A STUDY OF RURAL HEALTHCARE SERVICE PERFORMANCE WITH APPLICATION OF SERVQUALMODEL IN NORTHEAST, NAGALAND

Thesis Submitted for the Award of the Degree of

DOCTOR OF PHILOSOPHY

In

MANAGEMENT

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DECLARATION

I, hereby declared that the presented work in the thesis entitled "A Study Of Rural Healthcare Service Performance With Application of SERVQUAL Model In Northeast, Nagaland" in fulfillment of the degree of **Doctor of Philosophy (Ph. D.)**is the outcome of research work carried out by me under the supervision of Dr. Vishwas Gupta, working as Associate Professor, in Department of Management,Mittal School of Business of Lovely Professional University, Punjab, India. In keeping with the general practice of reporting scientific observations, due acknowledgments have been made whenever the work described here has been based on the findings of other investigators. This work has not been submitted in part or full to any other University or Institute for the award of any degree.

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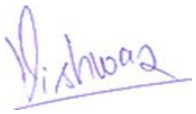
CERTIFICATE

This is to certify that the work reported in the Ph. D. thesis entitled " A Study Of Rural Healthcare Service Performance With Application Of SERVQUAL Model In Northeast, Nagaland" submitted in fulfillment of the requirement for the reward of the degree of Doctor of Philosophy (Ph.D.) in Department of Management / Mittal School of Business, is a research work carried out by Ms. Tssentsupeni A Murry, 11919157, is a bonafide record of his/her original work carried out under my supervision and that no part of the thesis has been submitted for any other degree, diploma or equivalent course.



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ABSTRACT

The right to health is a basic quality of life to that every individual is entitled without discreteness. The proverb that 'Health is wealth' is well justified as it widely contributes to the social and economic development of one's country. The essence of healthcare service is attributed to patient satisfaction. In the service industry like healthcare, delivering quality service is the most essential aspect for service providers. Understanding the perspective of the service users and exceeding their expectations will contribute to leveling up the performance standard of the healthcare institute. Exposure to modern technologies surely has manifold the service performance, especially those healthcare institutes run by private sectors. The introduction of hospitality culture in healthcare settings has revolutionized the dynamics of healthcaresettings. In contrast to this healthcare transformation, public healthcare institutesportray a different scenario. In reference to this claim, the current research aims to study rural healthcare service performance with the application of the SERVQUAL model in Northeast Nagaland. The present study is based on three tiers of government-established health centers (Sub-centre, PHCs, CHCs) in rural areas of Nagaland. Overall, the research analysisis carried out in nine districts of Nagaland with major rural occupants and considers two sets of populations- the healthcare service users (patients), and the healthcare service providers. The primary objective is to conduct a gap analysis study based on the SERVQUAL model. Based on the existing literature review, SERVQUAL measurement is widely used and accepted to evaluate and examine healthcare service quality. The research study's central agenda is to analyze healthcare service users' perceptions to better understand their perceived opinion and service expectations. The gap analysis also includes the study of the perception of healthcare service providers; and evaluates service specifications from the viewpoint of health service providers. Overall, the outcome of the study is to analyze whether patients are satisfied or unsatisfied with the perceived service.

The study is primarily focused on healthcare service quality delivered in Nagaland rural areas. These extensive approaches will provide information concerning service

performance and provide a clearer picture of the prevailing quality gaps in the rural healthcare system. Five standard dimensions are proposed to measure service quality: Tangibility, Reliability, Responsiveness, Assurance, and Empathy. Overall, the study result highlights that the Nagaland healthcare management system needs to establish a shared understanding with service users of the rural community. Address the identified service quality gaps and deliver long-term stability to achieve the performance standard.

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INTRODUCTION

Rod Blagojevich a former governor of Illinois quotes "*Health care is not a privilege. It's a right. It's a right as fundamental as civil rights. It's a right as fundamental as giving every child a chance to get a public education*." The concept of health care is not simply a process of treating or prescribing medicines to a patient but beyond this understanding. The emergence of modern and innovative technologies in the healthcare industry has also evoked interest and health awareness in the rural section of society. The involvement of the digital health system during the global Covid-19 pandemic has provided a novel and robust contribution to serving during public health emergencies. Nowadays, with so many players in the market, a customer gets an opportunity to choose from one health care to another, which can be considered a fortunate event for the people, but a challenging role for the healthcare providers to maintain a firm position in the competitive market. With so many options to choose from, one thing that a customer looks for in the service industry is the quality they receive and the fact that whether it matches or meets their expectations. The increased importance of patient satisfaction has intensified the service providers in identifying the various prevailing factors which lead to patient satisfaction and redefining quality improvement. In general, extensive attention needs to be addressed including the perspective of both individuals and populations concerning the problem of the quality of healthcare. Ultimately, the healthcare organization should serve a joint responsibility to hold accountable for improving the quality of care to the patients and strive towards delivering a reliable service quality for the end-users. In India, by 2025, the Government of India is planning to expand health spending, especially in the public sector to 2.5% of the country's GDP (source: www.ibef.org). This further accentuates the goal of healthcare growth in India where different initiatives or missions are being undertaken by the government as well as the private players. No doubt efforts and plans are being put on for achieving it in the long run, but the question lies with how to execute its plan and how effective is the process of

implementation in the present scenario of healthcare in India. The unexpected hit of the novel coronavirus has drawn the country's attention, giving a reality check on the living scenario of the healthcare system. In their research work, Iyengar et.al (2020) highlighted the learning opportunities and the implication of Covid-19. The study addresses the fact that the emergence of the novel coronavirus has ultimately offered an opportunity for healthcare service providers to reflect upon their service performance and the healthcare delivery system. This crisis has overall helped exposed the various loopholes and gaps that need utmost priority and healthcare reforms need to revolutionize to bring out a viable solution to avoid an under-preparedsituation in the future.

1.1 Healthcare service quality

1.1.1 Quality Service

Kotler and Keller (2009) define "*service as a performance that is offered by one party to other parties, which is immaterial, and it does not make any ownership on something. Service can or cannot correlate to the physical product in its production."* Kotler and Armstrong define service quality as "*the ability of a service firm to hangon to its customer*."

The service industry regarded as one of the fastest-growing sectors plays an important role in driving the country's economy. With the rapid increase in demand for service, the needs and expectations of customers have evolved. This eventually leads to the growth of awareness among service providers to learn how to hold a grip to survive in a competitive and highly diverse multicultural environment.

In a healthcare setting, customers are the patients who visit on a day-to-day basis to seek medical care and treatments. Customer satisfaction happens when health service providers can understand their expectations and fulfill service according to what has been perceived by customers. To attain customer satisfaction in healthcare settings, expectation and perception are two important factors that need to be examined. Whenever he/she visits healthcare, patients expect not only medical care and treatments from the health providers but also different other attributes. It includes

proper tangible facilities, neat and friendly employees, timely service delivery, employees with proper manners and good behavior, responsiveness to the patient request, understanding of patients' needs, and providing specific attention whenever required. The concept of healthcare delivery is an integrated approach to service performance and service quality. In a research study, Willmington et.al (2022) identified a positive association between the practice of benchmarking and its contribution to quality improvement. The study suggests that the practice of benchmarking facilitates a long-lasting improvement in healthcare service quality performance and promotes engaging activities to identify performance needs. Understanding the concept of the organization's cultural dimension in healthcare settings is another aspect contributing to quality improvement. Healthcare organizations include multiple subcultures central to values, beliefs, and shared ways of thinking. Altogether, these aspects of culture dimensions in healthcare settings can be a driving force for healthcare quality improvement but alongside require a better understanding of the organization's cultural dynamics. Overall, the key to achieving quality service performance, healthcare providers need to study and measure the preferences and expectations of the customers. They need to assign necessary implementation in the management plan to establish a shared understanding between the service providers and the customer endpoint.

With the tremendous growth of the healthcare industry in India, it is expected that the healthcare market will hit US$ 50 billion by 2022. With the emergence of large-sized Indian companies entering the healthcare industry and each striving towards rendering better quality care and service to the customers, the competition amongst allthe private players has become a battle for survival. Many researchers in their study indicate that customers take quality into account when choosing healthcare. Therefore, to maintain a sustainable quality service, the organization's management needs to focus major attention on attaining a consistent performance. It includes socialbenefits, contributing to economic growth, and giving utmost priority to customer needs and expectations which in return can help service providers to outperform their competitors and achieve long-term stability in the business.

World Health Organization (WHO) initiated recommendations for outreach support activities between health workers and underserved rural areas. Some specialist health workers find it unattractive to be working in remote rural areas, therefore outreach service activities like telehealth, mobile health clinics, and the use of e-health have been recommended as an appropriate approach. To retain and increase the recruitmentlevel of health workers in rural areas, delivering a safe and supportive workingenvironment to perform better health services has been made evident in their conducted observational studies. To bring out effective health service performance, improving the living condition of the health workers in remote rural areas can have a positive impact on recruitment and better retention power. The benefit of providing anopportunity to gain incentives (monetary or non-monetary) can act as a driving force for the health workers' increasing retention rate. In rural health settings, enhancing thescope of practice among mid-level staff by rendering the required training can fill in the gaps of the irregular presence of physicians. Introducing an education and development program for rural health workers can eventually lead to an improvement in providing better-quality healthcare. Although, WHO is working towards executing better plans, designs, and implementing strategies to contribute towards a collective effort through various independent research projects and research agendas for improving rural healthcare service performance.

1.1.2 The use of the SERVQUAL Model

What is the SERVQUAL model?

SERVQUAL model was proposed and implemented by Valarie Zeithaml, A. Parasuraman, and Leonard Berry in 1988. The concept of the SERVQUAL scale is an approach to measure the service quality, which is experienced by the end customer. It is an approach to a movement from the traditional way of considering perception to measure customer satisfaction. Instead, it suggests the use of expectationand perception to measure service quality based on certain parameters to analyze the existing service quality gap. During the past years, improving product quality was the only concern to be emphasized, but gradually with time, the importance of improving service quality became the latest trend for any organization to gain a competitive advantage over others. From that period onwards, the significance of measuring

service quality continued in all service sectors.

Its Function

The function of the SERVQUAL model address and compare the expected service quality and the perceived service. It is considered an external analysis that is focused on customers' perceived service and their actual expectations from service providers. The model does not address how an organization wants to portray its services or its perception of the service they are about to deliver to the customers. The model presents an expectancy pattern of service quality, which is the difference between expectation and perception. According to the SERVQUAL scale, 10 dimensions or factors are considered to measure and assess service quality. These dimensions ultimately enable the organization to identify which factor plays an important role to form a customer's expectancy pattern.

1. Credibility: To what extent the service provider is reliable and trustworthy?
2. Reliability: To what extent the service provider can function/perform the promised service?
3. Responsiveness: To what extent the service provider is responsible to provide adequate service to customers?
4. Competence: To what extent does the service provider possess the right skill to efficiently perform the service accurately?
5. Security: To what extent does the service provider guarantee and add trust to the service experienced by the customer?
6. Access: To what extent does the service provider makes it easy for the customer to communicate and approach them whenever they need assistance?
7. Communication: To what extent the service provider is willing to hear out and listen to a customer complaint or feedback?
8. Courtesy: To what extent does the service provider attend the customer with politeness, respect, and a friendly manner?
9. Knowing the customer: To what extent does the service provider make an effort to respond appropriately and understand customer needs and expectations?
10. Tangibles: To what extent the service provider is concerned about the physical appearance/facilities, modern-looking equipment and, other visibility forms like staff uniforms, etc?

Based on these 10-dimensional factors, the quality and performance of delivered service are measured accordingly by the researcher to identify which dimension ranks at the top amongst all other dimensions originating problems, and gap which contributes to poor service delivery.

1.1.3 Application of SERVQUAL In the Healthcare Sector

In the healthcare industry, service quality is considered an important factor to evaluate service function and overall performance. A systematic approach has been carried out by the healthcare organization to improve the quality and performance standards in the healthcare system. With the advent of technology, healthcare organizations, especially private health providers are enhancing the role of service quality by introducing modern equipment and the latest facilities. With so many private players in the market, healthcare has become more business-oriented, drivenby the interest to outperform others. With many options to choose from, a patient can select and compare healthcare based on the service quality they perceive to be the best.

The application of SERVQUAL in the healthcare sector is to probe the difference between patient expectations and perceptions. Hermanto (2015) states that patient satisfaction level highly depends on service performance conducted by the hospitals. The SERVQUAL approach has been widely used in many studies to define customer perceptions and expectations. To gain customer loyalty, and retain the trust of the patient, it all depends on the service experienced by the end-users. Fowder (2005) in his study aim towards validating the existence of SERVQUAL dimensions and their attributes in healthcare settings. Exploratory research was executed to identify quality healthcare in the Mauritian context. He further suggests the importance ofimplementing additional dimensions to better evaluate the quality of healthcare service. Most of the researchers using the SERVQUAL scale in healthcare settings, implement additional dimensions to validate and determine a better outcome. Whereassome researchers like Butt and Run (2010), consider SERVQUAL as a reliable tool that helps in identifying quality gaps and suggest no additional dimension thus proving its validity.

Quality is considered an important and determinant factor to evaluate the healthcare sector. Therefore, applying the right tool to measure quality can act to bring about long-term profitability, gain a competitive edge, and can lead to an overall improvement in service performance. Thus, this can result in a win-win situation for service providers as well as service users.

1.2 Healthcare Services in India

1.2.1 The healthcare challenges in India

The Indian healthcare scenario presents enormous challenges that need to be addressed:

1. Infrastructure: Proper infrastructure is regarded as being the basic step toward development in healthcare as well as progress towards society. No doubt we witness immense transformation in the private sector where proper physical infrastructure and trending digital facilities are being set up. But on the other side, the question lies with the existing infrastructural plans for a three-tier public healthcare system (sub-centre, PHC, CHC) at the state-district level. The fact that a major proportion of people live in rural areas, it has become a matter of concern to understand the importance of healthcare as public health centres are the first and most common point of contact for people living in rural areas. The utilization of allotted funds for expanding healthcare centres does not end with building physical infrastructure and facilities alone. Establishing a proper healthcare centre includes several other attributes and one most important attribute is the availability of human resources.

2. Human resource: The human workforce arguably plays an important role in healthcare service delivery. The shortage of workforce/manpower exists mostly in government institutions as compared to private hospitals Bhandari and Dutta (2007) states that a shortage of manpower mostly exists in rural public health institutions as they are unable to retain trained medical professionals creating a higher scope of need gap and low satisfaction of the existing position. In India, large-scale absenteeism is one major factor contributing to a shortage of manpower and lack of participation among the health workers to deliver efficient health service

is another drawback to be considered and exists mostly in rural areas. To overcome the manpower crisis in healthcare, adequate training needs to be provided to the health workers so that they can be competent enough to deploy a better health service.

3. Availability and accessibility to healthcare service: To achieve the desired health outcome, the geographic availability of healthcare facilities is one basic factor to be considered in seeking timely service delivery. In India, the majority of people living in rural areas are denied accessing basic healthcare facilities as compared to urban residents. No doubt the central government has initiated various plans and schemes for future development in the healthcare sector. Ultimately it is the role and responsibility of the state government to carry out the implemented function to a progressive stage. . Each state has established three tiers of healthcare infrastructure namely- sub-centers, Primary Health Centres (PHCs), and Community Health Centres (CHCs). According to the report as of March 2018 presented by the statistics division, of the Ministry of Health & Family Welfare, there is a shortfall in rural healthcare facilities- 18% at the sub-center level, 22% at the PHC level, and 30% at the CHC level. The current COVID-19 pandemic has placed the country in a challenging position to deliver adequate health services in dense interior rural areas where there exists no proper health setup. The poor healthcare systems in rural areas prevail due to a shortage of workforce, absenteeism, non-availability of equipment, poor infrastructure, and less attention to quality care and service. All these identified factors add to making the healthcare system more challenging to confront during public emergencies such as COVID-19.

4. Affordability: With an increase in the high cost of healthcare, it has placed India in a challenging position to deliver adequate health services. This gives rise to the question of how many Indian citizens can afford the high-cost expense of healthcare. Private players demand a higher price for the service they provide as they are considered the dominant players in the healthcare service sector. Due to this reason, out-of-pocket spending on health has become a burden for people seeking health services and this in return contributes to catastrophic health expenditure. The fact that public health centres provide a low cost for healthcare service, yet the main drawback is that they lack so many factors like- no proper infrastructure, lack of adequate

manpower, non-availability of equipment, and accessibility. Until and unless one can afford private healthcare service, generally, it is not the first choice of any individual seeking health treatment. Hopefully, the various initiatives taken up at the local and national levels, introducing different development programs and schemes can bring solutions to the problem of the affordability of healthcare.

1.2.2 Healthcare Scenario of the Northeast Region

Northeast India has eight contagious states- Arunachal Pradesh, Assam, Manipur, Mizoram, Meghalaya, Nagaland, Tripura, and Sikkim. All the states of the northeastern region are mostly covered by hilly terrain with a total population size of 45,772,188 (census 2011). The development in NER (Northeast Region) over the years in terms of healthcare is initiated by both state and central governments where improvement in health indicators such as IMR (Infant Mortality Rate) has shown impressive results. Physical infrastructure and delivering quality service is considered the major concern for healthcare in almost all states of NER, especially in rural public health centres. The contributing factor to these problems is due to several reasons suchas - lack of proper setup of physical infrastructure, shortage of manpower, dearth of medical colleges, a large scale of absenteeism resulting in underutilization of health facilities, inadequate availability of state-of-the-art equipment, poor participation from health workers, and management team. Mwita *et.al* (2009) pointed out thenegligence of government HR (Human Resource) functions within healthcare, as most of the management responsibilities are directed by clinicians who have just a little or no knowledge about its actual function or it is either directed by administration personnel who handles policies, rules, and regulation of civil service. This eventually calls for an urgent need to strengthen the HR management system to improve manpower productivity and better-quality outcome.

Northeastern states compared to other parts of India has a high dependence on government healthcare centers, but they lack underutilization of available health facilities, and, proper diagnosis and treatment are unable to be attained. For instance, the Mizoram Economy Survey of 2014-15 states that the lack of availability of state-of-the-art equipment and shortage of manpower has caused many people from rural areas to be referred outside the state for further

treatment at the cost of the government of Mizoram's exchequer. Due to poor service quality and facilities of district hospitals and health centres, people from rural areas need to take a long journey just to seek health treatment and which eventually leads to an increase in government spending and makes it inconvenient for the patients as well. The economic burden generated due to huge out-of-pocket expenditure is quite prevalent and is considered an underlying issue to develop focus attention. The shift from public healthcare to private healthcare service has relatively caused high health expenditure burden and has inflicted those vulnerable group of individual households who depends on a low income. The government of India concerning this issue has introduced schemes such as the Employees' State Insurance Scheme (ESIS) on 24 February 1952 and the Central Government Health Scheme (CGHS) providing healthcare facilities to Central Government employees and pensioners.

National Rural Health Mission (NRHM)

NRHM launched by the Government of India in April 2005 was a lead undertaken to provide healthcare to the rural population of India with a major focus on eighteen states which have poor public health indicators and weak infrastructure. Accredited Social Health Activists (ASHA) act as a direct link between the health centers and the villagers. The primary purpose of ASHA isto guide the village people about-hygiene, sanitation, knowledge of controlling birth, and the importance of immunization. The goal of NRHM is to seek universal accessibility to provide equitable healthcare facilities with quality service satisfying the need of the people. Providing quality service is a challenging factor that can be solved with improvement and innovation in human resource management. Therefore, to make health services available to the rural population, NRHM has introduced health workers from the local residents on a contract basis, training in multi-skills, and integrating with AYUSH. The implementation of NRHM has brought effective benefits to all eight Northeastern states, ensuring the delivery of quality healthcare service for all and improvement in physical health infrastructure.

Ayushman Bharat – National Health Protection Scheme is an initiative undertaken by the Government of India in September 2018. The major focus of this mission is to

reduce Out of Pocket (OOP) expenditure by increasing insurance coverage to nearly 40% for the poorest and most vulnerable section of the population targeting about 10.74 crore deprived families covering both rural and urban. To widen the coverage of health insurance, Ayushman Bharat Yojana is implemented recently in Northeast India.

1.2.3 Rural Healthcare Infrastructure In NER

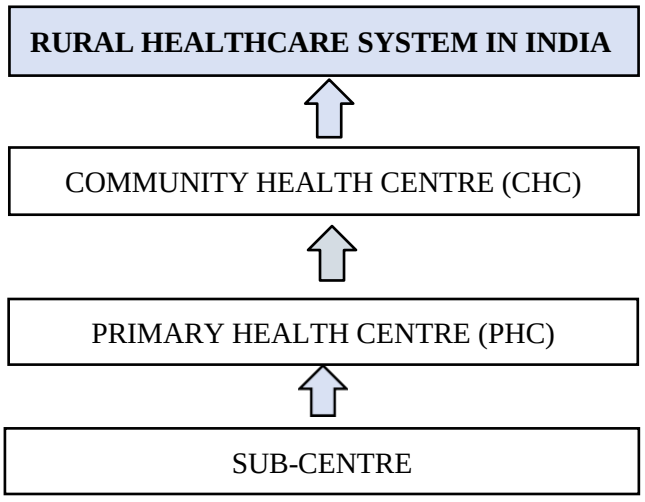
The development in healthcare infrastructure as compared with mainland India, the Northeast region lay back with this enhancement. A potential advancement in healthcare can be achieved only when more funds, especially from the private corporate sector, are invested in the healthcare sector. A suitable number of private hospitals have flourished and stepped up in the region, for instance, Assam is considered the new hub for healthcare venture where people from different state visits to seek health treatment. Contrastingly improvement in the development of super- specialty hospitals needs to be considered for better service quality. The prevailing question is the affordability of private healthcare services and the cost-effective factor,which is crucial, for the public, especially for those rural population who depends on alower income generated from farming and seasonal agricultural production. In NER a total majority of over 80% of the population still resides in rural areas. The monetary issue faced by the rural people of being unable to afford private health facilities leads to many patients' going without proper or no treatment. The northeast state has a high dependence on government public health centres, but due to its lack of underutilization of existing health facilities, it is unable to cater to the needs of the people who want to seek health treatment, which in turn creates a scope for a need gap. A rigorous effort needs to be initiated by the state government, health workers, and the community as a whole to bring progress to the entire healthcare system. This constructive change will make health treatment available equally to everyone, promoting a healthy lifestyle. The following table 1.1 presents the three tiers of healthcare infrastructure with population norms.

Table 1.1 Three Tiers of Healthcare Infrastructure with Population Norm

Centres	Population Norms*	
	Hilly/Tribal area	Plain area
Sub-Centre	**1 SC per 3000 population**	**1 SC per 5000 population**
Primary Health Centre	**1 PHC per 20000 population**	**1 PHC per 30000 population**
Community Health Centre	**1 CHC per 80000 population**	**1 CHC per 120000 population**
Source- Rural Health Statistics 2020-21		

In the report on rural health statistics 2020-21, there exist 156101 sub-centres, 25140 PHCs, and 5481 CHCs that are functioning in rural areas in India. The following is the structure of the rural healthcare system in India.

Figure 1.1 Rural Healthcare System in India



Source: Rural Health Statistics 2020-21

i).). Sub-centre: The sub-centre is considered a commonplace of contact between the primary healthcare system and the community. Each of the sub-centre is assigned to be managed by Auxiliary Nurse Midwife (ANM), one male worker, and, one Lady Health Visitor (LHV) who takes up the charge to supervise 6 sub-centre. The

basic responsibility of the sub-centre is to provide health needs for minor ailments serving the village community.

ii). Primary Health Centres (PHCs): The Primary Health Centre (PHC) is a functional unit, and the first contact made between the medical officers and the community. Each PHC is a hub for 6 sub-centres, and it is assigned to be managed by Medical Officer along with 14 paramedical and other staff. The responsibility of the PHCs is to deliver cost-effective service, to provide accessible service, and to make healthcare treatment available to the community. PHCs are maintained by the state governments under the Minimum Needs Programme (MNP)/ Basic Minimum Service Programme (BMS).

iii). Community Health Centres (CHCs) The Community Health Centres (CHC) are the third tier in the system of a healthcare institution. CHC is assigned to be managed by 4 medical specialists- surgeon, physician, gynecologist, and pediatrician along with 21 paramedical and other staff. Each CHC has been equipped with 30 in-door beds with one OT, X-ray, laboratory, and labor room. CHC acts as a referral point for 4PHCs, and its primary objective is to equip health centres with modern facilities to provide quality service and make it available and accessible to the rural population and minimize overcrowding in the district hospitals.

The following table presents the available infrastructure facilities of Sub-centres,PHCs, and CHCs (as of 31st March 2021) in the rural areas of the Northeast.

Sub-Centres:

Table 1.2

S. No	State	No. Of sub-centres	No. Of Sub-Centre with ANM Quarter	Without Regular Water Supply	Without Electric Supply
1	Arunachal Pradesh	337	165	56	63
2	Assam	4663	2067	96	1757
3	Manipur	416	42	89	110
4	Meghalaya	448	334	34	250
5	Mizoram	340	193	35	7
6	Nagaland	427	87	29	93
7	Sikkim	147	107	0	0
8	Tripura	967	357	132	379
Source- Rural Health Statistics 2020-21					

Primary Health Centres (PHCs)

Table 1.3

S.No	State	No Of PHCs Functioning	PHCs Functioning On 24x7 Basis	With Labour Room	With At Least 4 Beds	With OT
1	Arunachal Pradesh	122	48	71	48	2
2	Assam	948	293	742	178	80
3	Manipur	86	72	79	61	6
4	Meghalaya	121	111	108	111	113
5	Mizoram	62	41	52	58	32
6	Nagaland	131	34	105	100	4
7	Sikkim	24	24	24	24	12
8	Tripura	108	85	108	108	85
Source- Rural Health Statistics 2020-21						

Primary Health Centres (PHCs)

Table 1.4

S.No	State	Without Electric Supply	Without water supply	Without All-Weather Motorable Approach Road	With Telephone	With Computer
1	Arunachal Pradesh	14	13	30	20	49
2	Assam	16	0	65	309	613
3	Manipur	0	6	3	24	51
4	Meghalaya	1	0	5	26	90
5	Mizoram	0	6	3	24	51
6	Nagaland	9	7	32	17	36
7	Sikkim	0	0	0	4	24
8	Tripura	0	0	0	108	108
Source- Rural Health Statistics 2020-21						

Community Health Centres (CHC)

Table 1.5

S.No	State	Number of CHCs Functioning	With All Four Specialists	With Computer / Statistical Asst. For MIS/ Accountant	With Functional Laboratory
1	Arunachal Pradesh	57	1	31	49
2	Assam	197	7	25	197
3	Manipur	17	2	2	6
4	Meghalaya	28	0	9	28
5	Mizoram	9	0	2	9
6	Nagaland	21	1	13	21
7	Sikkim	2	0	2	2
8	Tripura	22	0	14	22
Source- Rural Health Statistics 2020-21					

Community Health Centre (CHC)

Table 1.6

S.No	State	With Functional O.T.	With Functional Labor Room	With Functioning Stabilization Units for Newborns	With At Least 30 Beds
1	Arunachal Pradesh	12	53	35	1
2	Assam	176	197	153	134
3	Manipur	5	6	6	7
4	Meghalaya	7	28	28	16
5	Mizoram	9	9	9	9
6	Nagaland	13	20	19	21
7	Sikkim	0	2	1	0
8	Tripura	22	22	6	22
Source- Rural Health Statistics 2020-21					

Over the past years, the initiative undertaken by each of the states and with the emergence of NRHM (National Rural Health Mission) to develop the healthcare centres has achieved a transformation resulting in the setting up of several Sub- centres, PHCs, and CHCs. But the ultimate question lies with the functioning, availability, and utilization of the existing health centres. From the above table presented as per the RHS report 2020-21, we witness the performance of each state, where some of the states have set up many health centres but the available service is below the required level, which in return, creates a gap in delivering quality service tothe end-users.

The progress in Northeast rural healthcare infrastructure can go- ahead when the existing health centres start to function actively towards rendering quality service to the rural community and keeping a closer look on working towards the prevailing

problems like- road conditions, water and electricity supply, state of the art equipment, availability of ANM quarters, man-power, and delivering a quality service. In the end, what matters the most for a service provider is to enable its users to be satisfied with the delivered service. Keeping in mind the interest of the user's expectations and perception can help towards producing better outcomes. Northeast people, especially the rural population rely on government-established health centers because of their cost-effective nature. But due to unsatisfactory service, they are compelled to approach private hospitals or private clinics for treatment. The government and the community as a whole play a significant role in the better functioning of the available health centers and collaboratively work towards a better tomorrow.

1.3 Nagaland Health System

Over the years, the state has witnessed a comprehensive improvement in the process of healthcare infrastructure and understanding the importance of delivering a better healthcare service. The healthcare scenario of the state has steadily positioned itself to provide basic human rights attaining accessibility to affordable and quality service, especially to the rural section of society. The Department of Health & Family Welfare, Nagaland has been undertaking various initiatives under National Health Mission (NHM) to restructure the state healthcare delivery system. The success of such initiatives has promoted the involvement of the community and leveled uphealthcare facilities. With these approaches and commitment, the state is headedtoward rendering quality healthcare service and structuring a better healthcare delivery system. Alongside considering these improvements, one cannot overlook the existence of certain interventions. Nagaland is a state with a major rural population and the contribution of the difficult hilly terrains, lifestyles, and habitation all togetherportrays a very challenging role for the healthcare service providers. Health awarenessamongst the rural population has also increased over the years which leads to demand for better healthcare facilities, equipment, infrastructure, timely service, and demand for sufficient manpower. Rural Healthcare Statistics report (2020-21) states that the number of Subdivisional hospital functioning is 0, the number of District hospital

functioning is 12, and the number of medical colleges within the state is 0. Considering the highlight of these facts, the state lacks behind in terms of the development of healthcare infrastructure. In this regard, there exists a prevailing gap that leaves scope for improvement in the overall development of healthcareinfrastructure. The state government should urge to work toward a genuine cause of establishing medical colleges which in return will contribute to additional benefits, facilities, and opportunities for higher medical education and render healthcare service to the community as well.

1.3.1 Nagaland Health Project

Nagaland Health Project (NHP), led by Project Director Dr. Vizolie Soukhrie is an initiative undertaken for 6 years with support from the World Bank, the project targets 177 health facilities and covers 500 villages intending to enhance the management system, promotes community participation to empower their opinion, and to improve overall service delivery in the healthcare system. The project evaluation will be conducted at the start, middle, and end ofgthe project. The outcome of conducting such an evaluation will provide information and improve knowledge regarding the healthcare service, and facilities and help identify various related factors. The project aims to implement two components-

1. Community action for health and nutrition
2. Health system development

The purpose of these implementations is to promote the activity of community engagement in the health delivery service and to increase their level of awareness about the utilization of health services. The project supports financial investment to improve the electricity supply, water supply, and proper sanitation for each targeted health facility. Development intended to improve supply chain management, improve IT, and frame strategy for improving HRM systems within the state aim towards strengthening the entire health system.

No doubt the state government has initiated various plans and programs which are

being implemented in the system and is planning to do more in the coming days, to promote an integrated effort for the deliverance of quality health service, especially to those sections of people who depend on government-established health centres. However, while the state government is taking up various steps for future sustainable development in the health sector, it is important to keep track of the expectations and perceptions of the end-users. If in case the various programs undertaken by the state government do not fulfill users' perceptions and meet their expectations, the outcome will bear no significant result. The satisfaction of the service user is what matters the most in the end. The government needs to understand the actual wants and expectations of the people they are rendering service to so that they do not conclude wrong understanding and further translate them into the service delivery specification. Therefore, service providers need to keep in mind the interest of the end-users to eliminate various gaps which occur due to lack of management, inappropriate service design standards, an improper chain of communication, and ignoring users'expectations and perceptions.

The following table 1.7 presents data as per the Rural Health Statistics (RHS) report on 31st March 2020. Number ofiSub- centers, PHCs, and CHCs functioning in Tribal areas of Nagaland-

Table 1.7 Number of Health Centres Functioning in Tribal Areas of Nagaland

S.No	Centres	Number of Sub-centres, PHCs, and CHCs functioning
1	Sub-centre	427
2	Primary Health Centre (PHC)	131
3	Community Health Centre (CHC)	21

As per the population size of Nagaland, the state has established adequate health facilities. Nevertheless, what seems to be important in health service is its ability to give a quality performance that satisfies the end-users. Therefore, the study incorporates the application of the SERVQUAL model to analyze gaps and to evaluate and measure users' expectations and perceptions.

1.3.2 The Initiatives Undertaken to Improve Rural Healthcare Facilities

Nagaland considered one of the smallest states located in northeastern India with a population size of 1,980,602 per the 2011 census, is known for its diversity in terms of language, various ethnic groups, and its natural beauty of hilly regions. In Nagaland, most people consider agriculture as the backbone of economic activity and the main source of income generators. Therefore, maintaining a good and healthy lifestyle is a principal factor to be considered. The sole purpose of the study is driven toward the three tiers of government-established health centres (Sub-centre, PHC, CHC) and it does not consider any private hospitals and government district hospitals. The scenario of the Nagaland healthcare system presents the fact that the majority of the people mostly rely on government-established healthcare centres but usually go without proper treatment or many a time with no treatment as well. Concerning this claim, a proper table (Rural Health Statistics Bulletin Report: 2018-19) has been highlighted above. Over the years, the state has set up several sub-centres, PHC and, CHC, but the main problem lingers around the unavailability of proper healthcare equipment, poor road connectivity, acute shortage of manpower, underutilization of available facilities, poor service quality, considering all these prevailing issues, it altogether portrays a different story. Most of the villagers residing in interior areas are unable to access health facilities due to poor road connections or even though they can visit the health centres, they are left unattained because of the poor availability of health professionals. The vast scattered population in rural areas is also a contributing factor and delays people to get immediate access to the health facility. Private hospitals in Nagaland are expanding in districts like Dimapur and Kohima where it is staffed by professional doctors and nurses but, the relevant question lies with- Are the service and facility affordable to all the public in general or is specific to a certain section of people who can afford to avail both?

According to the Sample Registration System (SRS) bulletin report of May 2019, the state has shown significant improvement in Infant Mortality Rate (IMR) ranking lowest in the country at 7 per 1000 live birth. Nagaland Minister of Health and FamilyWelfare, S. Pangnyu Phom, in an interview with Elets News Network, has made a statement that- based on the guidelines from the Ministry of Health and Family Welfare, the Government of India, the state is focusing on continuous improvement in

upgrading the standard of health care and treatment within the state. The initiative was taken up with objectives

-To award the best CHC, PHC, and district hospitals initiated under Swachh Bharat Abhiyan to promote cleanliness and improve service quality.

-Implementation of a quality management system to achieve sustainable quality in public health facilities by keeping continuous assessments and improving the service quality. The state government aims to initiate various programs like- The Maternal and Neonatal Health Toolkit, LaQshya, guidelines on maternal and child death review, skill lab, etc, to improve quality care for maternal and child health services.

-To promote active community participation to render public service to achieve sustainable health development.

Ayushman Bharat- Pradhan Mantri Jan Arogya Yojana (AB-PMJAY) is one such initiative undertaken by the GOI. The objective of this yojana is to provide healthcare benefits to those vulnerable households in rural areas. Under this program, each household is entitled to free hospitalization coverage up to ₹5 lakhs. For implementing the scheme, the state initiated a tie-up with 81 empaneled hospitals (64 public and 17 private). The prime purpose of the PMJAY scheme is to facilitate the country towards Universal Health Coverage.

1.3.3 Ethno-traditional practice of herbal medicines

The North-Eastern region of India is inhabited and occupied by various ethnic groups and tribal communities. These ethnic communities have extensive knowledge to provide traditional folklore treatment for everyday ailments and prescribe local healing herbs. The traditional herbalist uses various medicinal practices extracting from natural substances such as animals, minerals, and vegetables ((Shankar et al., 2012). The oldest form of traditional healing method is an essential branch to attain primary healthcare needs. Various ailments and diseases such as skin problems, diarrhea, digestion problem, and blood-related problems are cured through the utilization of natural products derived from different plant species collected from wild sources. Overall, traditional healers like herbalists, diviners, traditional birthattendants are common in most states of Northeast India and, they often play a vital role in serving the rural communities where proper healthcare facilities are not readily

available.

These traditional methods of administering local herbal medicines deliver a better service that is affordable, available, and caters to all age groups. The method applied in preparing traditional medicines as an antidote generally consists of different plant parts like the leaves, stems, roots, bark, and whole plant (Bhuyan & Laskar, 2014). All traditional healers do not perform the same functions as each of them has a different field of expertise and has their method to diagnose and give medicines accordingly (Shankar et al., 2012). The use of traditional healing practices and modernized health practices share a common platform in delivering a sustainable mode of treatment and plays a vital role in contributing a better healthcare service to those tribal, and rural communities. However, over the years, the use and knowledge of traditional medicinal plants as seen to be diminishing amongst the young generation of modern society. Therefore, the role and positive interference of the stategovernment play an essential part in promoting such traditional practices. Educational training needs to be imparted to those younger generations to carry forward anduphold the knowledge of old forms of medicinal healing practice and to encourage and take a keen interest to strengthen and support the folk healers.

1.4 Chapter Summary

This chapter is sectioned into three parts. It begins with a brief introduction to the concept of healthcare, the emergence of health awareness amongst the community, and addresses the importance of service performance in the healthcare system. The first section comprises the study of healthcare service quality with a focus on definingservice quality, the use, and the application SERVQUAL model in healthcare settings.The second section comprises the study of service performance and challenges faced in healthcare settings in India. It also outlines the scenario of rural healthcare infrastructure in the Northeast region. The third section comprises the study of the Nagaland healthcare system, the ongoing health projects, and various initiatives undertaken to develop healthcare facilities and infrastructure.

1.5 Organization of the Thesis Chapters

The thesis is categorized into 5 chapters. Chapter 1 presents the origin and describes

the background of the research study. It consists of three sections- the concept of healthcare service quality, healthcare service performance in India, with a particular focus on NER, and the study of the Nagaland healthcare system.

Chapter 2 consists of a review of the literature. It is divided into two parts- the first part consists of a review study of the application of the SERVQUAL model and healthcare service performance and the second part consists of a review study of the healthcare service system of NER.

Chapter 3 describes the research methodology and designs proposed in the study. This chapter overall covers the section on stating the research objectives and framework, sampling method, and techniques, questionnaire, data collection approach, pilot testing, and tools for data analysis.

Chapter 4 reports the data analysis, findings, and interpretation of the research study. The proposed tools for achieving the objectives of the study are Inferential statistics, Gap Score Analysis, Mann Whitney U test, Confirmatory Factor Analysis (CFA), and Logistic Regression.

Chapter 5 summarizes the entire thesis by concluding with reasons for poor satisfaction and highlighting key learning from the study. This is followed by describing managerial implications and suggestions for future research.

CHAPTER 2

CHAPTER 2
LITERATURE REVIEW

A literature review is a comprehensive overview specifically carried out by researchers to analyze those published works related to a specific domain/ topic. It demonstrates and combines valid information to establish related knowledge andstructure into a summary. Framing a proper literature review will help in guiding those readers and scholars to grasp an extensive understanding and define a better approach to their respective areas of study. Here, the literature review is described into two topics of the research study.

2.1 Application of SERVQUAL Model and Healthcare Service Performance (Global Context):

Mrabet et.al (2022)

The research paper evaluated the relationship between service quality and patient satisfaction in the healthcare sector of Tlemcen city in Algeria. The purpose of this paper is to identify those service quality dimensions which are critical for patients in a private healthcare institute. The questionnaire for data collection was developed based on the SERVQUAL instrument. The sample size consists of a totalof 208 patients. After the application of SEM, the result highlights the assurance dimension as the contributing factor in improving patient satisfaction. Overall, the result indicates a positive perception of the healthcare service with all the dimensions. The researchers further suggest healthcare managers use the SERVQUAL instrument to evaluate the performance of service quality in private hospitals in Algeria and other African countries.

Farrokhi et.al (2022)

The approach of the cross-sectional method was incorporated in a total of six public teaching hospitals in Tehran. The sample consists of 433 patients, 100 employees, and 15 managers. For data collection, the SERVQUAL instrument was used in the study. Based on the analysis results, the highest gap

exists with the responsiveness dimension followed by the empathy dimension from the perspective of patients. From the perspective of employees, the highest gap exists with the tangibility dimension followed by the empathy dimension. Finally, from the perspective of managers, the service gap is related to tangibility and responsiveness dimensions. The common factor contributing to the service gap is the responsiveness dimension. The researcher further concludes with a suggestion ofdeveloping effective training programs for the health workforce to improve service performance and initiate investment to improve the tangible aspects of healthcare facilities.

Jonkisz et.al., (2022)

The study has emphasized the use of the SERVQUAL method for assessing theservice quality of healthcare in selected Asian countries. The research objective is to conduct a meta-analysis and systematic review for identifying the key differences in the SERVQUAL dimensions. In addition, the study also aims to address the SERVQUAL model as a robust instrument for measuring service quality in the healthcare domain. The sample size consists of 5903 participants. The findings of the study reveal a gap in all five dimensions of SERVQUAL resulting in low patient satisfaction with the service performance. In conclusion, the study highlights the fact that the use of the SERVQUAL model can help achieve to measure service quality efficiently.

Sayan (2021)

The researcher measures healthcare service quality with the application of the SERVQUAL model. The sample size consists of 213 participants from a training and research hospital in Istanbul, Turkey. Considering the data analysis result, it was observed that patients have high expectations for all the dimensions but, the result suggests low satisfaction levels with the perceived service of health service and hits below their expectations. The dimensions contributing to low service quality performance are- the assurance dimension and the tangible dimension. Further, to improve the service quality, the researcher suggests reviewing those sections which contribute to low satisfaction amongst service users. In addition, healthcare service providers should take initiative to implement effective practices and activities to improve service quality. The researcher further recommends the use of the

SERVQUAL instrument in hospitals.

Lin et.al (2021)

This paper evaluated healthcare service quality (HSQ) from the perspective of patients to understand the prevailing gaps in the delivered service. A cross-sectional design approach was carried out in the study for NPP (Nurse Practitioner Practice) in Taiwan. The sample size consists of 200 patients to assess their expectations and perceptions of HSQ. The analysis results a highlight that the patients have significantly high expectations compared to their perceived service. The study reveals that the largest gap was the reliability and responsiveness dimension then followed by the empathy, assurance, and tangibility dimension. The researchers found in their study that those in-patients who were admitted to the hospital for long days had a significant contribution to the gap related to the HSQ. However, the contribution to the HSQ gap was less from out-patients. Hence, the patients were not completely satisfied with the service quality of NPP in Taiwan. The researchers further suggested implementing a practice of patient-centered care and introducing a proper certificationprogram for NPs'.

Akob et al. (2021)

The researcher conducted a study in Makassar City, Indonesia, with a sample size of 296 respondents from private hospitals. The objective is to understand the underlying factors that reflect patient loyalty using the SERVQUAL model. The findings and discussion of the study suggest that good service quality is needed for attainingpatient loyalty and satisfaction. The testing models incorporated in the study highlightthat if patient satisfaction is fulfilling from the end users' point of view, it includes the attainment of patient loyalty, such as service quality and image. As a result, the essence of delivering quality service can have a direct impact on the hospital's image. It, therefore, shapes the perception of health users in their decision-making ability and improves the level of customer satisfaction and loyalty.

Alumran et al., (2020)

The research paper aims at measuring the quality of healthcare service from a patient's point of view and comparing the service quality of public and private hospitals in Saudi Arabia's eastern area. The SERVQUAL model was incorporated into the study with a sample size of 258 inpatients. The result indicates that private hospitals in

Saudi Arabia deliver a better service quality compared to public hospitals in terms of assurance. The researchers further highlight the need to expand a study on the financial and leadership dimension of health service quality which will eventually help to enhance and deliver better service quality.

Došen Đ, Škare V, Cerfalvi V, et al. (2020)

It presents a report assessing the service quality of public healthcare using the SERVQUAL instrument. The patients that use hospital services at SM UHC were included in the study. The sample size consists of 630 patients, out of which 564 patients completed the questionnaire correctly. The assessment carried out in the research study highlights that four out of five SERVQUAL dimensions were rated negatively by patients that reveal patients' expectations were higher than what they perceived. Overall, the result indicates that the management of the Croatian public healthcare service sector should give substantial importance and advocate a practical approach to understanding patients' expectations and finding an effective way to attain patient satisfaction.

Ko and Chou (2020)

The study applied the SERVQUAL instrument to measure the e-health service quality for the adoption of information and communication technology (ITC) by elderly care organizations in Taiwan. In this research study, a pre-implementation analysis combining the SERVQUAL questionnaire and importance-performance analysis was developed. The study has highlighted certain factors which are dissatisfactory to the service quality such as the physical environment, services related to room maintenance, the quality outcome regarding medical treatments, and staff inadequate response related to service delivery and problem-solving issues concerning the need of the patients. To eradicate the identified problems mentioned by the researchers, Health care informatics (HCI) systems such as an electronic shift system (ESS) and electronic health records (EHR) are proposed in the study which could be meaningful for further practical application.

Zobair et.al., (2020)

The researchers have undertaken a study focusing on the relevant barriers to the adoption of telemedicine healthcare services in the rural hospitals of Bangladesh. The sample size consists of 500 telemedicine patients. The overall findings and results

highlight the fact that the lack of technology affects the channel of communicationand the poor-quality service highly contributes to patient dissatisfaction and impactthe competency of healthcare service providers as well. These barriers are the challenging factors for telemedicine healthcare centres in the rural areas of Bangladesh.

Endeshaw (2019)

The researcher conducted a review of a literature study on healthcare service quality-measurement models. The researcher considered a review of 137 studies, of which 74 studies were chosen for further analysis. The findings of this study accentuate that no definite variables or indicators have been reached on the nature of healthcare service quality. The prevailing models for measuring healthcare service quality are of Western origin and are not compatible with the context of other developing countries. Furthermore, a suggestion has been highlighted for healthcare organizations to create their framework of healthcare service quality-measurement models and pay attention with concern to the technical aspects of the service delivery.

AlOmari (2019)

The paper emphasized the importance of healthcare service quality by assessing the prevailing gaps from a patient's perspective in five private hospitals in the Syrian capital Damascus. In the context of the Syrian healthcare setting, the use of SERVQUAL has proved to be a reliable tool for measuring service quality performance. The result of the research study highlights that all SERVQUAL dimensions indicate a negative gap score except for the tangible dimension. This study provides practical implications which suggest that hospital administrators implement the use of the SERVQUAL model to gauge their service performance and attain a competitive advantage in the healthcare market in Damascus. The main contribution of this research study is to provide valuable information to policymakers and the hospital management team to improve service performance through the use of five dimensions-SERVQUAL scales.

Upadhyai et al. (2019)

The researchers present a paper exploring a review of healthcare service quality dimensions and their measurement. Databases of EBSCO and google scholar were searched to conduct and identify research on topics related to healthcare service

quality. A total of 124 articles were considered in the study, where the identified dimensions drawn out from the literature on healthcare service quality were classified into medical and non-medical aspects of care. Further, the findings of the research study suggest that non of the methods and approaches for assessing healthcare service quality include the perspective of service providers; therefore, there is a need to incorporate a standard dimension to assess the perception of service providers as well.

Qolipour M,khiavi F. et al., (2018)

It is a descriptive survey study, that examined 550 outpatients intending to determine a gap analysis between expectation and perception of service quality based on patients' viewpoints. The SERVQUAL questionnaire is incorporated in the study for data collection and uses SPSS16 for data analysis. The result of the gap analysis survey study highlights that the smallest gap with the differences in perceptions and expectations concerns the statement of having the right to choose among clinics; the significant gap is associated with the item of waiting time of fewer than 15 minutes. Overall, based on the survey study, the service quality in the studied hospital fell short of patients' expectations, and the identified negative gaps with poor service quality can be worked upon by implementing proper strategies and employing patients' viewpoints to improve service and increase patient satisfaction.

Zun et.al (2018)

The study has emphasized assessing the level of patient satisfaction based on the SERVQUAL instrument. The main objective of the study is to evaluate and measure the gap derived by the mean score between the expectation and perception of the patient attending 1 Malaysia Clinic, Malaysia. The sampling size consisted of 386 patients from the low socioeconomic group and the application of a simple random sampling method was incorporated into this study. The assessment of the five SERVQUAL dimensions resulted that the tangible dimension being the most unfavorable among all other dimensions. A conclusion was made by stating that most patients were not satisfied with the actual perceived service. Further research was suggested for a proper assessment of the service gap for improving the service quality.

Kwateng et.al (2017)

The researchers carried out a comparative study of public and private hospitals in Ghana. The purpose of the study was to provide an understanding of service quality with application to the SERVQUAL model. A sample size of 400 patients from 30 hospitals was incorporated and related information was collected using a questionnaire. The use of SERVQUAL'sfive dimensions (responsiveness, empathy, reliability, tangibility, and assurance) has enabled the assessment of patients' expectations and perceptions of service quality. The findings of the study depict the difference in service quality delivery between private and public hospitals where private health service providers were regarded positively better compared to public health service providers. In all five dimensions, differences are being identified for both private and public healthcare, therefore it was suggested to adopt a collaborative approach in the service delivery system where all major stakeholders can participate in making an effort to develop a systematic approach and transform it into an entire delivery system. The researcher further suggested instilling factors like- the socio-economic, socio-demography, and behavioral intention of the patients while measuring the quality of health services.

Pekkaya et.al (2017)

The study emphasized the importance of service quality in the healthcare industry where assessing the satisfaction level of the individual can act as a guiding factor for health service providers to gain knowledge about whether the service quality provided is being satisfied by the end users. To measure the service quality, the researchers have undertaken the SERVQUAL scale and implemented it in hospitals in Turkey.The use of SERVQUAL can help in understanding the expectations and perceptions of the patient with five dimensions to identify the gaps. A sample size of 626 outpatients was considered in the study. The result highlights that the satisfaction of outpatients from hospitals differs with age group, income, and service type. . Among all five dimensions, the reliability dimension was regarded as the most determinant factor from the patients' point of view. To sum up, improving the degree of satisfaction by working on identified gaps and maintaining consistency can overall have a good impact on the service provider as well as gain satisfied users.

Shabbir A, Malik S, and Janjua S. (2017)

The study was proposed to look into the expected and perceived service quality from patients' viewpoints and compare service providers of both public and private healthcare. The sample size consisted of 310 inpatients and a 40 items survey instrument to assess patient expectations and perceptions were used, along with seven attributes of healthcare service quality. . The findings of the survey study revealed serious service quality gaps where the attainment of patient satisfaction with the expected service was not being met by the healthcare service providers of both public and private hospitals. In comparison to public healthcare settings, patients were satisfied with the involvement of the hospitality culture of those private hospitals. Overall, the purpose of the study demonstrates that both public and private healthcare sectors need to incorporate a practical implementation towards quality improvement and public hospitals need to better utilize the allocated funds for delivering quality healthcare services to end-users in general.

Junewicz and Youngner (2015)

The paper presents a report describing the effect of patient satisfaction surveys and to interpret whether it contributes towards improving healthcare or misleading healthcare. The paper states that patient satisfaction is often confused and considered with patient-centered care and shared decision-making. However,through various valid definitions, it has been further clarified that patient-centered care and shared decision-making describe a conversation shared between the health provider and user whereas patient satisfaction is the result a patient will perceive after the interaction. Patient satisfaction depends on various nontechnical factors and differs for every individual patient. Conducting surveys on patient satisfaction can also somewhere add pressure on health providersto regulate function inappropriately or it may increase unnecessary care toward patients even to the extent of giving false hope just for the sake of receiving a better patient satisfaction score. Based on the overall study it can be concluded that patient satisfaction is an important factor to be considered when it comes to evaluating the service quality of healthcare, however the study suggested that a survey conducted on patient satisfaction may lead healthcare astray as it can promote a problematic consequence and sabotage the professionalism of physicians.

Sharifirad et.al (2012)

The researchers bring out the importance of quality service in primary healthcare with context to identifying the gaps between clients' perceptions and their expectations of the service. The primary objective of the study was to define the quality gap in primary health care centers of Isfahan concerning women's viewpoint. With a sample size of 1280 people, a cross-sectional study was carried out on women visiting primary healthcare centers in Isfahan city. Service quality tool was used for the collection of data and was analyzed by t-test and chi-square test, the questionnaire set was based on 22 Likert questions and has 5 dimensions- tangible services (4 questions), reliability of services (5 questions), the responsiveness of service providers (4 questions), service assurance (4 questions), and empathy (5 questions). For improving service quality, clients' contributions (perceptions and expectations) play an important role in determining thequality gap and identifying required solutions to fill in the gap. The study result indicates that clients had a controversy with all five dimensions of service quality with the highest gap in tangibles, empathy, reliability, assurance, and responsiveness. For evaluating service quality in healthcare, client satisfaction is the utmost important focus, and therefore managers and planners of healthcare centres need to pay more attention to satisfy clients. To do so, it was suggested to establish an information and feedback mechanism to improve better communication between the organization and service recipients, which in turn will contribute towards better service delivery. In addition, monitoring of quality gap can be a guiding factor for an organization to maintain systematic planning and budgeting expenses. The result of this study cannot be generalized as it was conducted to determine the quality gap with special reference to Isfahan City alone.

Butt and Run (2010)

The study has been undertaken to measure the quality of private healthcare with application to the SERVQUAL model. The samples are 340 respondents visiting private healthcare in Malaysia. The data collected were analyzed using means, correlations, principal components, and confirmatory factor analysis. The research paper overall states the importance of quality in healthcare and the use of the right

tool to measure quality. Understanding customer expectations and perceptions can help service providers to seek an opportunity to overall improve their service quality. SERVQUAL is regarded as a reliable tool that helps in identifying quality gapsallowing service providers to reflect on their delivery process and take up all necessary steps to improve delivery systems and work towards closing the identified gaps.

Mwita et.al (2009)

It accentuates in a report the importance and responsibility of human resource management (HRM) in the health sector undertaking four East African countries: Ethiopia, Uganda, Tanzania, and Kenya. The primary purpose of the study was to understand the roles and responsibilities of HRM, and identify the key challenges and set of skills and training required by health professionals. A cross-sectional design method was used to elicit information from managers with dual roles, both clinical and managerial. HRM survey tool was developed based on 3 parts- (I) demographic information; (II) views on human resource management and preparation; and (III) human resource management assessment of the respondents' organization and respondents' individual skills-building needs. The study findings indicate the lack of HR management capacity as a complex issue contributing to the competency gaps in HRM in the health sector. Some prominent HR challenges described by the respondents include- lack of staff satisfaction, staff grievances, poor working condition, and understaffing. Considering the challenges faced by health professionalsin HRM, some recommendations have been addressed by the respondents stating the need for additional HRM courses including management and leadership skills, proper orientation training for newly joined HR managers for at least two weeks, and the importance of training in team management and interpersonal communication skills. Further, to strengthen the HRM system in the health sector, it is essential to address obstacles effectively, and with the right training programs and the right implementation, it will eventually help achieve and accomplish competent human resource management.

Dieleman et.al (2009)

The researchers have applied a realistic review of published HRM interventions to

gain a holistic idea of how different HRM interventions can be effective to improve health workers' performance in low- and middle-income countries (LMICs). Analysis was carried out based on 48 articles from 6,177 titles, where three HRM intervention levers were classified – job interventions (individual), support system interventions, and interventions that create an enabling environment. A framework was developed upon four dimensions of health worker performance– availability, productivity, responsiveness, and competence to understand the mechanisms that triggered the change. The overall discussion highlights that the application of this realistic perspective to published research has helped in identifying which HRM interventions might improve health worker performance. Considering the reviewed studies, only a limited variety of HRM interventions have been investigated in the health sector in LMIC. It has been further suggested that a combination of both qualitative and quantitative methods will enable health managers to better understand outcomes, mechanisms, and the insight context to contribute towards HRM interventions and how they can help to improve health workers' performance.

Siddiqui and Khandaker (2007)

They surveyed Bangladeshi patients who underwent health treatment in public, private, and foreign hospitals. The prime purpose of the study is to compare service quality in three types of different hospitals and elicit information from Bangladeshi patients. A set of structured questionnaires with 5-point interval scales were used and about 400 interviews were conducted. The result of the study showcased the view and perspective of the Bangladeshi patients on the service quality they had experienced. Based on the result, foreign hospitals stood above both private and public hospitals in the overall service quality delivered. The in-country hospitals suffered laid off tangible factors such as better equipment, availability of drugs, cleanliness of toilets, cabins, etc. The Bangladeshi patients also considered foreign hospitals to be less expensive and reasonable as compared with in-country hospitals. To sum up, the study brings to light the different prevailing issues identified by patients in Bangladesh. Some of the common issues within country hospitals are- the service of nurses/physicians, tangible factors, availability of drugs, and high-cost private hospitals. The suggested recommendations are- to promote consistency in the

performance of nurses and physicians through rigorous training and continuous evaluation, present a holistic approach in private hospitals, improve tangible factors, and establish relationships between private and public hospitals to eradicate all common issues.

Fowder (2005)

The study aim towards validating the existence of SERVQUAL dimensions and their attributes in healthcare settings. Exploratory research was carried out to identify the quality of healthcare in the Mauritian context. Data collection was done through in-depth interviews with 12 patients to elicit information about their expectations from private GPs. The findings of the study suggest an addition of two dimensions in the healthcare quality specs- 'core medical outcomes' and 'professionalism/skill/competence'. The researcher, therefore, highlights the importance of implementing these additional dimensions to better evaluate the quality of healthcare service and improve overall service performance.

Cass et.al (2002)

The study has undertaken an objective to distinguish the relevant factors affecting communication between aboriginal patients and healthcare workers and to identify methods for improving those communication gaps. A qualitative study was carried out with participants of aboriginal patients (Yolngu language group in northeast Arnhem land) and medical staff of a satellite dialysis unit in suburban Darwin. For gathering information, data were collected through- videotaped interactions between patients and staff, and in-depth interviews conducted in their first language. The study findingsstate that- communication and quality of care service were seriously limited. These occurred due to the absence of shared understanding between staff and patients and their lack of interest in assessing its extent. A fundamental change is essential to build up effective communication considering the social needs of both staff and patients, to maintain balance, and to know their priorities. This research work can be considered in other healthcare settings where their first language is not English as their result mostly support similar findings of miscommunication in other Aboriginal health research. A few strategies for improving communication gaps have been identified- promoting intercultural communication by training staff to ease aboriginal people,

training local interpreters and preparing them for assisting healthcare workers, supervising the effectiveness of communication to fill in gaps, promoting social, and cultural and economic realities through shared understanding between patients and medical staff and collaboration with patients' families.

Lim and Tang (2000)

This paper demonstrates the service quality gap between patients' expectations and perceptions using the SERVQUAL model. Considering the current scenario of the healthcare industry where service providers are highly concerned to gain a competitive edge in the market, the focus has been shifted to delivering better service quality to the recipients. This can be attained by hospitals striving for 'zero defections.To assess the quality of services provided by Singapore hospitals, an exploratory research method was conducted by the authors. The pilot questionnaire consisted of 22 questions and has 5 dimensions of the SERVQUAL scale. Further, based on the pilot survey, a questionnaire set was framed with additional dimensions- accessibility, and affordability. A 5- point Likert scale was used with 1 representing least important and 5 representing most important. The sampling size consisted of 252 patients,thereby achieving a response rate of 84%. Based on the study findings, the SERVQUAL instrument has helped Singapore hospitals identify the important characteristics considered by the patients. The exploratory study indicates that the assurance dimension comprises the major problem faced by Singapore hospitals. There exist several features considering assurance from patients' viewpoint- patients expect healthcare service providers to treat them with dignity, in a courteous and friendly manner, and have staff with proper medical knowledge. Total quality care needs to be considered to have sustainable healthcare deliverance and overall satisfaction from the patients' end.

Ueltschy and Krampf (2001)

Researchers have undertaken in their study a group of the Hispanic population of Mexican Americans with a sample size of 378 respondents. The purpose of the study was to access and measure cultural sensitivity to satisfaction and service quality. A dental office setting was used where data collection was done through a simulation method. Through various tests and analyses were done between Mexican- Americans and Anglos, the finding highlights that customer satisfaction and service quality were

scaled higher among Mexican Americans and they were indeed culturally sensitive than Anglos. It is important to note that the influence of culture plays a vital role in satisfaction and service. Therefore, marketers to have a long-term business endeavor need to carry out a timely assessment for measuring satisfaction and service quality keeping in mind the needs and expectations of target customers.

Rosenthal and Shannon (1997)

The study has highlighted the importance of measuring service quality based on understanding the sensitivity of patient perception in a healthcare setting. The study was undertaken with the sole purpose of examining and reviewing patient perceptions based on studies that have already been carried out by other researchers about how healthcare service providers are emphasizing their interest in assessing its importance and improving the service delivery systems. Numerous frameworks are reviewed in the study and each proposed conceptual framework for measuring patient perceptions brings out a common relationship between patient perceptions and characteristics of delivery systems. Findings also suggest inconsistencies across each prior research and the reason identified as related to limitations and differences in applied research methodology. Further, it was concluded by stating a valid recommendation for future studies - considering patient perception to eliminate differences in service delivery systems, incorporating optimal framework by modifying complex models and producing additional studies to assess patients' perception of quality, to develop a standardized instrument for examining patient perceptions.

2.2 Overall view of the SERVQUAL method and service performance (Indian Context)

Sharma and Jain (2021)

The paper presented the impact of service quality in a few selected private hospitals in Rajasthan to overall analyze the outcome of patient satisfaction. With the application of SERVQUAL, the research objective is to study the dimensions of service quality with a sample size of 250 OPD patients. The findings of the study revealed that there is a gap between the patient expectation and perception with association to the service quality delivered by the health providers. The five dimensions of service quality implicate that healthcare service quality is a

concern for health service users. Therefore, the study suggests that to overall improve the satisfaction level of patients: the management should assure timely services and deliver a well-trained and developed team resulting in increased patient satisfaction.

Khambhati et.al (2021)

The study has incorporated the Fuzzy TOPSIS (Technique for Order of Preference by Similarity to Ideal Solution) method for evaluating performance and assessing service quality of urban public healthcare. The study was held in Gujarat, India, where three urban public healthcare facilities were considered for evaluating service quality. Data collection was done from out-patients and healthcare experts to evaluate in-patients' service. The study has identified a measuring scale for urban public healthcare service quality with 19 items and is divided into 6 dimensions. The result suggests that this measuring scale has the potential outcome to help management to improve the service quality gaps. The application of the Fuzzy TOPSIS method also has made it easier for health experts to focus on improving tangible facilities and hygiene factors. The result of all three urban public healthcare facilities highlights an improvement in the responsiveness, visual facility, and hygiene dimensions.

Farhat Hossain (2019)

The paper presented a research study undertaking all eight states in Northeast India. Its prime objective is to analyze health profiles, health infrastructure, and health expenditure based on secondary sources of data collected from the Government of India and NRHM The findings of the study present that the status of sub-centers,PHC, CHC, and the availability of manpower are delivering better performance in most of the Northeastern states as compared to the rest of India. However, it has been observed that most of the health centres in Northeastern states do not meet the norms of IPHS (Indian Public Health Standards). The regional disparities in most parts of theNortheastern states act as a drawback and constraint for health workers. Inaccessible terrain leading to poor road connectivity impacts the people living in the interior villages to access basic healthcare facilities. As a whole, Mizoram is considered the only state to deliver better performance terms for all healthcare facilities in Northeast India.

Moatula Ao (2019)

The researcher presented in her study the Paretian classification of health change to

examine users' outcomes of traditional medicine by using the EuroQol-5 Dimensions (EQ-5D) method. Data were collected and analyzed from 540 households in Dimapur Nagaland. Overall, the research study highlights the use and demand of traditional medicines are high, and it does play a role in healthcare. . People are more likely to use the indigenous medicine approach than allopathic medicine. As a result, the use and growth of traditional medicines can help reduce the pressure of healthcare expenses on communities and nurture the rich culture of indigenous medicine.

Tongpangkumla (2016)

The researcher surveyed 140 patients from 5 different private hospitals located in Dimapur Nagaland. . The purpose of the study was to assess the service qualityrendered by health providers with application to the SERVQUAL scale. The structure of the questionnaire set was proposed as per the standard 22 statements of SERVQUAL. A gap analysis was carried out to comprehend patient expectations andperceptions of service quality. The result of the study accentuates that all five dimensions indicate a negative perception-expectation gap score. This eventually manifests in the actual service delivered by the private hospitals and users are not satisfied with the overall service quality. To sum up, it was suggested that it is the responsibility of the top management to ensure that the expectations of patients are met and interest in sensitive issues of patients is considered. It is also expected to take considerable steps toward better decision-making and problem-solving. Introducing a business strategy with the latest technology in healthcare can help bring a revolutionin the service delivery systems and it is regarded as the need of the hour.

Pranamik (2016)

The study has emphasized a comparative study of urban and rural hospitals in India. The purpose of the study is to measure patients' perception of healthcare service quality. With the support of a literature review and survey, the researcher has attempted to study the ongoing scenario of healthcare care service qualityperformance amongst urban and rural patients. With the application of theSERVQUAL model, the findings suggest an unsatisfactory result of the healthcare service quality performance. The findings also found a difference in the perception ofpatients regarding the SERVQUAL dimensions amongst urban and rural service users. Overall, the researcher concludes by stating that the major gap exists due to

unawareness of proper knowledge and lack of satisfactory service delivery in the healthcare system.

Buragohain (2015)

This paper stressed the importance of health, and how it affects the lifestyle of people living in the society concerning the status of rural health infrastructure of different districts of Assam. The researcher approached the descriptive method, and the study was based on both primary and secondary sources of data (Census of India, DLHS, NRHM, and other government publications). Health infrastructure does not include just a mere physical setup of health centres, but the role, responsibility, and availability of health workers play a vital role in it. The study highlights the shortfall of physical health infrastructure in Assam, and the state failed to meet the required number as set by the government. In addition, there exists a shortfall of manpower in the case of specialist doctors and radiographers which has an impact on the rural health system affecting overall health outcomes. The researcher mentions how poor rural public health facilities contribute to the failure of the entire health system and has been observed as unsatisfactory. The study result determines the importance of undertaking appropriate measures to promote health service quality by improving the need for better food security, hygiene, and safe drinking water, housing, toilet, and electricity. The emergence of the inter-group politics system in Assam has affected not only the health and education sector debilitate but also imbibed a fear factoramong the rural people to proceed with the facilities and services of both health care and education provided under the public sector. In this regard, rural people have no other option but to shift from the public to the private sector to seek medical treatment which in return contributes to an economic burden on them. Therefore, to witness a better health status among the rural population, efforts from both central and state governments need to be emphasized to fill the gap existing in the achievement to facilitate progressing health outcomes.

Lupo (2015)

The study analyzed the service quality of the public health sector in the Sicilian region (Italy) using a framework based on the Fuzzy service quality evaluation module and analysis module (SERVQUAL disconfirmation paradigm). Service quality structure

was incorporated under a fuzzy evaluation environment where, service quality perceptions are assessed using a 5-point linguistic scale parameterized by Triangular Fuzzy Numbers (TFNs) whereas, for service quality expectation, AHP (Analytical Hierarchy Process) was being considered. Results obtained based on a survey conducted for a period of 5- months suggest that effort must be implemented toward quality improvement by emphasizing a concern on promoting competent staff members, encouraging teamwork, staff reliability, and responsiveness towards patient needs and want. To sum up, it was further recommended to primarily focus on understanding what stakeholders want and to introduce effective internal communication to reduce the gap between stakeholders' needs and how staff perceives those needs.

Hermanto (2015)

This paper, states that patient satisfaction level highly depends on service performance conducted by the hospitals. To study service performance, service quality analysis was used to understand patients' expectations and their service perceptions of the patients and to identify the gaps. The study includes a sample sizeof 96 inpatients and data collection was done through a set of closed-ended questionnaires. The researcher in his study indicates that amongst all service quality dimensions, the reliability dimension has the highest gap proving patients' dissatisfaction with this dimension. To maintain the competitive edge and stay ahead in terms of quality of health service, it is important to level up the performance of human resources with proper training on customer service and improve quality through subsequent research.

Lyngdoh (2015)

The study has undertaken an objective to achieve a grasp of rural public healthcare infrastructure, its system, availability of manpower as well as healthcare facilities, and the extent to which these facilities help cater to the needs of the rural population. To determine the service capacity for the eight states of NER, a healthcare infrastructure index has been developed using the Principal Component Analysis method where 16 indicators have been considered. . Based on the analysis, an empirical result has been framed which concludes that Tripura and Mizoram are in a better position in terms of

physical infrastructure and manpower as compared to the rest of the states in the region. Lyngdoh further suggests that the two most important components ofthe social sector i.e., health and education must be given top priority to churn out quality human capital which in turn would contribute to the overall development of the economy.

Dean (2014)

The study measures service quality in two different environments- medical care (medical centers), and health care (Maternal and Child Health Centres) as it has high customer involvement. The researcher in her review has observed the need for further work on the dimensionality scale to measure expectations and perceptions. The prime purpose of the study is, therefore, to examine the relevance of the modified SERVQUAL instrument, to check and validate the importance of gap score i.e., the difference between perceptions and expectations. The sample size comprised of total 490 respondents considered from both medical centers and MCHCs. A modified SERVQUAL scale was used as an instrument to measure service quality where 22 items were reduced to 15 statements based on the recommended approach to better define expectations and omit certain negatively worded statements as identified by customers in the pilot study conducted. The collection of data was done through a seven-point Likert scale where respondents were asked to assign 100 points to five statements to point out the importance of the dimensions of service quality. To examine the dimensions of quality in two different environments, a factor analysiswas adopted in the study where four distinct factors were identified – Reliability/ Responsiveness, Assurance, Tangibles, and Empathy. To test the reliability of the four factors, coefficient alpha was used. In summary, it can be stated that the modified SERVQUAL instrument was found to be reliable in both the environment (medical care and health care). Customers of medical care services considered the Reliability dimension as more important whereas, Assurance and empathy were considered important by customers of health care services. The study further suggests and supports the use of SQ gap scores to measure dimensions of quality as it has a more reliable diagnostic value. The researcher suggested that, since a distinctionhas been made between medical care and health care settings based on the

importance of extra dimensions in health care, namely, cognitive, emotional,and social elements, further research can be done to identify whether these are the major components of a health care environment.

Saikia and Das (2014)

The paper has underlined a report on understanding the healthcare infrastructure in rural Northeast India. The paper presents various ongoing issues such as public healthcare infrastructure, poor accessibility to healthcare services, and shortage of health manpower regarding the aftermath of NRHM implementation. Under NRHM, considerable progress in physical infrastructure has to be witnessed although the problem lies with the availability of healthcare workers. In addition, in all states except Mizoram, healthcare facilities in Northeastern states remain in poor condition. The availability of healthcare workers is a key determinant for the effective functioning of any healthcare centre yet, it is evident from the paper which suggests that the existing problem lies with a shortage of well-trained manpower which includes- doctors, a pharmacist, a nurse, female health workers, and a male health worker. All the states suffer from an acute shortfall of manpower but among all, Nagaland has been ranked low in terms of the availability of male health workers and health assistants which further contributes to underperformance in service delivery. Another prevalent issue is considering the accessibility of healthcare facilities where the connectivity of motorable roads is not quite satisfactory. Taking into account all these facts mentioned in the paper, the researchers conclude by stating that- the rural Northeastern states lack behind in the delivery of high-quality services which have an impact on performance therefore rigorous effort need to take through an initiative from the state government as well as the community as a whole.

Mal et.al (2013)

The study is based on a secondary source of data to accentuate the influence of health infrastructure by measuring the health indicators- Maternal Mortality Rate (MMR), Under–Five Mortality Rate (U5MR), Infant Mortality Rate (IMR) and how it inflicts its impact on economic development of the country. This paper aims atdeveloping a comparison between the healthcare system of the country with that of Northeast India. Healthcare infrastructure in the Northeast region is much in a weaker position than that of the country. Significant Health policies are being undertaken by

the Northeast states which have eventually contributed to some extent to reduceMMR, U5MR, and IMR.

Bhandari and Dutta (2007)

The paper highlighted a report on issues related to rural healthcare infrastructure. In rural India, health infrastructure is set up on three tiers- SC (Sub-centre), PHC (Primary health centre), and CHC (Community health centre). The report states that the problem lies not in a shortfall of physical infrastructure alone, but also in the lack of human resources which eventually contributes to the poor health status, where some states are ranked below the minimal norms set by the government. Although post for health workers is being sanctioned, many are lying vacant as health workers especially doctors do not want to serve in rural areas, which primarily leadsto underutilization of health facilities. The inadequate public health service has led the way for the private healthcare sector to fill in the gap of unmet needs left by the public sector. Adopting a systematic approach can bring a change within the institutional framework, for instance, introducing a well-equipped mobile medical vancan help eradicate the problem of accessibility in rural areas. With the advent of information and technology, there is now an increasing possibility to transform the quality of service through better communication activities, improving awareness levels for health users, empowering users to post their grievances online, and enablingeasy access to health-related information and issues. Overall, the best way to maintain a well-structured healthcare system, importance needs to focus on formulating both the public and private sectors as well as community action as a whole.

2.3 Research Gap

The research gaps identified in the review of literature conducted for several studies have been overall summarized and have highlighted potential research that has not been explored- i). To consider a research study on how the importance of patient perception can eliminate the difference in the service delivery system. To answer more definitely the question or the importance of the need to measure patient perception and its response to certain changes in the delivery system of care and aspects of organizational structure.

ii). The need to study and examine the question of whether the application of a complex conceptual and theoretical framework or incorporating a new model can help develop a piece of optimal information for the complex relationship between patient perception and patient expectation.

iii). The need to develop a specific and common tool measuring instrument to evaluate the patient perception and related concepts so that such common measuring tools can be implemented for evaluating factors related to a different healthcaresetting.

iv). The need to facilitate a study based on the combination of both qualitative and quantitative methods will enable health managers to better understand outcomes, mechanisms, and the insight context to contribute towards HRM interventions and how it can help to improve health workers' performance.

Besides the identified gaps based on the review of literature, additional gaps have been highlighted related to the research study conducted through various local newspaper articles and testimonial statements posted on various social media platforms, the problem statements are-

i). There is no exclusive study that covers assessing the gap analysis of patient expectations and perception of healthcare providers from the prospect of a hospital setting.

ii). The lack of research studies on rural healthcare service performance with the application of the SERVQUAL model in Northeast Nagaland.

iii). The focus of the government-established public health centres is mostly not directed toward a continuous assessment and measurement of service quality performance. Therefore, there is a lack of research to understand the service user's perspectives.

iv). Since the language diversity is vast in the state, it acts as a barrier for researchers to conduct much exploratory research, especially in the tribal areas. So, basically, it creates a gap for researchers to explore that section of society.

CHAPTER 3

CHAPTER 3

RESEARCH METHODOLOGY

This chapter overall presents the framework of the research work. The content of this chapter includes the problem statement, the significance of the study, research objectives, research design, the research instrument, and a detailed overview of the statistical tools.

3.1 Problem statement

Defining the research problem aims to address the gap in knowledge and further contribute to expanding knowledge. A well-defined problem statement results in developing a better research design and helps reinforce a solution to the research work.

The government-established healthcare centres in Northeast, India evoke a matter of concern and interest while considering the capabilities of available healthcare facilities, infrastructure, and overall healthcare service. The mountainous topography is also one challenging factor hindering the delivery of healthcare services in this region Considering all these prevailing issues, it is relevantly important to understand the needs, expectations, and perceptions of healthcare service users. The present studyhas been conducted to address the three tiers of government-established health centres(Sub-centre, PHC &CHC) in rural areas of Nagaland. The research study describes rural healthcare facilities' scenarios and various underlying service gaps. The problem of the present study is “A Study of Rural Healthcare Service Performance with Application of SERVQUAL Model in Northeast Nagaland”.

3.2 Significance of the study

In lieu of the problem statement, the research study demands the need for a gap analysis. The findings of this study will help gain access to information concerning service performance in rural healthcare centres in Northeast Nagaland. The interest of the study is focused on presenting a descriptive research approach to three tiers of rural healthcare infrastructure sub-centre, Primary Health Centres (PHC),and Community Health Centres (CHCs). The prime purpose is to understand and

evaluate the living scenario of rural health service quality, whether service performance is satisfying user expectations and perceptions, and to identify various prevailing factors contributing to quality gaps. No thorough study or research has been carried out so far regarding rural healthcare service quality in the Nagaland context, which makes this study more significant to address. To drive the study ahead,the application of the SERVQUAL model also called the gap model was proposed.

According to Parasuraman et.al. (1985), service quality is defined as "the ability of the organization to meet or exceed customer expectations. It is the difference between customer expectations of service and perceived service". The five standarddimensions (Tangible, Reliability, Responsiveness, Assurance, and Empathy) will be undertaken to measure quality and identify gaps, evaluate service performance based on how users perceive the delivered service, and whether expectations have been met or subverted. Extensive research work has been carried out in the healthcare sector with the use of the SERVQUAL model but, it is significant to note that the views, opinions, and perceptions of service users of different parts of the state cannot be generalized to that of service users in Nagaland. Overall, the result of this study will help towards discovering various underlying issues that have not been addressed by service providers. Presenting a clearer picture of expectation and perception differences will contribute to service improvement and benefit individuals, health providers, and society. Although the SERVQUAL instrument will be incorporated in the study, it is important to validate its function i.e., the five dimensions to measure service quality and to check its reliability in healthcare settings so that it can be considered a robust instrument to measure Nagaland rural healthcare service providers. Thus, in this way, it can also guide future researchers to refer to and modifythis instrument to have a continuous assessment of service quality rendered by public health providers.

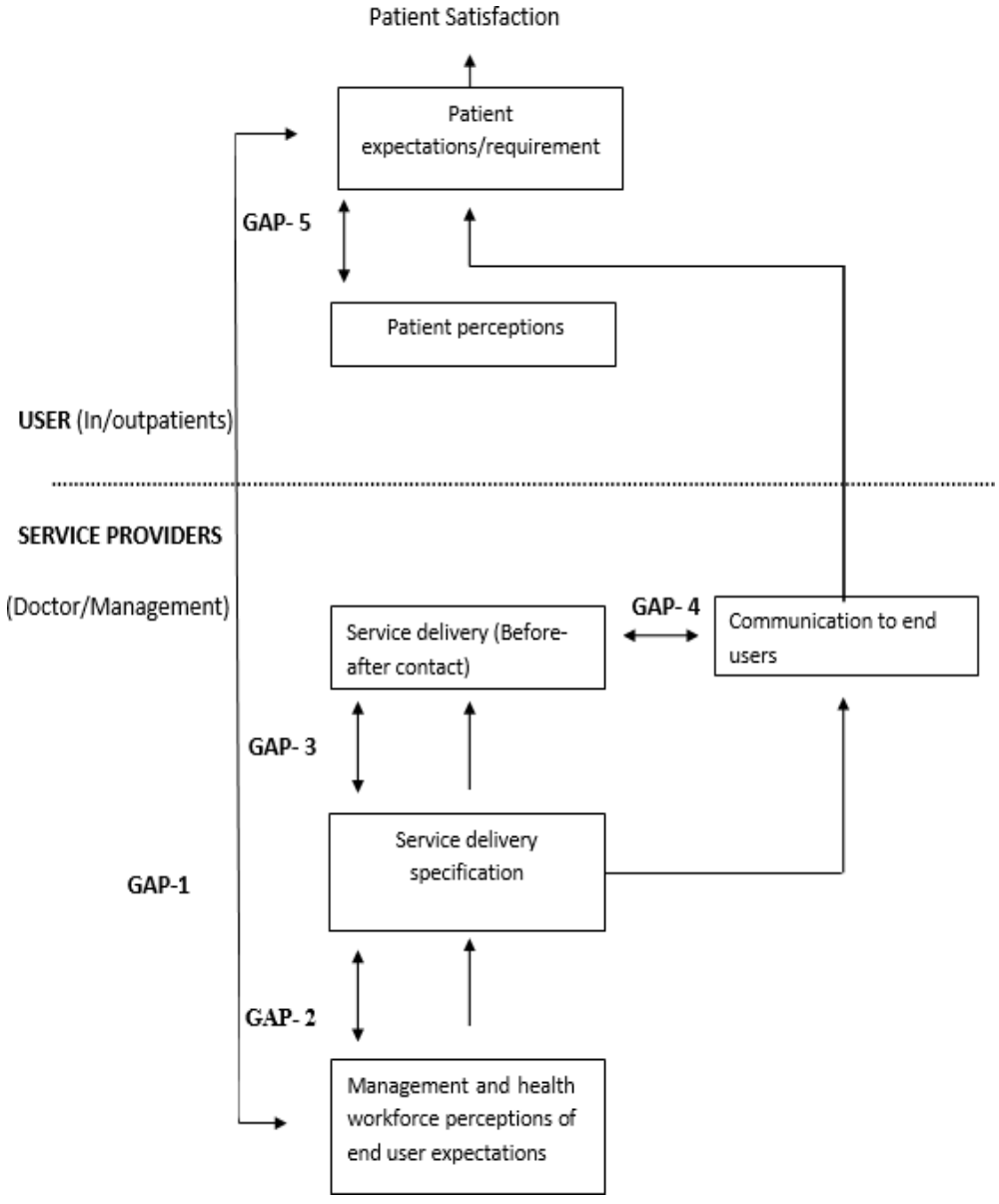
3.3 Objectives of the study

The broad objective of the study is to examine the rural healthcare service performance with the application of the SERVQUAL Model in Northeast Nagaland. The objectives are:

1. To identify the prevailing gap between patient expectations and the perception of healthcare service providers.
2. To assess the key reasons that cause unsuccessful service delivery.
3. To examine the factors affecting the flow of communication shared between the service providers and the service users.
4. To analyze the outcome of the patient's (In/out) expectations and perceptions.

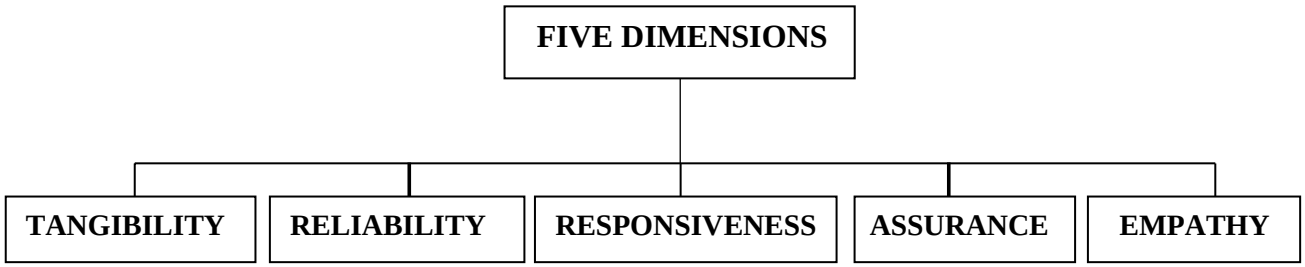
3.4 Research Framework

Figure 3.1 Proposed Gap Model



This framework is extracted from the work of Parasuraman, Zeithaml, and Berry (1985;1988) further, it is modified from the healthcare perspective and as per the objectives of the study.

Figure 3.2 Identification of Key Variables



Standard dimensions are proposed to measure the service quality of the government-established healthcare centres (Sub-centres, PHC &CHC) in rural areas of Nagaland.

i). Tangibility: The tangibility dimension is defined as the physical and personnel appearance and the available facilities (Parasuraman *et.al.,* 1985; Ramya *et.al.,* 2019). In healthcare settings, facilities such as proper medical equipment (stretchers, BP monitor, stabilization units for newborns etc) a clean and appealing physical environment, privacy, and other visible objects impact patient perception leading to either satisfaction or dissatisfaction with the service quality.

ii). Reliability: The reliability dimension is defined as the ability of the service provider to accurately perform promised service at the right time (Parasuraman *et.al.,* 1985; AIOmari,2020). In healthcare settings, doctors/staff are expected to carry out their duties competently and deliver service performance at the right time.

iii). Responsiveness: The responsiveness dimension is defined as to what extent the service provider performs adequate and prompt service to its customers (Parasuraman *et.al.,* 1985). In healthcare settings, doctors/staff are expected to be punctual, responsive to patients' problems, accessible during emergencies, and informative.

iv). Assurance: The assurance dimension concerns the courtesy, trust, and confidence the service providers can instill among customers (Parasuraman *et.al.,* 1985; Ramya *et.al.,* 2019). In healthcare settings, the attitude of healthcare service providers should convey a relationship of trust, and comfort, and assure relaxing communication with the patient.

v). Empathy: The empathy dimension is defined as to what extent the service provider makes an effort to give appropriate responses and understand customer needs and requirements (Parasuraman *et.al.,* 1985). In healthcare settings, doctors/staff are expected to understand patients' requirements, take necessary follow-ups for medical treatment, and actively respond to patient's questions and worries.

3.5 Research Design

3.5.1 Scope of the study

The study is limited with a focus on the service quality delivered by healthcare providers in Nagaland rural areas. The application of the SERVQUAL model to 3 tiers of the rural health system - Sub-centres, PHCs, and CHCs will ultimately provide insights into existing gaps. It will help evaluate the service performance, identify user expectations and perceptions, and contribute to further suggestions for closing those gaps.

3.5.2 Sampling Method and Technique

This section presents a detailed elaboration of how the sample universe and sample size have been identified. Since the research study is focused on evaluating the service performance of the government-established health centres in rural areas of Nagaland, the sample needed to be derived from districts having a major rural population. The sampling universe included the populations of healthcare service providers and service users of Sub-centres, Primary Health Centres (PHC), and Community Health Centres (CHCs) of Nagaland.

According to the census 2011, Nagaland had a total of 11 administrative districts. For this study, Kohima and Dimapur districts were not considered as the problem of accessibility of healthcare services was not a major issue due prevalence of private hospitals, medical professionals, and technicians in the existing health centres. Thus, the districts considered were - Peren, Wokha, Phek, Kiphiri, Zunheboto, Mokokchung, Tuensang, Mon, and Longleng.

The population size of healthcare service users for 9 districts was 1,330,770 (census 2011) and the population size of healthcare service providers for 9 districts was

approximately 664 (Department of Health & Family Welfare, Nagaland) which included doctors, medical officers, Community Health Officers, Nurses, Auxiliary Nurses Midwives, technicians, and medical staff. To further derive the required sample size, the application of Slovin's formula was used (Slovin,1960; Sevilla, 1992;Asra & Prasetyo, 2015).

Slovin's formula is computed as n= N/ (1+Ne2).

Here, n denotes the number of samples, N denotes the total population, and e=margin of error (0.05).

Population 1- Healthcare Service Users

The first category of the population has a sample size of 385 respondents which was determined using Slovin's formula. The respondents for this population were the healthcare service users (In/Outpatients), ie., those individuals who availed/availing of the healthcare services provided by the rural sub-centre, PHCs, and CHCs. In order to break down the sample size amongst the 9 selected districts, proportionate stratified sampling followed by convenience sampling was adopted to further proceed with the study.

Stratified sampling is a method of partitioning a set of populations into sub-group that share a similar attribute. Rajalatchumi et.al (2018) and Ester et.al (2020), have also used a similar sampling technique. The characteristic/attribute of each strata was selected based on the presence of a major rural population. Accordingly, 9 districts were defined as individual strata. The selection of villages for each district wasconsidered based on the availability of functioning health centres (rural sub-centre, PHCs, CHCs) and healthcare professionals.

Nagaland has 16 major tribes, with each tribe having its own native dialect. Mainly, for this reason, a convenience sampling technique was specifically proposed. Cilliers (2019) and Mostafa et.al (2020) have also used a similar sampling technique in their study. The respondents who were approached are the village chairman, church leaders, village executive members, and individuals who could speak and understand the Nagamese dialect (the common dialect of Nagaland).

To further identify how many respondents will represent each district, a weighted average was calculated with respect to the determined sample size of 385 respondents

based on the population of each district.

The formula for weightage average- $$W = \frac{\sum_{i=1}^{n} w_i X_i}{\sum_{i=1}^{n} w_i}$$

W is the weighted average

W_i is the weight applied

X_i is the value to be averaged

n is the total number of districts to be averaged

Table 3.1 Weighted Average of Respondents (Healthcare Service Users)		
DISTRICTS	**DISTRICT-WISE POPULATION AS PER CENSUS 2011**	**NO. OF RESPONDENTS BASED ON WEIGHTAGE AVERAGE**
Mon	250,260	72
Tuensang	196,596	57
Mokokchung	194,622	56
Wokha	166,343	48
Phek	163,418	47
Zunheboto	140,757	41
Peren	95,219	28
Kiphiri	74,004	21
Longleng	50484	15
TOTAL	**1,330,770**	**385**

Population 2- Healthcare Service Providers

The second category of the population has a sample size of 250 respondents which was determined using Slovin's formula. The respondents for this population were the healthcare service providers, i.e., doctors, medical officers, Community Health Officers, Nurses, Auxiliary Nurses Midwives, technicians, and medical staff. For this population, proportionate stratified sampling and convenience sampling were used to collect data.

The characteristics/attributes of the sample group included only those healthcare service

providers from the selected 9 districts of Nagaland. As the research study addressed the three tiers of government-established health centres in rural areas of Nagaland therefore, the approach of convenience sampling technique was adopted. The healthcare officials from the urban health centres and district hospitals were not considered in the sample group.

To identify how many respondents will represent each district, a weighted average was calculated with respect to the determined sample size of 250 respondents basedon the total rural healthcare service providers of each district.

Table 3.2 Weighted Average of Respondents (Healthcare Service Providers)

DISTRICTS	DISTRICT-WISE RURAL HEALTHCARE SERVICE PROVIDERS	NO. OF RESPONDENTS BASED ON WEIGHTAGE AVERAGE
Mon	75	28
Tuensang	78	29
Mokokchung	75	28
Wokha	89	33
Phek	129	48
Zunheboto	54	21
Peren	50	20
Kiphiri	67	25
Longleng	47	18
TOTAL	**664**	**250**

Source- Department of Health & Family Welfare, Nagaland

The following Table 3.3 presents a district-wise detail of those villages/rural areas selected for data collection.

Table 3.3 District-Wise Detail of Selected Rural Areas		
SR.NO.	**DISTRICTS**	**RURAL AREAS/VILLAGES**
1	Peren	Jalukie(old), Athibung, Benreu, Dungki, Gaili, Heningkunglwa, Mbaulwa, Nsong, Poilwa, Tening (old).
2	Wokha	Changpang, Sungro, Bhandari, Chukitong, Englan, Morakjo, Yimpang, Chudi, Wozhuro, Longidang, Lakhuti, Longsa, Mungya, Nyiro, Okotso, Tsungiki, Ralan, Yamhon.
3	Phek	Akhegow, Chepoketa, Chizami, Chobama, Gidemi, Kutsokhuno, Kami, Metsale, Old Phek, Pfutsero.
4	Kiphiri	Sitimi, Amahator, Chomi, Kisetong, Likhimro, Longmatra, Pungro, Salumi, Zanger.
5	Zunheboto	Aghunato, Kilomi, Aghuito, Akuhaito, Asukhuto, Chishilimi, Ghukiye, Hebolimi, Lazami, Lumami, Pughoboto, Satakha, Satami, V.K, Yezami.
6	Mokokchung	Alichen, Alempang, Alongkima, Asangma, Chakpa, Changki, Changtongya, Chuchuyimlang, Chungliyimsen, Kubolong, Kubza, Longjang, Longkhum, Longpa, Mangmetong, Ungma.
7	Tuensang	Helipong, Khudei, Sangchen, Sangsangnyu, Shamator.
8	Mon	Angphang, Changlang, Changnyu, Choknyu, Hunta, Longwa, Munyakshu, Oting, Sheangha, wangti.
9	Longleng	Boranamsang, Pongo, Yachem, Yangching.

3.5.3 Data Sources

The data has been collected with help of a primary source. Since the research study is based on assessing data related to patient expectations and service perceptions as well as the healthcare service provider's perception, it demands a collection of a primary

source of data. A well-structured questionnaire is prepared for both sets of populations. The questionnaire consists of the same set of questions for both parts i.e.,expectations and perceptions of patients and perception of healthcare service providers. Suggestions and feedback from the rural people about the healthcare services were also considered and addressed in the research work.

The research study also performed a scheduled method of data collection where the response to the set of questions is filled in by the researcher. This method of data collection is used in the study as the target populations consist of both literate and illiterate respondents.

3.6 Pilot Testing

A pilot study was conducted to validate the feasibility of the questionnaire and instrument of the study. The purpose of pilot testing is to understand the comfort level of the target respondent and to check for any error or modification in the framed questionnaire set (Field, 2005; Junyong In, 2017). A sample size of 10% was considered for the larger parent study (Tíeece and 1ˇíeece, 1982; Connelly, 2008).

3.6.1 Performing Factor Analysis for Pilot Testing

A factor analysis was performed for the data collected for pilot testing as the proposed framework and the questionnaire statements were formulated from a healthcare perspective. The application of factor analysis helps in determining a common component by extracting all their commonalities from multiple items (Crocker & Algina, 1986; Norton *et.al*., 2019). The approach of principle component analysis (PCA) was incorporated for the extraction method and the rotation method used was Varimax with Kaiser Normalization.

The Kaiser-Meyer-Olkin (KMO) test was conducted to measure how appropriate the data is for the factor analysis approach. A KMO value of less than 0.5 is considered unacceptable (Kaiser and Rice, 1974; Snedecor and Cochran, 1983). The results for KMO and Barlett's test of Sphericity are presented in Table 3.1. The KMO measure of sampling adequacy is .856 which is greater than 0.5 (acceptable value), and the

result of Bartlett's test shows 0.000, a value that suggests that the factors that form the variable are appropriately significant. Therefore, it ensures that the study may further conduct factor analysis.

Table 3.4 Results of KMO and Barlett's Test

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.856
Bartlett's Test of Sphericity	Approx. Chi-Square	4565.004
	Df	190
	Sig.	.000

Source: Results obtained using SPSS 22.

By applying factor analysis, twenty service quality variables are reduced to five components as presented in Table 3.4. The extraction method used for the study is Principal Component Analysis (PCA) with the rotation method of varimax and Kaiser normalization. The variables RES3, RES1, RES2, RES6, RES5 and RES4 correlate with component one. This component is labeled as the 'Responsiveness aspect' along with the reliability coefficient which is .789. The variables REL3,REL4, REL2, and REL1 correlate with component two. This component is labeled as the 'Reliability aspect' along with the alpha reliability coefficient which is .776. The variables ASS2, ASS3, ASS4, and ASS1 were extracted as the third component and are labeled as the 'Assurance aspect'. The alpha reliability coefficient for this component is .714. The variables EMP4, EMP3, EMP2, and EMP1 correlate with component four. This component is labeled as the 'Empathy aspect' along with the alpha reliability coefficient which is .684. The fifth component is labeled as the 'Tangibility aspect' and it includes TAN1, TAN3, and TAN2. The alpha reliability coefficient for this component is .718. Exploratory factor analysis was applied for the pilot testing as the SERVQUAL instrument was reframed and addressed from the healthcare perspective.

Table 3.5 Rotated Factors Loading

Rotated Component Matrix[a]

	Component				
	1	2	3	4	5
RES3	.841				
RES1	.835				
RES2	.768				
RES6	.767				
RES5	.741				
RES4	.679				
REL3		.937			
REL4		.927			
REL2		.912			
REL1		.898			
ASS2			.864		
ASS3			.860		
ASS4			.845		
ASS1			.795		
EMP4				.826	
EMP3				.820	
EMP2				.800	
EMP1				.668	
TAN1					.815
TAN3					.811
TAN2					.787

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.[a]

a. Rotation converged in 6 iterations.

Source: Results obtained using SPSS 22

3.6.2 Validity and Reliability of the Questionnaire

The testing of reliability assures a measure of consistency whereas validity addresses truthfulness or correctness (Altheide & Johnson, 1994; Mohajan,2017). Cronbach alpha was calculated to measure the reliability and internal consistency of the questionnaire items under a construct. The desirable Cronbach alpha

Table 3.6 Reliability Statistics

Cronbach's Alpha	N of Items
.887	21

Source: Results obtained using SPSS 22.

value should range above 0.7 (Nunnally, 1978; Griethuijsen et al., 2015; Taber, 2018). As seen in table 3.4, the Cronbach alpha value is .887 which ranges above theacceptable value of 0.7. These indicate a good consistency in all items of the constructbeing measured. A Cronbach alpha value ranging from 0.88 to 0.95 is considered excellent (Sánchez-Medina et al. 2011).

3.6.3 Finalizing the Instrument

The rural healthcare service quality questionnaire consists of two parts. The first part has two sections. Section I is labeled as 'Patient Expectation' and section II is labeled as 'Patient Perception'. The second part also has two sections. Section I is labeled as 'Perception of Healthcare Service Providers' and section II is labeled as 'Service Specification from the Perspective of Health Providers. A total of 21 items are listed in all sections of the questionnaire set. Further, the items are divided into 5 dimensions namely- Tangibility (Q1 to Q3), Reliability (Q4 to Q7), Responsiveness (Q8 to Q13), Assurance (Q14 to Q17), and Empathy (Q18 to Q21).

To measure the response of both the population (service users and healthcare service providers) a five-point Likert scale is used in the current research study. To specify the level of satisfaction and quality with each statement, 1 represents 'very poor' and 5 represents 'excellent' for healthcare service users. Whereas 1 represents 'very unimportant' and 5 represents 'very important for healthcare service providers. A Likert scale is a widely used reliable method used by researchers for rating responses and evaluating a series of questions (Vogt, 1999; Kothari, 2004).

Table 3.7 Proposed Hypothesis

The gap in SERVQUAL Model	Details of those gaps	The Objective of the Study	Proposed Hypothesis	Statistical Tools adopted
Gap 1	Difference between management perception of patient expectations and actual patient expectations	**Objective 1:** To identify the prevailing gap between patient expectations and the perception of healthcare service providers.	**Ho1:** There is no significant difference in the mean value of patient expectation and perception of healthcare service providers on all five variables	Mann-Whitney U Test
Gaps 2	Difference between the perception of healthcare service providers and service specifications from the perspective of health providers	**Objective 2:** To assess the key reasons that cause unsuccessful service delivery.	**Ho2:** There is no significant difference in the mean value of perception of healthcare service providers and service specifications from the perspective of health providers on all five variables	Mann-Whitney U Test

3.7 Tools for Data Analysis

After completing the data collection phase, data are tabulated and analyzed accordingly. The data are analyzed using SPSS statistics 22. The tools used for data analysis are as follows:

i). Descriptive statistics

ii). Gap Score Analysis

iii). Mann-Whitney U test

iv). Confirmatory Factor Analysis (CFA)

v). Logistic Regression

3.8 Limitations of The Study

The limitations associated with the research study are:

i). The study is limited to rural areas of the 9 districts of Nagaland. Therefore, the results cannot be generalized to the world at large.

ii). The study is restricted to the three tiers of government-established healthcare centres in rural areas of Nagaland. Private hospitals, district hospitals, and urban health centres are not considered in the study. Therefore, the results cannot be generalized to these sections of healthcare service providers.

Further, the above-stated reasons should be taken care of while considering the result and outcome of the study.

CHAPTER 4

CHAPTER 4
DATA ANALYSIS, FINDINGS, AND INTERPRETATIONS

This chapter presents the study's analysis, findings, and interpretations, which focus on the proposed objectives.

4.1 Identifying the prevailing gap between patient expectations and perceptions of healthcare service providers

The first objective is proposed to identify the prevailing gap between the two populations i.e., healthcare service providers and service users. As such the questionnaire statements for both populations are framed in identical order and pattern so as to evaluate the gaps. This objective throw light on addressing the fact that healthcare service providers may not always understand what users expect from the delivered service. As the research study is focused on government-established health centers, it has been observed that the response of both populations reports a disparity in their perception and expectation of the service.

The gap score formula is **$\bar{P}$ - $\bar{E}$.**

Computing the SERVQUAL score

Mean and SD of perception of healthcare service providers and patient expectation of items in SERVQUAL.

Table 4.1 Computing the SERVQUAL score

Statements	**Perception of healthcare service providers**		**Patient expectation**	
	Mean	**SD**	**Mean**	**SD**
TANGIBILITY:				
Well-maintained and modern-looking medical equipment	2.76	.691	4.68	.467
Clean and visually appealing physical environment	3.19	.736	4.89	.308
Privacy during treatment and enough waiting room	3.06	.780	5.00	.000
RELIABILITY:				

Delivery of healthcare services at the appointed time	3.04	.726	5.00	.000
Service performance should be executed right the first time	3.13	.751	5.00	.000
Doctors/ staff should carry out their duties competently	3.17	.785	5.00	.000
Prescribed medicines should be affordable and reliable	3.31	.738	5.00	.000
RESPONSIVENESS:				
Doctors/ staff should be punctual with the service they deliver to the patient	3.22	.679	4.94	.235
Responsive doctors/ staff who are willing to provide service at the time promised	3.42	.677	5.00	.000
Doctors/ staff should be accessible at odd hours in case of emergencies	3.20	.705	5.00	.000
Doctors/ staff should attentively communicate to patient's problem	3.56	.677	5.00	.000
Doctors/ staff should be informative about healthcare schemes/ services and willing to answer questions	3.33	.666	4.56	.497
Waiting time of not more than one hour	3.25	.737	5.00	.000
ASSURANCE:				
Polite and friendly doctors/ staff	3.70	.614	5.00	.060
The attitude of doctors/ staff should instill trust and confidence in the patient	3.72	.641	5.00	.000
Doctors/staff should assure a relaxing transaction of communication with the patient	3.70	.727	5.00	.000
Doctors/ staff should explain thoroughly medical condition and treatment to the patient	3.46	.736	5.00	.000
EMPATHY:				
Doctors/ staff should understand patient's requirement	3.85	.635	4.92	.272
Doctors/ staff should have patience in understanding and respond to patient's questions and worries	3.68	.693	5.00	.000
Doctors should follow up with the patient about the medical treatment where necessary	3.55	.756	5.00	.000
Doctors/ staff should have the patient's best interests at heart	3.84	.563	4.88	.321

EXPLANATION FOR TABLE:

The above-given table describes the Mean and SD of the perception of healthcare service providers and patient expectation of items in SERVQUAL. Based on observation, the means score of perception of healthcare service providers ranges between 2 to 3, and the means score of patient expectation range from 4 to 5. The inclusion of SD addresses the relevance of measuring how much data deviated or clustered around the mean. The following table 4.2 presents the gap value obtained by subtracting the mean patient perception score from the mean patient expectation score for each of the given statements i.e. - Gap score: $\bar{P} - \bar{E}$

Table 4.2 Gap Score Analysis and Mann-Whitney U Test

Statements	Perception of Healthcare Service Providers	Patient Expectation	Gap Score	Mann Whitney Test (z)	Asymp. Sig. (2-tailed)	Hypothesis
TANGIBILITY:	**3.00**	**4.86**	**-1.86**	**-22.087**	**.000**	**Rejected**
Well-maintained and modern-looking medical equipment	2.76	4.68	-1.92	-20.668	.000	
Clean and visually appealing physical environment	3.19	4.89	-1.7	-22.170	.000	
Privacy during treatment and enough waiting room	3.06	5.00	-1.94	-23.515	.000	
RELIABILITY:	**3.16**	**5.00**	**-1.84**	**-24.248**	**.000**	**Rejected**
Delivery of healthcare services at the appointed	3.04	5.00	-1.96	-23.975	.000	

time						
Service performance should be executed right the first time	3.13	5.00	-1.87	-23.513	.000	
Doctors/ staff should carry out their duties competently	3.17	5.00	-1.83	-23.150	.000	
Prescribed medicines should be affordable and reliable	3.31	5.00	-1.69	-23.094	.000	
RESPONSIVENESS:	**3.33**	**4.92**	**-1.59**	**-22.000**	**.000**	**Rejected**
Doctors/ staff should be punctual with the service they deliver to the patient	3.22	4.94	-1.72	-21.944	.000	
Responsive doctors/ staff who are willing to provide service at the time promised	3.42	5.00	-1.58	-22.964	.000	
Doctors/ staff should be accessible at odd hours in case of emergencies	3.20	5.00	-1.8	-22.551	.000	
Doctors/ staff should attentively communicate to patient's problem	3.56	5.00	-1.44	-21.910	.000	
Doctors/ staff should be informative about healthcare schemes/ services and willing to answer questions	3.33	4.56	-1.23	-15.735	.000	
Waiting time of not more than one hour	3.25	5.00	-1.75	-22.753	.000	
ASSURANCE:	**3.64**	**5.00**	**-1.36**	**-23.548**	**.000**	**Rejected**
Polite and friendly	3.70	5.00	-1.36	-21.667	.000	

doctors/ staff						
The attitude of doctors/ staff should instill trust and confidence in the patient	3.72	5.00	-1.33	-22.487	.000	
Doctors/staff should assure a relaxing transaction of communication with the patient	3.70	5.00	-1.35	-21.880	.000	
Doctors/ staff should explain thoroughly medical condition and treatment to the patient	3.46	5.00	-1.46	-21.917	.000	
EMPATHY:	**3.64**	**4.93**	**-1.29**	**-22.199**	**.000**	**Rejected**
Doctors/ staff should understand patient's requirement	3.85	4.92	-1.24	-17.175	.000	
Doctors/ staff should have patience in understanding and respond to patient's questions and worries	3.68	5.00	-1.32	-21.437	.000	
Doctors should follow up with the patient about the medical treatment where necessary	3.55	5.00	-1.45	-20.997	.000	
Doctors/ staff should have the patient's best interests at heart	3.84	4.80	-0.96	-16.589	.000	

EXPLANATION FOR TABLE:

The above-given table interprets the service quality gap by subtracting the perception of healthcare service providers from patient expectations. The gap value for each of the five variables is obtained by adding up the values for each of the statements in the variables and then dividing it by the number of statements in the variable. The negative score for each of the five variables indicates a shortfall in service quality and a gap between patient expectations and the perception of healthcare service providers.

Mann Whitney's U Test

The Mann-Whitney U Test also called the Wilcoxon rank-sum test is a nonparametric test. It checks whether there is a difference between the two independent groups. The Mann-Whitney U test is applied when data are not normally distributed. When two groups are independent, and the dependent variable is either ordinal or numerical.

Testing of Normality

The testing of normality is used to find the significance of the K-S and Shapiro-Wilk tests. The value should be less than .05 (sig. different from normal) or greater than .05 (approximately normal).

Table 4.3 K-S and Shapiro-Wilk tests

Category	Kolmogorov-Smirnov[a]	Shapiro-wilk
	***P*-Value**	***P*-Value**
Tangibility	.000	.000
Reliability	.000	.000
Responsiveness	.000	.000
Assurance	.000	.000
Empathy	.000	.000

Interpreting Output

For both patient expectation and perception of the healthcare service providers' data, the distribution appears to be non-normal as presented in Table 4.3, where $p < .05$. Hence, the findings suggest that a non-parametric test should be used. The hypothesis statement framed for Mann Whitney's U test is that there is no significant difference in the mean (patient expectation and perception of healthcare service providers). All dimensions of the questionnaire were assessed. Based on the Mann-Whitney U test result presented in below Table 4.4, there is a significant difference in the mean value between patient expectation and perception of healthcare service providers. Therefore, we reject the null hypothesis that the means are equal.

Table 4.4 Mean Rank Value

Category	**Mean Rank**	**Asymp. Sig. (2-tailed)**
Tangibility	442.99	
	125.52	0.000
Reliability	443.00	
	125.50	0.000
Responsiveness	443.00	
	125.50	0.000
Assurance	438.47	
	132.47	0.000
Empathy	440.33	
	129.61	0.000

The gap score for each of the 5 dimensions is ranked in order from the largest to the smallest gap as presented in Table 4.5. A comparison of the five dimensions shows that the Tangibility dimension has thelargest gap score of -1.86. It means that the service providers are unable to perform the promised service to the rural population in Northeast, Nagaland. Although the tangibility dimension denotes the largest gap, the negative gap score for all the remaining dimensions suggests that the healthcare service providers could not meet the expectations of the patient.

Table 4.5 Ranking of Gap Score

Dimensions	**Gap Score**
Tangibility	-1.86
Reliability	-1.84
Responsiveness	-1.59
Assurance	-1.36
Empathy	-1.29

Perception of Healthcare Service Providers and Patient Expectations

This objective defines defines the first gap of the SERVQUAL model which details a difference between management perception of patient expectations and actual patient expectations. The overall result indicates that the government-established health centres (Sub-centre, PHC, CHC) are unable to provide quality healthcare services, particularly in the dimensions of Reliability, Tangibility, and Responsiveness. A similar result has been found in the study of Al-Momani (2015) and Goula et. Al (2021). To produce better results in these dimensions, the health workforce should be aware of the needs and service users' expectations. Understanding the patients' perceptions can help healthcare service providers to establish a relationship with the patients and identify different aspects of healthcare. Using the five dimensions ofthe SERVQUAL instrument, the study shows that the perception of healthcare service providers falls below the patient's expectation. Thus, in Nagaland, healthcare providers failed to meet the service expectation central to patient requirements.

4.2 To assess the key reasons that cause unsuccessful service delivery

Computing the SERVQUAL score

Mean and SD of perception of healthcare service providers and service specification from the perspective of health providers of items in SERVQUAL

Table 4.6 Computing the SERVQUAL score

Statements	Perception of healthcare service providers		Service specification from the perspective of health providers	
	Mean	**SD**	**Mean**	**SD**
TANGIBILITY:				
Well-maintained and modern-looking medical equipment	2.76	.960	3.00	.691
Clean and visually appealing physical environment	3.19	.750	3.17	.736
Privacy during treatment and enough waiting room	3.06	.894	3.05	.780
RELIABILITY:				
Delivery of healthcare services at the appointed time	3.04	.759	3.33	.726
Service performance should be executed right the first time	3.13	.884	3.34	.751
Doctors/ staff should carry out their duties competently	3.17	.929	3.33	.785
Prescribed medicines should be affordable and reliable	3.31	.969	3.56	.738
RESPONSIVENESS:				
Doctors/ staff should be punctual with the service they deliver to the patient	3.22	.935	4.01	.679
Responsive doctors/ staff who are willing to provide service at the time promised	3.42	.898	4.00	.677
Doctors/ staff should be accessible at odd hours in case of emergencies	3.20	.941	3.98	.705
Doctors/ staff should attentively communicate to patient's problem	3.56	.931	3.94	.677
Doctors/ staff should be informative about healthcare schemes/ services and willing to answer questions	3.33	.951	4.02	.666
Waiting time of not more than one hour	3.25	.903	3.92	.737

ASSURANCE:				
Polite and friendly doctors/ staff	3.70	.876	4.03	.614
The attitude of doctors/ staff should instill trust and confidence in the patient	3.72	.767	4.05	.641
Doctors/staff should assure a relaxing transaction of communication with the patient	3.70	.831	3.71	.727
Doctors/ staff should explain thoroughly medical condition and treatment to the patient	3.46	.914	3.59	.736
EMPATHY:				
Doctors/ staff should understand patient's requirement	3.85	.985	3.82	.635
Doctors/ staff should have patience in understanding and respond to patient's questions and worries	3.68	.910	3.72	.693
Doctors should follow up with the patient about the medical treatment where necessary	3.55	.944	3.47	.756
Doctors/ staff should have the patient's best interests at heart	3.84	.827	3.90	.563

EXPLANATION FOR TABLE:

The above-given table describes the Mean and SD of the perception of healthcare service providers and service specification from the perspective of health providers (Para-medical staff) of items in SERVQUAL. Based on observation, the means score of perception of healthcare service providers ranges between 2 to 3, and the means score of service specification from the perspective of health providers ranges from 3 to 4. The inclusion of SD addresses the relevance of measuring how much data deviated or clustered around the mean. The following Table 4.7 presents the gap value obtained by subtracting the mean perception of healthcare service providers' score from the mean service specification from the perspective of health providers' score for each of the given statements.

Table 4.7 Gap Score Analysis and Mann-Whitney U Test						
Statements	**Perception of Healthcare Service Providers**	**Service Specification from the Perspective of health providers**	**Gap Score**	**Mann Whitney Test (z)**	**Asymp. Sig. (2-tailed)**	**Hypothesis**
TANGIBILITY:	**3.00**	**3.07**	**-0.07**	**-1.730**	**.084**	**Rejected**
Well-maintained and modern-looking medical equipment	2.76	3.00	-0.24	-2.989	.003	
Clean and visually appealing physical environment	3.19	3.17	0.02	-.224	.823	
Privacy during treatment and enough waiting room	3.06	3.05	0.01	-215	.830	
RELIABILITY:	**3.16**	**3.39**	**-0.23**	**-3.199**	**.001**	**Rejected**
Delivery of healthcare services at the appointed time	3.04	3.32	-0.28	-4.303	.000	
Service performance should be executed right the first time	3.13	3.34	-0.21	-2.775	.006	
Doctors/ staff should carry out their duties competently	3.17	3.33	-0.16	-2.018	.044	
Prescribed	3.31	3.56	-0.25	-2.454	.014	

medicines should be affordable and reliable						
RESPONSIVENESS:	**3.33**	**3.97**	**-0.64**	**-13.162**	**.000**	**Rejected**
Doctors/ staff should be punctual with the service they deliver to the patient	3.22	4.01	-0.79	-9.680	.000	
Responsive doctors/ staff who are willing to provide service at the time promised	3.42	4.00	-0.58	-7467	.000	
Doctors/ staff should be accessible at odd hours in case of emergencies	3.20	3.98	-0.78	-9.733	.000	
Doctors/ staff should attentively communicate to patient's problem	3.56	3.94	-0.38	-4.780	.000	
Doctors/ staff should be informative about healthcare schemes/ services and willing to answer questions	3.33	4.02	-0.69	-8.827	.000	
Waiting time of not more than one hour	3.25	3.92	-0.67	-8.585	.000	
ASSURANCE:	**3.64**	**3.84**	**-0.2**	**-4.829**	**.000**	**Rejected**
Polite and friendly doctors/ staff	3.70	4.03	-0.33	-4.305	.000	
The attitude of doctors/ staff should instill trust and confidence in the patient	3.72	4.05	-0.33	-4.804	.000	
Doctors/staff should assure a relaxing transaction of communication	3.70	3.71	-0.01	-337	.736	

with the patient						
Doctors/ staff should explain thoroughly medical condition and treatment to the patient	3.46	3.59	-0.13	-1.714	.087	
EMPATHY:	**3.64**	**3.72**	**-0.08**	**-.293**	**.769**	**Rejected**
Doctors/ staff should understand patient's requirement	3.85	3.82	0.03	-1.006	.315	
Doctors/ staff should have patience in understanding and responding to questions and worries	3.68	3.72	-0.04	-.298	.766	
Doctors should follow up with the patient about the medical treatment where necessary	3.55	3.47	0.08	-.667	.505	
Doctors/ staff should have the patient's best interests at heart	3.84	3.90	-0.06	-.777	.437	

EXPLANATION FOR TABLE:

The above-given table interprets the service quality gap by subtracting the perception of healthcare service providers from service specification from the perspective of health providers. The gap value for each of the five variables is obtained by adding upthe values for each of the statements in the variables and then dividing it by the number of statements in the variable. The negative score for each of the five variables indicates unsuccessful service delivery.

Interpreting Output

The testing of normality is used to find the significance of the K-S and Shapiro-Wilk tests. For the perception of healthcare service providers and service specification from the perspective of health providers' data, the result appears to be non-normal as the *p-value* is less than .05 ($p < .05$) as presented in Table 4.8. The hypothesis statement framed for Mann-Whitney's U test is that there is no significant difference in the mean (perception of healthcare service providers and service specification from the perspective of health providers). All dimensions of the questionnaire were assessed. Concerning Table 4.9 of theMann-Whitney test result, there is a significant difference in the mean value between the perception of healthcare service providers and service specification from the perspective of health providers. Therefore, we reject the null hypothesis that the means are equal.

Table 4.8 K-S and Shapiro-Wilk tests

Category	Kolmogorov-Smirnov[a]	Shapiro-wilk
	***P*-Value**	***P*-Value**
Tangibility	.000	.000
Reliability	.000	.000
Responsiveness	.000	.000
Assurance	.000	.000
Empathy	.000	.000

Table 4.9 Mean Rank Value		
Category	**Mean Rank**	**Asymp. Sig. (2-tailed)**
Tangibility	239.52	
	261.48	0.000
Reliability	230.20	
	270.80	0.000
Responsiveness	167.02	
	333.98	0.000
Assurance	219.84	
	281.16	0.000
Empathy	248.66	
	252.34	0.000

The gap score for each of the 5 dimensions is ranked from the largest to the smallest, as presented in Table 4.10. A comparison of the five dimensions shows that the Responsiveness dimension has the largest gap score of -0.64. It means that the service providers are not responsive to providing adequate service to the rural population in Northeast, Nagaland. Although the Responsiveness dimension denotes the largest gap, the negative gap score for all the remaining dimensions suggests that the healthcare service providers could not meet the patient's expectations.

Table 4.10 Ranking of Gap Score	
Dimensions	**Gap Score**
Responsiveness	-0.64
Reliability	-0.23
Assurance	-0.2
Empathy	-0.08
Tangibility	-0.07

Key reasons that cause unsuccessful service delivery

This objective defines the second gap of the SERVQUAL model which details the difference between the perception of healthcare service providers and service

specifications from the perspective of health providers. The gap between service quality specification and healthcare providers' perceptions arises when they perceive patients' requirements without setting performance standards. An analysis of the findings concerning Table.10, clearly shows that the responsiveness dimension has the largest gap of -0.64. It means that healthcare service providers are unable to provide prompt services to the patients as they are unable to meet the requiredperformance standards. The negative gap for all the remaining dimensions- Reliability (-0.23), Assurance (-0.2), Empathy (-0.08), and Tangibility (-0.07) highlights thecauses of unsuccessful service delivery. Using the five dimensions of the SERVQUAL instrument, the study shows that the service quality specification and healthcare providers' perceptions fall below the performance standards.

The healthcare scenario of rural areas in Nagaland is not satisfactory mainly due to a shortage of manpower and accessibility. The negative gap in all dimensions addresses the fact that there is a need for refinement in the healthcare system. The rural population, especially those sections of people residing in the interior villages, has less health awareness and fewer resources due to non-accessibility. One contributing reason is due to non-availability of healthcare workers and the absence ofstaff in their allotted place of posting. Such negligence on the part of healthcare workers may put those people's lives at stake, especially during an emergency case. Some interior villages of Mon and Tuensang districts do not have access to an internet connection and there are absent healthcare workers in the medical centres.

Rural Health Statistics (RHS) 2020-21 reports an acute shortage of specialist doctors at CHCs in Nagaland. Out of 84 specialists required at CHCs (Community Health Centres) in rural areas, only 7 specialists are reported to be in position while indicating a shortfall of 77 specialists. As per the IPHS (Indian Public Health Standards) norms, CHCs should be manned by four specialists i.e., Surgeons, Physicians, Obstetricians//Gynaecologists, and Paediatricians. So far, the state government has only sanctioned 10 posts for medical specialists, of which 4 posts are sanctioned for Surgeons and 2 posts each for Physicians, Obstetricians//Gynaecologists, and Paediatricians. Specifically, in Nagaland, the performance of workforce status falls below the national average. Of these details, thegovernment-established health centres are likely to fall under slow progress within the

healthcare system. This gap of persistent crisis of shortage of healthcare workers causes unsuccessful service delivery.

A popular perception of the service users in rural areas is that the existing health- related facilities need to be upgraded along with improvement in manpower andproper management of public health centres. As per the RHS 2020-21 report, out of 131 PHCs functioning in Nagaland, only 26% function on a 24x7 basis. In addition, the major shortage of specialist doctors in CHCs in rural areas is a matter of concernof concern for the state. The condition of the healthcare system in rural areas requires high-end transformation for the people to access better and satisfactory health services. Due to low uptake, there is not much exceptional change in rural healthsetup, especially in those villages of remote districts.

The application of the SERVQUAL instrument in this study has helped identify those prevalent gaps in healthcare service deliverance. Under this section, the objective is to assess the key reasons that cause unsuccessful service delivery. As presented in the above table, the results highlight a negative gap score for all 5 dimensions. The key reason is the difference in the perception of healthcare service providers and their service specifications. The responsiveness dimension holds the highest gap of -0.64 which indicates that there is a lack of adequate performance, and the service providers of Nagaland rural healthcare centres are unable to provide prompt service. Over the years, the healthcare infrastructure and medical care have seen improvement in districts like Kohima, Dimapur, and Mokukchung but these alone do not solve the lingering problem of the rural healthcare system. The lack of timely service during emergencies, and acute shortage of specialist doctors is due to a manpower gap that falls under the responsiveness and reliability dimension. Another contributing factorto these gaps is the non-availability of medical colleges in Nagaland. The lack of medical institutes is one reason that deprives many added facilities to the community as a whole. Altogether, the present scenario calls for a constructive effort by the state government to improve performance standards and service delivery.

4.3 To examine the factors affecting the flow of communication shared between the service provider and the patient

Application of Confirmatory Factor Analysis

Confirmatory Factor Analysis (CFA) was performed using AMOS 23.0 to test the measurement model. The model-fit indices were used to determine the model's overall goodness of fit. The measures considered were CIMIN/DF, GFI, AGFI, CFI, TLI, and RMSEA. The modification indices (MI) were used to identify the error and covary those variables that are on the same factor to improve the model fit. The recommended value of CIMIN/DF should range between 3-5 (Marsh & Hocevar, 1985; Schumacker & Lomex, 2004). The GFI and AGFI values should range close to 1.0 (Marsh & Hocevar, 1985; Yousapronpaiboon & Johnson,2013). The value for CFI and TLI should be greater than 0.09 (Bentler, 1990; Hair et al. 2010; Awang, 2012). RMSEA value of .08 is considered a reasonable/acceptable fit (Hu & Bentler,1998; Browne & Cudeck,1993; Awang, 2012). Table 4.11 reports the result of the model fit.

Table 4.11 Model-fit Indexes

Fit Indices	Obtained Value	Standard Value	Model-Fit
P value	.000	.000	Acceptable fit
CIMIN/DF	3.678	3-5	Acceptable fit
GFI	0.90	Closer to 1.0	Acceptable fit
AGFI	0.90	Closer to 1.0	Acceptable fit
CFI	.935	0.09	Acceptable fit
TLI	.921	0.09	Acceptable fit
RMSEA	.08	0.08	Acceptable fit

Figure 4.1 Confirmatory Factor Analysis (CFA)

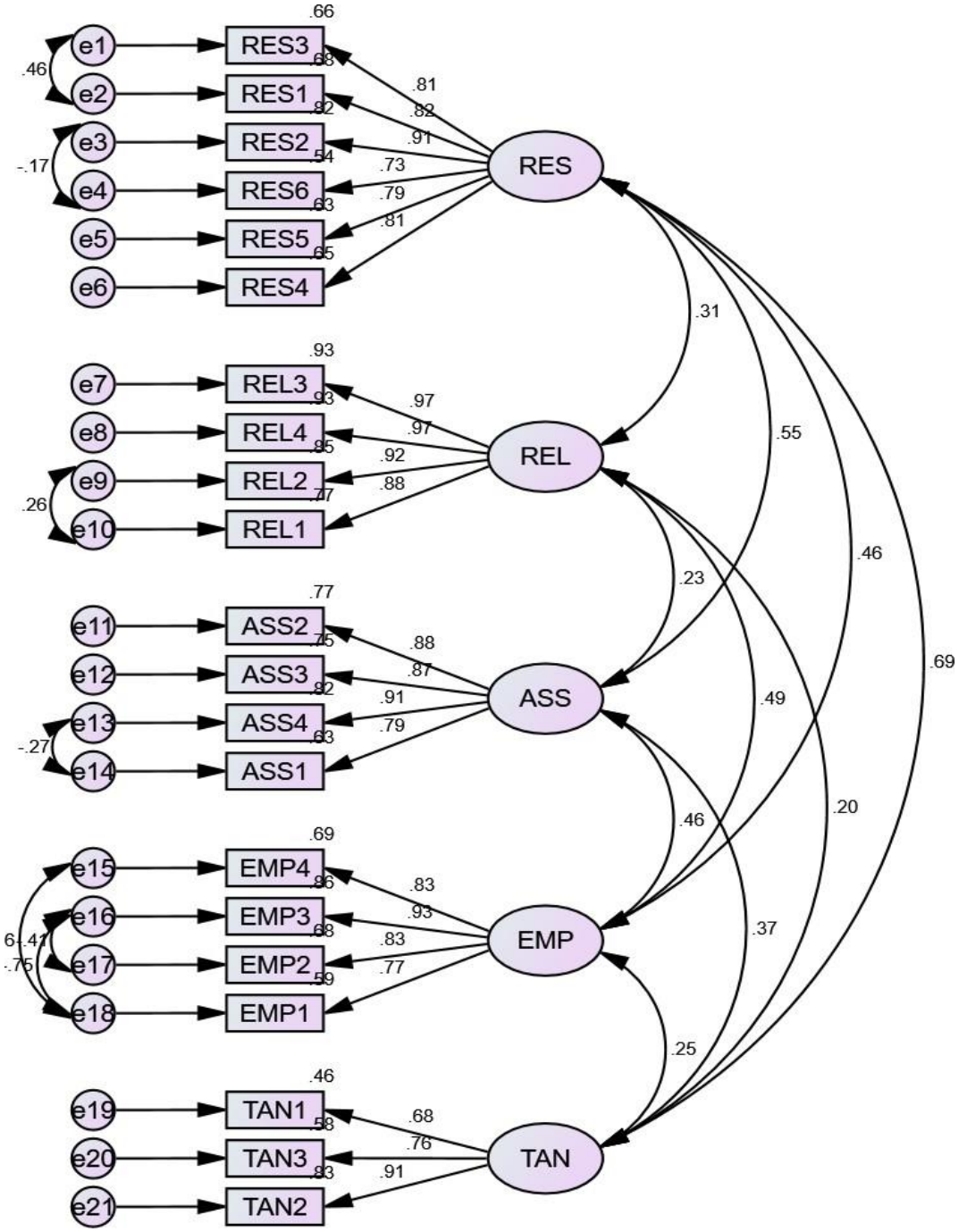


Figure 1 shows the CFA results and the factor loadings of all the items. The value of Modification Indices (MIs) was observed to achieve the required level of acceptance for the model-fit indexes. To improve the measurement model, the errors with high values that are correlated under the same factor are covaried. Table 4.12 shows those values of Modification Indices considered for the measurement model. The following Table 4.13 shows the summary of Confirmatory Factor Analysis (CFA) for all the constructs in the measurement model. This is also called testing of the convergent validity.

Table 4.12 Modification Indices

	Value of MIs
e1<--> e2	51.294
e15<-->e18	19.712
e9<-->e10	17.774
e13<-->14	7.347
e16<-->e17	7.338
e16<-->18	5.369
e3<-->e4	4.122

Table 4.13 Testing of the Convergent Validity

Variables	**Label**	**Factor Loading**	**Cronbach Alpha**	**Composite Reliability (CR)**	**Average Variance Extracted (AVE)**
Responsiveness	RES 1	0.835	0.924	0.921	0.59
	RES 2	0.768			
	RES 3	0.841			
	RES 4	0.679			
	RES 5	0.741			
	RES 6	0.767			
Reliability	REL 1	0.898	0.966	0.964	0.84
	REL 2	0.912			
	REL 3	0.937			
	REL 4	0.927			
Assurance	ASS	0.795	0.914	0.866	0.70

	1				
	ASS 2	0.864			
	ASS 3	0.860			
	ASS 4	0.845			
Empathy	EMP 1	0.668	0.870	0.799	0.61
	EMP 2	0.800			
	EMP 3	0.820			
	EMP 4	0.826			
Tangibility	TAN 1	0.815	0.829	0.838	0.64
	TAN 2	0.787			
	TAN 3	0.811			

The above table shows that the value of Cronbach Alpha ranges above the acceptable value of 0.7 (Nunnally, 1978; Griethuijsen et al., 2015). Furthermore, the value of Composite Reliability (CR) exceeded the cut-off value of 0.7 (Hair et.al., 2022). The Average Variance Extracted (AVE) is calculated to assess the convergent validity of each construct. The acceptable value of AVE is 0.50 (Hair et.al., 2022). The result indicates higher than the threshold value. Overall, the results validate a clear indication of the suitability of the SERVQUAL scale. The retention of all 21 items, thus, reveals the fact that all factors ie., Tangibility, Reliability, Responsiveness, Assurance, and Empathy have a significant effect on the flow of communication shared between the service provider and the service user. This objective defines the third and fourth gaps of the SERVQUAL model which details the difference in the flow of communication shared between the service providers and the service users.

4.4 To analyze the outcome of the patient's (In/out) expectations and perceptions

Application of Logistic Regression

In statistics, logistic regression is a predictive analysis that explains the strength of a relationship between one dependent variable and one or more independent variables. The three types of logistic regression are- binary logistic regression, multinominal logistic regression, and ordinal logistic regression. This study, predicts a binary outcome with two possible options i.e., 'satisfied' that is labeled as 1 and 'not satisfied' labeled as 0. The common assumptions of binary logistic regression are:

i). The observed dependent variable should be in dichotomous categories.

ii). There should not be high correlations among the independent variables.

iii). It assumes the independent variables to be linearly related to log odds.

In the regression technique for the analysis of binary data, we consider the following general form where,

z = 1 if 'satisfied'

0 if 'not satisfied'

*We predict the model probability π that z= 1.

$$y = a + b_1x_1 + b_2x_2 + b_3x_3 + \ldots\ldots\ldots + b_mx_m \quad (1)$$

Here, y represents the linear relationship function of the explanatory variables x_1, x_2, x_3 …… x_m. The function z is represented as the binary response where the value 1 (satisfied), and the value 0 (not satisfied).

$$y\,[\text{logit}\,(p)] = \log_e\left[\frac{p}{1-p}\right] \quad (2)$$

Here, y is denoted as the logit (p), and the likelihood ratio or the probability that the dependent variable z is 1.

$$P = e^y / 1+e^y \quad (3)$$

The function P is the probability output of the logistic regression model. When the value of y increases, the probability function P increases along. The parameters b_1, b_2,

$b_3 \ldots b_m$ show the input of each explanatory variable (x_1, $x_2 \ldots x_m$) on the probability function P. An output with a value of a positive sign implies an increase in the probability of change and vice versa. The model coefficients were estimated by using SPSS software version 22.

Table 4.14 shows the coding of the criterion variable where not a satisfied patient is classified as 0 and a satisfied patient is classified as 1. To determine whether the model adequately describes the data, the Omnibus Tests of Model Coefficients are used to test the model fit. The model was statistically significant, χ^2 (5, N = 385) = 219.05, p = .000, suggesting that it could distinguish between those patients who are satisfied and not satisfied with the healthcare service quality. In the analysis, the model explained between 43.4% (Cox and Snell R Square) and 64.9% (Nagelkerke R Square) of the variance in the independent variable and overall correct classification with 93.8% of cases. Concerning the following Table 4.15, shows a significant value of .000 for all the variables, hence the model can describe the data pretty well, and therefore, the model shows a good fit. The Hosmer and Lemeshow statistic is also another test to determine the model fit. In this test, a non-significant value indicates a good fit. It means, that the test result as shown in Table 4.16 preferably indicates that the model adequately fits the data. Hence, there is no difference between the observed and the predicted model. To understand which of the independent variables have got a significant impact on the choice of patient satisfaction level with the service quality, we refer to the following Table 4.17. Odds are the ratio of probability i.e., P(A) / P(B) which is choice A divided by choice B. Here, the table shows the relationship between the predictors and the outcome. In this analysis, the predictors are- Empathy, Assurance, Reliability, Responsiveness, and Tangibility. The B (Beta)

Table 4.14

Dependent Variable Encoding

Original Value	Internal Value
NOT SATISFIED	0
SATISFIED	1

Table 4.15

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	219.058	5	.000
	Block	219.058	5	.000
	Model	219.058	5	.000

Table 4.16

Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	3.376	8	.909

is the predicted change in the Log-odds which means 1 unit change in predictor will make a difference in Exp (B) i.e., the probability of the outcome.

If the odds ratio is exactly 1, then the probability of falling into the target group (satisfied patient) has an equal chance probability of falling into the non-target group (not satisfied patient). However, if the odds ratio > 1, then the probability of falling into the target group (satisfied patient) is greater than the probability of falling intothe non-target group (not satisfied patient). Which means the event is likely to occur. When the odds ratio < 1, then the probability of falling into the target group (satisfied patient) gets lower compared to the probability of falling into the non-target group(not satisfied patient). This means the event is unlikely to occur.

Table 4.17 Equation of Dependent and Independent Variables

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
								Lower	Upper
Step 1[a]	EMP	.016	.400	.002	1	.967	1.017	.464	2.228
	ASS	.213	.369	.333	1	.564	1.237	.600	2.550
	REL	1.073	.272	15.597	1	.000	2.925	1.717	4.982
	RES	2.116	.496	18.211	1	.000	8.294	3.139	21.915
	TAN	1.937	.602	10.354	1	.001	6.935	2.132	22.559
	Constant	-2.536	.282	81.076	1	.000	.079		

a. Variable(s) entered in step 1: EMP, ASS, REL, RES, TAN.

From above Table 4.17, we can frame the equation and correlation of both thedependent variable (patient satisfaction) and the independent variable (Empathy, Assurance, Reliability, Responsiveness & Tangibility).

$y = -2.536 + .016\,x1 + .213\,x2 + 1.073\,x3 + 2.116\,x4 + 1.937\,x5$

We see that the independent variables of reliability, tangibility, and, responsiveness have a significant impact and role in patient satisfaction. We can say that the odds of patients (service users) being satisfied with the healthcare service providers offering prompt service, and actively responsive to patients' problems contribute to making a patient satisfied with the service performance in Nagaland. In addition, the tangibility

variable with a significant value of .001 also impacts patient satisfaction.

A research study by Kwateng et.al (2017) who evaluated service quality in public and private hospitals has found a similar result highlighting a positive input of the responsiveness dimension contributing towards patient satisfaction. Similarly, these findings support the gap analysis result of some of the published studies from Turkey, Saudi Arabia, India, and Algeria (Messala &Paul, 2016; M. Pekkaya et.al 2017; Alumran et.al 2020; Mrabet et.al 2022). All these results demonstrate tangibility, reliability, and responsiveness dimensions as significant factors contributing to patient satisfaction.

On the flip side, the result also indicates that the empathy and assurance dimensions do not significantly contribute to patient satisfaction. These may be due to certain reasons like the rural healthcare service users feeling less need or low expectations from these dimensions (empathy and assurance) and the aspect of friendly and empathic gestures from healthcare service providers do not positively impact patients' satisfaction. A similar study has been conducted in the government hospitals of Southern Saudi Arabia by Alghamdi (2014) where the empathy dimension resulted in the greatest impact on patient satisfaction. Another study also suggests a similar result in the work of Kitapci et.al (2014) where the assurance and empathy dimensions contribute a significant impact on patient satisfaction. While the case is not the same as with the government-established health centers in rural areas ofNagaland. Based on the analysis, the satisfaction of the service users (patients) is not associated with relationship building, nor does ensuring a relaxing conversation or sharing empathic gestures contribute to a positive influence or outcome. To support the result, a similar study has been found in the published work of Messala &Paul, (2016) and Al-Daoar & Zubair, (2018) where the assurance and empathy dimensions do not have a significant impact on patient satisfaction.

From the findings, it can be understood that patients expect a dependable service where doctors/staff carry out their duty with competence and perform their service at the right time. As per the observation during the data collection phase, the rural people's general perception was concerning the healthcare infrastructure, upgrading medical equipment and facilities, improving the shortfall of manpower, and upgrading essential skill sets. All in all, patient satisfaction can only be attained when service

performance surpasses patients' expectations, therefore, the interest of the healthcare service providers should be addressed toward understanding the needs and requirements of the service users.

Analyzing outpatient expectations and perceptions

The application of binary logistic regression is used for analyzing outpatient expectations and perceptions. The following general form is used for analyzing the binary data of outpatients where,

z = 1 if 'satisfied'

0 if 'not satisfied'

The equation is explained as:

$y = a + b_1x_1 + b_2x_2 + b_3x_3 + \ldots\ldots\ldots + b_mx_m$

Here, y represents the linear relationship function of the explanatory variables x_1, x_2, $x_3 \ldots\ldots x_m$. The function z is represented as the binary response where the value 1 (satisfied), and the value 0 (not satisfied).

Table 4.18 shows the result of Omnibus Tests of Model Coefficients. The purpose of this test is to determine whether the model adequately describes the data. We see that the model was statistically significant, χ^2 (5, N =290) = 172.8, p = .000, suggesting that it could distinguish between those outpatients who are satisfied and not satisfied with the healthcare service quality. The test result shows a significant value of .000 for all the variables, hence the model shows a good fit. In the analysis, the model explained 44.9% (Cox and Snell R Square) and 65.1% (Nagelkerke R Square) of the variance in the independent variable and overall correct classification with 86.9% of cases. Table 4.19 shows the result of Hosmer and Lemeshow's statistic, it is

Table 4.18

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	172.853	5	.000
	Block	172.853	5	.000
	Model	172.853	5	.000

Table 4.19

Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	10.477	8	.233

another test to determine the model fit. The result indicates a non-significant value. It means, that preferably the model adequately fits the data. Hence, there is no difference between the observed and the predicted model. The following Table 4.20 presents the equation result of which of the independent variables have significantly impacted the choice of outpatient satisfaction level with the service quality.

Table 4.20 Equation of Dependent and Independent Variables (Outpatient)

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
								Lower	Upper
Step 1[a]	EMP	.118	.449	.069	1	.793	1.125	.466	2.714
	ASS	.318	.406	.612	1	.434	1.374	.620	3.046
	REL	1.065	.303	12.318	1	.000	2.901	1.600	5.258
	RES	1.639	.545	9.056	1	.003	5.150	1.771	14.979
	TAN	1.986	.689	8.322	1	.004	7.288	1.890	28.097
	Constant	-2.057	.272	57.111	1	.000	.128		

a. Variable(s) entered on step 1: EMP, ASS, REL, RES, TAN.

From above Table 4.20, we can frame the equation of the relationship between the dependent variable (patient satisfaction) and independent variable (Empathy, Assurance, Reliability, Responsiveness & Tangibility).

$y = -2.057 + .118\,x1 + .318\,x2 + 1.065\,x3 + 1.639\,x4 + 1.986\,x5$

we see that the independent variables of tangibility, responsiveness, and reliability have a significant impact and role in outpatient satisfaction. The odds of outpatients being satisfied with the healthcare service providers offering prompt service, well- equipped health centers, maintaining a clean visual environment, and being actively responsive to patients' problems contribute to making outpatients satisfied with the service performance in Nagaland. Previous studies based on similar research work in Thailand, Iran, Saudi Arabia, and Jordan have also found that the highest expectation and perception were shown in the tangibility dimension (Zarei, 2012; Al-Hawary, 2012; Yousapronpaiboon & Johnson, 2013). Based on the analysis result, the influence of the tangibility factor such as well-maintained medical equipment, a clean physical environment, and maintaining enough waiting rooms significantly

contributes to outpatient satisfaction in rural areas of Nagaland. The findings also suggest that the responsiveness dimension significantly contributes to outpatient satisfaction. To support the result, a reference to similar studies has been highlighted. A published research work by Yousapronpaiboon & Johnson, (2013) and Al-Daoar & Zubair, (2018) also found a similar result where the responsiveness dimension significantly influences outpatient satisfaction. Here, the analysis result suggests that the service providers of rural healthcare centres of Nagaland are receptive and sensitive to the patient's needs and are therefore considered one key contributor to outpatient satisfaction. The reliability dimension also significantly contributes to outpatient satisfaction. A similar result has been found in the research work of Chakravarty (2011) where the service users expressed a sense of dependability and confidence in the performance of the healthcare service providers. The result is in contrast to Al Fraihi & Latif's (2016) study that observed the reliability dimension maintaining the highest gap in the outpatient department. All in all, based on the analysis result, it can be observed that the service providers of rural healthcare centres in Nagaland were able to exceed those outpatient expectations, particularly in the aspects of tangibility, responsiveness, and reliability factors.

Of all the five dimensions, the empathy and assurance dimension did not exceed patient expectations and overall does not contribute to patient satisfaction. The empathy dimension denotes an expression of understanding of a patient's requirements and the level of compassion given by the service providers. In support ofthe findings of this study, a similar result has been found in the published research work of Bahadori M et al. (2014). In contrast, the research study by Huang & Li (2010) and Yousapronpaiboon & Johnson, (2013) found the empathy dimension has a significant impact on outpatient service and satisfaction. Emphasizing the analysis of my study, the result suggests probable outcomes for the reason of dissatisfaction of outpatients with the empathy dimension. The reason may be due to a lack of healthcare service providers in developing a relationship that failed to understand the patient requirement, especially that of outpatient service. Furthermore, health service providers are expected to be friendly and have an empathetic attitude toward their patients to address their problems and engage in a relaxing conversation. Such failure on their part will hamper the relationship with the patients and eventually contributes

to dissatisfaction with the service performance. Another such dimension is the assurance aspect which did not exceed patient expectations and overall did not significantly contribute to patient satisfaction. A similar result has been found in the research work of Huang & Li (2010), Adebayo et.al (2014), Meesala & Paul (2016), and Al-Daoar & Zubair (2018) where the service quality of assurance dimension did not significantly impact outpatient satisfaction. The assurance dimension describes the ability of healthcare service providers to be able to assure security, be competent in their duty, and instill a sense of trust and confidence in the patient. Based on the analysis result, the rural healthcare service users in Nagaland do not associate their satisfaction with the assurance aspect of service quality. Thus, the reason may be similar to that of the responsiveness dimension where one probable outcome may be due to failure on the part of the healthcare service providers to instill trust andconfidence in the patient.

Analyzing inpatient expectations and perceptions

The application of binary logistic regression is used for analyzing inpatient expectations and perceptions. The following general form is used for analyzing the binary data of inpatients where,

z = 1 if 'satisfied'

0 if 'not satisfied'

The equation is explained as:

$y = a + b_1x_1 + b_2x_2 + b_3x_3 + \ldots\ldots + b_mx_m$

Here, y represents the linear relationship function of the explanatory variables x_1, x_2, $x_3 \ldots\ldots x_m$. The function z is represented as the binary response where the value 1 (satisfied), and the value 0 (not satisfied).

Table 4.21 shows the result of Omnibus Tests of Model Coefficients. The purpose of this test is to determine whether the model adequately describes the data. We see that

Table 4.21

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	40.803	5	.000
	Block	40.803	5	.000
	Model	40.803	5	.000

the model was statistically significant, χ^2 (5, N =95) = 40.8, p = .000, suggesting that it could distinguish between those inpatients who are satisfied and not satisfied with the healthcare service quality. The test result shows a significant value of .000 for all the variables, hence the model shows a good fit. In the analysis, the model explained between 34.9% (Cox and Snell R Square) and 63.5% (Nagelkerke R Square) of the variance in the independent variable and overall correct classification with 92.6% of cases. Table 4.22 shows the result of Hosmer and Lemeshow's statistic, it is another test to determine the model fit. The result indicates a non-significant value. It means, that preferably the model adequately fits the data. Hence, there is no difference between the observed and the predicted model. The following table 4.23 presents the equation result of which of the independent variables has significantly impacted the choice of inpatient satisfaction level with the service quality.

Table 4.22

Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	5.449	7	.605

Table 4.23 Equation of Dependent and Independent Variables (Inpatient)

Variables in the Equation

		B	S.E.	Wald	Df	Sig.	Exp(B)	95% C.I.for EXP(B)	
								Lower	Upper
Step 1[a]	EMP	.153	.999	.023	1	.878	1.165	.164	8.256
	ASS	.337	.982	.118	1	.731	1.401	.204	9.607
	REL	1.033	.729	2.004	1	.157	2.809	.672	11.732
	RES	3.000	1.344	4.979	1	.026	20.077	1.440	279.898
	TAN	2.366	1.387	2.907	1	.088	10.650	.702	161.546
	Constant	-4.403	1.074	16.815	1	.000	.012		

a. Variable(s) entered on step 1: EMP, ASS, REL, RES, TAN.

From above table 4.23, we can frame the equation of the relationship between the dependent variable (patient satisfaction) and independent variable (Empathy, Assurance, Reliability, Responsiveness & Tangibility).

$y = -4.403 + .153\ x1 + .337\ x2 + 1.033\ x3 + 3.000\ x4 + 2.366\ x5$

We see that all the independent variables of empathy, assurance, reliability responsiveness, and tangibility do not have a significant impact and role in inpatient satisfaction. The analysis result reflects the fact that the rural healthcare service providers of Nagaland were unable to exceed inpatient expectations in any of the service quality dimensions. In support of these findings, a similar result has been found in some of the published studies from Greece, Iran, and India where all the five dimensions of service quality did not contribute to patient satisfaction (Chakravarty, 2011; Bahadori et.al, 2014; Bahadori et.al, 2021). The survey for inpatients has been conducted in PHCs and CHCs where patients were admitted for treatment and basic ailments. The insignificant result in all the five dimensions of service quality denotes poor performance on the part of rural healthcare service providers (doctors/staff).Such failure on their part influences the perception of the service users and altogether impacts the satisfaction level of the inpatients. Based on the findings of my research, in Nagaland, the general expectations of the inpatients of rural health centres are to dowith the aspect of responsiveness, tangibility, and reliability dimensions. This calls foran urgent need and attention to improve rural healthcare service quality and demands that healthcare service providers contribute a productive amount to better understand the needs and expectations of inpatients. This objective defines the fifth gap of the SERVQUAL model which details the difference between patient's (In/outpatient) expectations and perceptions.

CHAPTER 5

CHAPTER 5
CONCLUSION AND SUGGESTIONS

Performance is the key attribute for evaluating the delivered service in any industry or sector. From a healthcare perspective, patient satisfaction is the deriving factor for the service experience they undergo during their healthcare visit. Nowadays, the concept of healthcare settings has moved beyond just a medical treatment or a visit for basic ailments. Patients or service users expect certain attributes from the service and the overall experience. Concerning this notion, many healthcare industries especially the private set up have started to emphasize more on promoting a healthcare experience with the hospitality concept of Evidence-Based Design (EBD). The holistic approach to such an attempt is directed toward improving service performance and providing an aesthetic experience to the patients. From the literature study, it is observed that the aspect of tangibility and empathy factors is a contributing essence to integratingpatient satisfaction with the provided healthcare service. The healthcare system has achieved progressive development over the years with advancements in technology, infrastructure, healthcare facilities, equipment, and overall improving the service users' experience. The sole purpose of cultivating the concept of hospitality culture and transforming the hospital settings with a hotel-like room environment is a step closer to developing the healthcare system and improving service performance to ultimately achieve patient satisfaction. Such improvement is garnered overall to deliver a better healthcare service, refine the service quality, and uplift performance. These attributes of healthcare facilities have become a global trend majorly in private healthcare institutes. The sole purpose of such transformation in healthcare settings is to enhance service quality, improve patient experience, and all in all attain patient satisfaction. Unlike private healthcare institutes with major facilities, health services, and aesthetic experience, the scenario is different for those public healthcare institutes. The thin line between private and public healthcare settings is the cost factor and the medical facilities. The fact that a section of people who generate low income cannot afford the luxury of service experience and the various healthcare facilities the private healthcare institute has to offer. This ultimately leaves no choice

but to depend on the public healthcare facility. The function of most of the government-established health institutes lacks service performance and quality on the part of healthcare service providers. For this reason, people usually go without treatment because of the non-availability of a healthcare worker or with unsatisfactorytreatment all along.

In India, the healthcare system portrays a spectrum of enormous challenges and diversity. The fact that most people in India rely on public healthcare institutes but due to lack of accessibility, lack of health awareness, poor infrastructural facilities, and non-reliable on the part of healthcare service providers contributes to a major concern. A large section of people living in rural areas has a low level of health awareness due to poor literacy rates, and a lack of proper health education. Accessibility to good healthcare service is a basic human right but practically, the result of poor service quality in the rural healthcare setting altogether portrays a different story. The private sector plays a major role in the healthcare domain where almost the maximum health expenditure comes from ordinary household budgets and,with heavy medical expenses and service charges it leads to poverty more or less. On the flip side, public health institutes that are functioned by the government sector offerno medical charge or come with low medical expenses. But the drawback lies with theservice performance which impacts the quality and reliability factor which occurs due to a shortage of manpower, infrastructure, healthcare facilities, and improper function of the healthcare system.

The domain of my research study is centered on rural healthcare service performance in Northeast, Nagaland. The structure of the Northeast rural healthcare system lack behind compared to the national average. Gogoi et. al (2021) have carried out a study particular to NER rural healthcare infrastructure and have highlighted some of the prevailing challenges. Their study result suggests a compelling need to focus on establishing a proper health centre, especially in rural parts of NER with a special interest in recruiting properly trained health workers. The pertaining reason is due to poor and unequal health infrastructure which contributes to unsatisfactory performance on the part of the service providers. In rural society, healthcare is established on three-tier namely- sub-centre, Primary Health centres (PHCs), and Community Health Centres (CHCs). The Northeast region comprises eight states ie.,

Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, and Tripura. Over the years, the healthcare system in this region has witnessed certain improvements but the problem lingers for people living in rural areas as compared to those living in urban or semi-urban areas. In NER, considering the building infrastructure of healthcare centers, the status seems to be acceptably well-established in some of the states like Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, and Sikkim. Besides this fact, one cannot overlook the prevailing issues like the problem of accessibility of health facilities, shortfall of specialist doctors, manpower, and active participation of healthcare service providers to promote health awareness amongst the rural population.

The research study is directed toward a gap analysis of the service performance of rural healthcare in Nagaland with a focus on understanding the perspective of service users and their expectations.

5.1 Reasons for poor satisfaction and Learning from the Study

Analyzing and evaluating the perspective the service users (patients) play a pivotal role in the success of achieving a performance standard and improving the service quality. Henceforth this research work is driven toward assessing a gap study with particular to gauging the performance of rural healthcare service quality in Nagaland. Overall, this study highlights some of the prevailing reasons leading to poor performance with four prime objectives.

The first objective is to identify the prevailing gap between patient expectations and perceptions of healthcare service providers. With the approach of the SERVQUAL scale and Mann-Whitney U Test, the objective was further analyzed. The analysis result projects a negative gap score for all five variables namely- Tangibility, Reliability, Responsiveness, Assurance, and Empathy. The Mann- Whitney U Test frame the hypothesis that there is no significant difference in the mean (patient expectation and perception of healthcare service providers). The result highlights that there is a significant difference in the mean value therefore we reject the null hypothesis. Amongst all the five dimensions, the tangibility dimension denoted the largest gap score of -1.86. All in all, the findings suggest the fact that the

service providers of rural healthcare in Nagaland were unable to provide the promised service and could not meet the patient's expectations. The second objective of the study is to assess the key reasons that cause unsuccessful service delivery. By computing the SERVQUAL score, the result suggests a negative gap score for all five dimensions. It was then followed by the Mann-Whitney U Test for the hypothesis testing that there is a significant difference in the mean (perception of healthcare service providers and service specification from the perspective of health providers). The result highlights that there is a significant difference in the mean value therefore we reject the null hypothesis. Amongst all the five dimensions, the responsiveness dimension denoted the largest gap score of -0.64. All in all, the study highlights a negative gap score for all five dimensions which sums up that the specified service quality and healthcare providers' perceptions failed to hit the performance standards.It overall addresses the fact that the Nagaland rural healthcare system is not satisfying the expectation of the service users. The third objective of the study is to examinethe factors affecting the flow of communication shared between the service provider and the patient. Here, the application of Confirmatory Factor Analysis (CFA) was performed. The measurements considered were CIMIN/DF, GFI, AGFI, CFI, TLI, RMSEA, and the modification indices (MI) were used to identify the error and associate those variables which are on the same factor. The testing of the convergent validity was further carried out to overall summarize the CFA result. The findings indicate acceptable results which are above the threshold values. Therefore, the outcome validates the suitability of the SERVQUAL scale Thus, the retention of all

21 items confirms the fact that all five dimensions- Tangibility, Reliability, Responsiveness, Assurance, and Empathy contribute to a remarkable outcome in the flow of communication shared between the service provider and the patient. Finally, the fourth objective is directed toward analyzing the outcome of the patient's (In/out) expectations and perceptions. The approach of binary logistic regression is applied where it predicts a binary outcome with two options i.e., 'satisfied' that is labeled as 1 and 'not satisfied' labeled as 0. Individual analysis for both In/Outpatients was carried out. The result of Inpatient indicates that all the five independent variables- Tangibility, Reliability, Responsiveness, Assurance, and Empathy do not contribute toinpatient satisfaction. This addresses the fact that rural healthcare service providers of

Nagaland lack far behind in achieving inpatient satisfaction concerning all five dimensions of the measurement scale. the independent variables of tangibility, responsiveness, and reliability have a significant impact on outpatient satisfaction. On the other hand, the independent variables of empathy and assurance dimension overall do not contribute to patient satisfaction. All in all, the healthcare service provider in Nagaland achieved a satisfactory response in terms of tangibility, responsiveness, and reliability dimensions whereas, the empathy and assurance dimension did not exceed patient expectations.

Over recent years, the state has positioned itself to restructure the healthcare delivery system with particular interest for rural people. Certain health initiatives are undertaken the National Health Mission (NHM) which involves the participation of the community and helps improve service performance all along. The state also has witnessed an increase in literacy rate with an average of 89.62% for the urban region and 75.35% for rural areas of Nagaland. These surely have contributed towards healthcare awareness among the people. A significant number of the population resides in rural areas of Nagaland and therefore is one of the particular reasons why many people rely on government-established health centres. Besides, the challengesof the healthcare infrastructure faced by the state, other relevant issues are due to poorroad connectivity in interior areas, hilly terrains, language barriers, and lifestyle. As per the RHS report (2020-21), the state overall lack proper functioning of sub- divisional and district hospitals. Compared to the neighboring states, Nagaland fail to establish a medical college to date which still is in an underdeveloped stage. In midst of all these medical healthcare practices, the prevalence of the practice of traditional herbal medicines is still carried forward for a decade. People still choose to believe in the use of local herbal medicines and consider it as the best healing practice that comes free of cost and cater to all age group.

5.2 Managerial Implication and Suggestion for future research

Overall, the study intends to understand the concept of patients' perceptions and expectations (In/Outpatients) and study the perspective of the service providers as well. This study can help healthcare service providers, management, and

administration committees to understand the actual needs of the service users (patients) and work towards the identified gaps. Addressing the issues of the prevailing gaps will result in improving the rural healthcare service delivery system.

The interpretation of the findings and the outcome of the analyzed result suggest the fact that the healthcare service providers in rural areas of Nagaland need to establish a relationship to make a better connection with the service users. Implementing such steps will guide the service providers to understand users' perspectives in a broader spectrum. And in addition, it will contribute to fulfilling patients' expectations and eliminate those prevailing gaps in service quality performance. The rural healthcare scenario in Nagaland as presented in the analysis study addresses a negative gap in all five dimensions (Tangibility, Reliability, Responsiveness, Assurance, and Empathy) of the SERVQUAL measurement in terms of service delivery. The prevailing issues like the non-availability of the health workforce, non-accessibility of health resources, negligence, and absenteeism of staff in their allotted place, all together contribute to unsatisfactory performance of service delivery and affect the quality of service as well. To eliminate unsuccessful delivery and improve the performance standard, the state government should take a collective effort with the active involvement of the community as a whole. It is high time the state takes a constructive step towards solving the necessity issues faced by the rural healthcare system, improving thefunction of service delivery, and overall taking a closer interest in the sector of healthcare infrastructure. Health awareness, schemes, and various health-related programs need to be better communicated and executed through a proper channel directed by healthcare service providers. All things considered, the ultimate purpose of the entire research study is projected with the question of whether service users (patients) are satisfied or unsatisfied with the delivered service. In light of this, the analysis and findings portray the fact that the service users considering both in/outpatients, expect the healthcare service providers (doctors/staff) to carry out the allotted duties with interest and dedication and to perform service at the right time.The demand for proper health infrastructure, improving medical facilities, and equipment, and enhancing required skill sets is the current need of the hour. The state should also focus on upgrading the literacy rate of the tribal and indigenous people living in interior rural villages. In Nagaland, people share a diverse culture, beliefs,

values, and language and hold different ways of thinking altogether. These distinctive features somewhere or another affect the preference of the service users. To sum up, the state government along with the functioning Department of Health and Family Welfare should altogether give a collective contribution and emphasize enacting words into action.

Further, a future examination and continuous study should be called for with evaluating the service performance of the rural healthcare sector. Researchers should take an extensive interest to study the performance of the established district hospitals run by the state government which was not considered in this research study. The application of the SERVQUAL scale to measure service quality can be further adapted to conduct future research for healthcare settings. Additional dimensions can be improvised with the changing scenario of healthcare settings and the model can be reframed accordingly to deliver a reliable outcome.

The focus should be directed toward addressing those identified service quality gaps and providing adequate training to the mid-level staff. The three tiers of government-established health centres (Sub-centre, PHCs, CHCs) are the pillars of reliability for most rural people. Therefore, a continuous assessment and evaluation need to be conducted. It ought to be addressed from the researchers' perspective and the state government should duly take active participation to overall enhance service performance and improve health service quality.

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APPENDIX

Rural Healthcare Service Quality Questionnaire

SECTION I

PATIENT EXPECTATION

Service Quality Statement	Very Unimportant	Somewhat Unimportant	Neutral	Somewhat Important	Very Important
TANGIBILITY					
Well-maintained and modern-looking medical equipment					
Clean and visually appealing Physical environment					
Privacy during treatment and enough waiting room					
RELIABILITY					
Delivery of healthcare services at the appointed time					
Service performance should be executed right the first time					
Doctors/ staff should carry out their duties competently					
Prescribed medicines should be affordable and reliable					
RESPONSIVENESS					
Doctors/ staff should be punctual with the service they deliver to the patient					
Responsive doctors/ staff who are willing to provide service at the time promised					
Doctors/ staff should be accessible at odd hours in case of emergencies					
Doctors/ staff should attentively communicate to patient's problem					
Doctors/ staff should be informative about healthcare schemes/ services and willing to answer questions					
Waiting time of not more than one hour					
ASSURANCE					
Polite and friendly doctors/ staff					
The attitude of doctors/ staff should instill trust and confidence in the					

patient					
Doctors/staff should assure a relaxing transaction of communication with the patient					
Doctors/ staff should explain thorough medical conditions and treatment to the patient					
EMPATHY					
Doctors/ staff should understand patient's requirement					
Doctors/ staff should have patience in understanding and respond to patient's questions and worries					
Doctors should follow up with the patient about the medical treatment where necessary					
Doctors/ staff should have the patient's best interests at heart					
Source: Lim & Tang,2000; Fowdar,2005; Butt & Run,2010; Hermanto,2015; Pekkaya et.al 2017; Chinedum et.al 2019.					

Any other expectations:

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SECTION II

PATIENT PERCEPTION

Service Quality Statement	Very Poor	Poor	Average	Good	Excellent
TANGIBILITY					
Well-maintained and modern-looking medical equipment					
Clean and visually appealing Physical environment					
Privacy during treatment and enough waiting room					
RELIABILITY					
Delivery of healthcare services at the appointed time					
Service performances are executed right the first time					
Doctors/ staff carry out their duties competently					
Prescribed medicines are affordable and reliable					
RESPONSIVENESS					
Doctors/ staff are punctual with the service they deliver to the patient					
Doctors/ staff are responsive and willing to provide service at the time promised					
Doctors/ staff are accessible at odd hours in case of emergencies					
Doctors/ staff attentively communicate to patient's problem					
Doctors/ staff are informative about healthcare schemes/ services and willing to answer questions					
Waiting time of not more than one hour					
ASSURANCE					
Polite and friendly doctors/ staff					
Doctors/ staff attitude instilled trust and confidence in the patient					
Doctors/staff assure a relaxing transaction of communication with the patient					
Doctors/ staff explain thoroughly medical condition and treatment to the patient					

EMPATHY					
Doctors/ staff understand patient's requirement					
Doctors/ staff have patience in understanding and responding to patient's questions and worries					
Doctors follow up with the patient about the medical treatment where necessary					
Doctors/ staff have the patient's best interests at heart					
Source: Lim & Tang,2000; Fowdar,2005; Butt & Run,2010; Hermanto,2015; Pekkaya et.al 2017; Chinedum et.al 2019.					

Rural Healthcare Service Quality Questionnaire

SECTION I

PERCEPTION OF HEALTHCARE PROVIDERS

Service Quality Statement	Very Poor	Poor	Average	Good	Excellent
TANGIBILITY					
Well-maintained and modern-looking medical equipment					
Clean and visually appealing Physical environment					
Privacy during treatment and enough waiting room					
RELIABILITY					
Delivery of healthcare services at the appointed time					
Service performances are executed right the first time					
Doctors/ staff carry out their duties competently					
Prescribed medicines are affordable and reliable					
RESPONSIVENESS					
Doctors/ staff are punctual with the service they deliver to the patient					
Doctors/ staff are responsive and willing to provide service at the time promised					
Doctors/ staff are accessible at odd hours in case of emergencies					
Doctors/ staff attentively communicate to patient's problem					
Doctors/ staff are informative about healthcare schemes/ services and willing to answer questions					
Waiting time of not more than one hour					
ASSURANCE					
Polite and friendly doctors/ staff					
Doctors/ staff attitude instilled trust and confidence in the patient					
Doctors/staff assure a relaxing transaction of communication with the patient					
Doctors/ staff explain thoroughly medical condition and treatment to					

the patient					
EMPATHY					
Doctors/ staff understand patient's requirement					
Doctors/ staff have patience in understanding and responding to patient's questions and worries					
Doctors follow up with the patient about the medical treatment where necessary					
Doctors/ staff have the patient's best interests at heart					
Source: Lim & Tang,2000; Fowdar,2005; Butt & Run,2010; Hermanto,2015; Pekkaya et.al 2017; Chinedum et.al 2019.					

SECTION II

SERVICE SPECIFICATION FROM THE PERSPECTIVE OF HEALTH PROVIDERS

Service Quality Statement	Very Poor	Poor	Average	Good	Excellent
TANGIBILITY					
Well-maintained and modern-looking medical equipment					
Clean and visually appealing Physical environment					
Privacy during treatment and enough waiting room					
RELIABILITY					
Delivery of healthcare services at the appointed time					
Service performances are executed right the first time					
Doctors/ staff carry out their duties competently					
Prescribed medicines are affordable and reliable					
RESPONSIVENESS					
Doctors/ staff are punctual with the service they deliver to the patient					
Doctors/ staff are responsive and willing to provide service at the time promised					
Doctors/ staff are accessible at odd hours in case of emergencies					
Doctors/ staff attentively communicate to patient's problem					
Doctors/ staff are informative about healthcare schemes/ services and willing to answer questions					
Waiting time of not more than one hour					
ASSURANCE					
Polite and friendly doctors/ staff					
Doctors/ staff attitude instilled trust and confidence in the patient					
Doctors/staff assure a relaxing transaction of communication with the patient					
Doctors/ staff explain thoroughly medical condition and treatment to					

the patient					
EMPATHY					
Doctors/ staff understand patient's requirement					
Doctors/ staff have patience in understanding and responding to patient's questions and worries					
Doctors follow up with the patient about the medical treatment where necessary					
Doctors/ staff have the patient's best interests at heart					
Source: Lim & Tang,2000; Fowdar,2005; Butt & Run,2010; Hermanto,2015; Pekkaya et.al 2017; Chinedum et.al 2019.					

PUBLISHED PAPERS AND WORKSHOPS

Title of the paper	Name of the Journal	Published Date	ISSN/ISBN Number	Journal indexing (Scopus/UGC/Web of Science)
A gap study of rural healthcare service quality in Nagaland, India.	NeuroQuantology	Dec-22	ISSN-1303 5150	Scopus

Sr. No.	Paper Presented /Attended at the Conference	Conference & Workshops	Year
1.	A research note: the application of the hospitality management concept in a healthcare setting	Contemporary Issues and Challenges in Management	2021
2.	A gap study between healthcare service provider perception and expectation of patients in Nagaland, India	Fostering Resilient Business Ecosystems and Economic Growth: Towards the Next Normal	2022
3.	Attended the conference	Industry 5.0: Human Touch, Innovation, and Efficiency	2022
4.	Attended the workshop	Elsevier Author Workshop: Fundamentals of Research Article Writing	2021
5.	Attended the workshop	Nuances in Writing Research Article	2022