Kalkis, 2023), (Patwardhan & Tillu, 2018), (Javed et al., 2024)
Financial protection and affordability	(Das, 2020), (Sriram & Khan, 2020), (Hooda, 2017), (Vijayan et al., 2020), (Patwardhan & Tillu, 2018), (Ahmad & Itrat, 2020), (Taneja et al., 2025)
Health insurance coverage	(Dalui et al., 2020), (Vijayan et al., 2020)
Adherence to standard protocol and guidelines	(Dehury & Chatterjee, 2016)
Administrative and management efficiency	(Dehury & Chatterjee, 2016)
Clinical outcome measures	(Sharma et al., 2019)
Incidence of hospitalisation	(Sriram & Khan, 2020)
Length of hospital stay	(Sriram & Khan, 2020)
SERVQUAL (Reliability, Responsiveness, Assurance, Tangibility, Empathy)	(Endeshaw, 2021), (Chakraborty Ranajit & Majumdar Anirban, 2011), (Senić & Marinković, 2013), (Zeithaml et al., 1993), (Aljumah et al., 2020), (Suhail & Srinivasulu, 2021), (Ahmad & Itrat, 2020), (Naaz, 2019), (Khan et al., 2015), (Das, 2020), (Dehury & Chatterjee, 2016), (Chandra & Patwardhan, 2018)
Health Quality measurement	(Endeshaw, 2021)
System of medicine	(Vijayan et al., 2020)
Social assistance & Government aid	(Vijayan et al., 2020)
administrative and operational practices	(Khan et al., 2015)
SERVPERF	(Chakraborty Ranajit & Majumdar Anirban, 2011)
Survey and Questionnaire	(Suhail & Srinivasulu, 2021)
SEM (structure equation modelling)	(Senić & Marinković, 2013)
Accreditation and certification	(Senić & Marinković, 2013)
Conformity assessment	(Jauhri & Pathak, 2022)
Minimum standard for mass healthcare	(Jauhri & Pathak, 2022)
premium and standard marks	(Jauhri & Pathak, 2022)
Discriminant validity	(Jauhri & Pathak, 2022)
Variance restriction	(Zeithaml et al., 1993)
Personal (behaviour performance)	(Zeithaml et al., 1993)
Strengthening public health infrastructure	(Darzi et al., 2023)
	(Patwardhan & Tillu, 2018)

Outcome based evaluation and research initiatives	(Patwardhan & Tillu, 2018)
Value added through policy innovations	(Patwardhan & Tillu, 2018)
Interpersonal manner	(Ahmad & Itrat, 2020)
Technical quality	(Ahmad & Itrat, 2020)
Evidence based research	(Javed et al., 2024)
Continuous monitoring & improvement	(Javed et al., 2024)
Quality control measures	(Jauhri & Pathak, 2022), (Taneja et al., 2025)
SERVESCAPE (Physical environment)	(Darzi et al., 2023)

Table 2: Measurement of Healthcare Service Quality

5.2 *Theories applied to healthcare service quality*

The list of popular theories that have been applied to examine healthcare service quality across the globe is presented in (Fig. 3). A total of "fifteen" different theories were identified during the review process. Approximately 50% of the researchers have applied the SERVQUAL framework developed by Parasuraman, Zeithaml, and Berry (1988). This makes SERVQUAL the most widely used service quality framework, followed by SERVPER (30%) and Structural equation modelling (SEM) (20%). The other theories that have been utilized in our selected study articles for review to examine the service quality of healthcare system include Empirical observational, Policy Critiques, Workforce analysis, Donabedian's model, PubHosQual, Theory of self-regulation, Tri Component model, Kano's model, American customer satisfaction Index (ACSI) model, Exploratory factor analysis (EFA), Confirmatory factor analysis (CFA), Total Quality management (TQM) tool (10%) each.
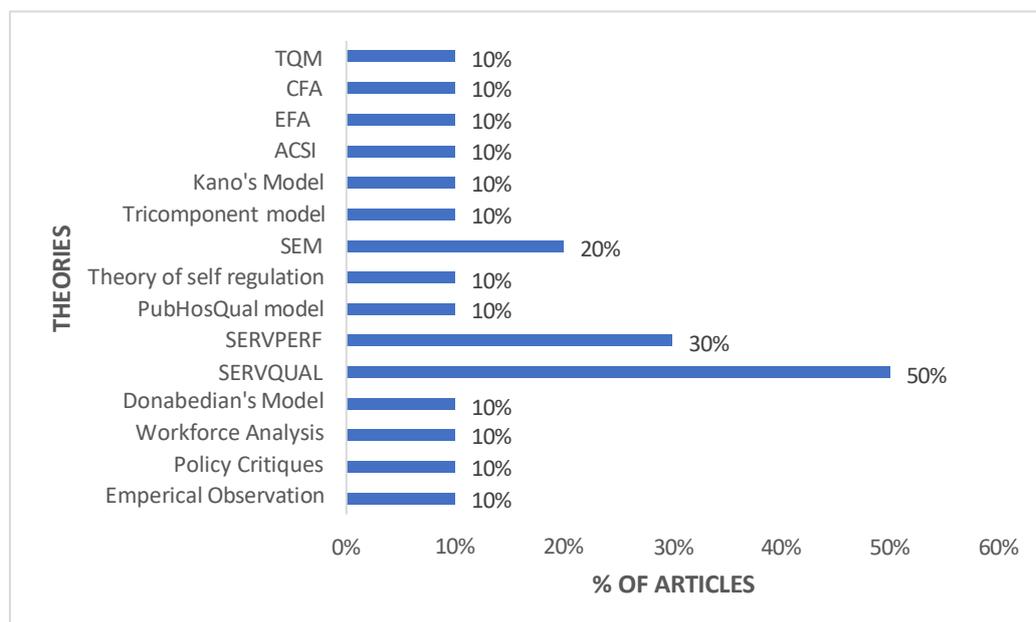

Figure 3: Theories Applied in Healthcare Service Quality

6. Limitations

The current study has several limitations, which open opportunities for future research. The present study followed a systematic review process to obtain research articles from various databases, including Google Scholar, ResearchGate, Emerald, Elsevier, Sage, and Taylor & Francis. Several inclusion and exclusion criteria were applied. Therefore, there might be a possibility of excluding some articles that are not available in these databases. The review of available literature has revealed that there is a large number of measurement tools available for the assessment of service quality in AYUSH healthcare.

7. Practical implications

The study has attempted to identify and describe all dimensions and measurement tools relevant to healthcare service quality in light of the available literature. The study provides a thorough description of a vast number of investigations and reflects their outcomes. This research could help understand the diverse conceptualizations of service quality in healthcare compared to other types of services. The study also identified various gaps in the available literature that could be answered by future research.

The results of this study will help healthcare staff and practitioners in understanding the various constituents of quality and their impact on patient satisfaction. This will help AYUSH healthcare workers and Healthcare managers in formulating strategies that will improve patient satisfaction and ultimately improving the overall performance of AYUSH healthcare setups.

8. CONCLUSION

The current study presents an in-depth review of the literature concerning service quality and patient satisfaction in the AYUSH healthcare. Service Quality is a subjective measure and hence tends to vary from place to place and from patient to patient based on preference. The study has identified various measures that have been used to examine service quality or quality gaps in different hospital settings. Most of the studies selected for review have employed SERVQUAL dimensions of quality as service quality parameters. Service quality in the majority of the studies was established based on a difference between perceived and expected scores of service quality determinants, and the t-test was identified as the widely used statistical measure for testing its significance. Additionally, all SERVQUAL determinants were found to have a significant positive correlation with patient satisfaction.

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