



# Patient Satisfaction on Application of Modern Technology on Herbal Healthcare Delivery in Southwestern Nigeria

Ogirima S. A. O.<sup>1\*</sup>, Adigun E. B.<sup>2</sup>

<sup>1,2</sup>Ladoke Akintola University of Technology, Ogbomosho, Nigeria

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\*Corresponding Author: Ogirima S. A. O.<sup>1\*</sup>

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Abstract	Original Research Article
<p>The paper is to find the contribution of technology in achieving excellence in herbal healthcare services to meet the patient satisfaction. It depends on the quality of care received in which patients are happy with the treatment received from the herbal practitioners. The study evaluates patient satisfaction on the <a href="#">service quality</a> dimensions towards the application of modern technology on herbal healthcare delivery. Primarily, the patient satisfaction receives from the herbal practitioner in relationship with service expectations, environment conduciveness, medical-technical competence, and timely and cost accrue during the treatment. Three hundred (300) administered questionnaires were distributed to patients amongst the six herbal medical centres of the region to know the outcomes of service expectations, environment conduciveness, medical-technical competence, and timely and cost accrue to the treatment the patients. The patient satisfaction with healthcare quality was significantly high base on the results from the dimensions taking. The results revealed that priority, religion and cultural factors are essential to providing quality healthcare and to patient satisfaction in Southwestern Nigeria. All the service quality (SERVQUAL) dimensions are instrumental in maintaining patient satisfaction with the quality of healthcare. In conclusion, patients are satisfied with the concept of the modern technology and its integration into the current herbal practitioner’s practice. Patients’ satisfaction was similar towards healthcare quality regardless of the various lengths of stays at the herbal centres. These findings would provide information for healthcare practitioners and herbal medical centres policymakers to enhance its healthcare services. Therefore, the patients’ fear is about the privacy of medication information online may undermine their privacy.</p> <p><b>Keywords:</b> Environment Conduciveness, Herbal Healthcare Delivery, Technical Competence, Modern Technology, Patient Satisfaction, Quality of Service, Service Expectations, Timely and Cost Of Treatment, Southwestern Nigeria</p>	

## 1. INTRODUCTION

Herbal medicine has been widely used in Southwestern Nigeria for the treatment of the diseases to patients that seek herbal medical care from the designated centres like Lambo care, Yoyo-bitters, Ogi-herbs etc. (Ogirima, 2018). With advent of modern technology, patient currently seek treatment from the practitioners either face-to-face or remotely depend on patient convince, fulfilling expectations or satisfaction (Ogirima, 2021). Patient satisfaction can be measured according to the level at which a patient is contented with the healthcare received from the healthcare provider (Manzoor, et al., 2019). It is a relative phenomenon, which embodies the patient’s perceived need, expectations from the health system, and experience of care received from the health system (Ahmad, et al., 2011 and Mukhtar, et al., 2013). Patient satisfaction depends on the patient’s delightedness quality with the quality of medical care received from practitioner (Saba, et al, 2022).

Therefore, satisfaction is an example of a perception as a fulfilling expectations, needs, or desires. This is based on the difference between what is expected and what is recieved. In Southwestern, patient’s perceptions about health facilities of modern technology, the

practitioner competence, with service expectations, environment conduciveness, cost accrue to the treatment and timely healthcare delivery were ignored (**Ogirima, 2021**). Satisfied patients will be more adherent to healthcare practitioner recommendations and higher loyalty to the practitioners from proper and adequate medication received (**Fenton, et al., 2012**).

In Southwestern Nigeria, there were two main types of healthcare providers, the Orthodox (modern) and traditional (herbal) medical providing centres. Interestingly, the latter highly patronize by the people of the region. Patients' satisfaction has been remarkably low towards application of modern technology in herbal healthcare. Though there are quality cares in terms of herbal healthcare delivery. The facilities provided by the herbal consulting centres are patient-centred that focuses on service marketing to ensure sustainability of its services. This is to maintain high standards and improve service quality in herbal healthcare delivery to patient satisfaction (**Ogirima, et al; 2021**). Patient's satisfaction regarding the application of modern technology also depends on the mode of facilities used by practitioner in consultation (telephone, video-conferencing, etc) for herbal care delivery. For example, during the Coronavirus pandemic (Covid-19), practitioners provides necessary information and healthcare services to patients through this modern technology (such as telephone, radio, television and internet connectivity) to get prevention and curative of the disease. This helps the patient during the period of the pandemic (**Ogirima and Arulogun, 2022**).

Patient satisfaction cannot be ignore when a healthcare provider or practitioner want to give a tangible services to the patient to have better healthcare, especially, the provision of patients' satisfaction with the cleanliness of the health facility, safety and comfort while waiting, and ease of finding where to go (**Amporfro et al., 2021**). It is believed that when a practitioner improved patient care as a priority for all health care delivery it will enhance a high degree of patient satisfaction. Therefore, patient satisfaction is measured with respect to the healthcare quality metric.

## 2. REVIEW OF RELATED WORKS

Patient satisfaction is a psychosomatic term used with respect to quality of serviced from the practitioner during medication. It occurs when one's experience is aligned with one's expectations or hopes. It is referred to as "a person's feelings of pleasure or disappointment that results from comparing a product or service perceived performance (or outcome) to expectations. But if the experience falls short of expectations, the patient is dissatisfied. Otherwise, if it matches expectations, the patient is satisfied else if it exceeds expectations, the patient is highly satisfied or delighted". Thus, patient satisfaction is tightly related to patient loyalty. Whilst satisfaction is gained from a patient based on his/her previous medication, then loyalty becomes a consequence or purpose on the upcoming medications (**Andromeda and Antonio, 2022**). Patient satisfaction is very important to health care providers (practitioners), patients and stakeholders in the medical care organization. Therefore, patient satisfaction is an indicator for the quality of healthcare services received by patient receives which is vital for smooth functioning of the healthcare system. This identifies the factors that influence patients' overall satisfaction with healthcare (**Ahmad and Uddin, 2010, Sharma, 2013 and Odonkor, et al., 2019**).

Healthcare provider must make sure the patients are satisfied as a constant endeavor in order to achieve a better healthcare delivery to improve on the quality of services in order to meet an increasing demand of the patient (**Ofil, 2014**). A patient satisfaction survey serves as a valuable tool in healthcare setting to improve quality of care from patients' perception. It is an essential parameter used in assessing healthcare system for improvement. The auditing from the data received within the health facility and utilize determine patient satisfaction (**Bulus, et al; 2017**). Patient perceptions are influenced by healthcare organization support functions that determine reputation which influence future patient demands rather than consumers of medical procedures (**Baalbaki, et al, 2008**). Patient satisfaction is an essential factor in healthcare promotion. When patients are satisfied with healthcare services, it enhances the patient patronage to the health centre. The satisfaction with care is an essential tool in the monitoring of the quality of health care. The quality of care given to a patient can be influenced patient's patronage as a results of previous experiences from the practitioner (Babatola, et al, 2022). An adequate supply of healthcare by practitioner is significant for delivering high-quality care especially during COVID-19 (**Ogirima, et al. 2022**). A study was conducted to evaluate the patient's perspective on healthcare services provided at the Edward Francis Small Teaching Hospital, Gambia. The study found that most of the patients have higher expectations and a lower perception of the services provided by the hospital. This shows that patient satisfaction was very low compare to the services provided by the hospital (**Yusupha, 2019**). It is usually difficult to measure patient satisfaction and gauge responsiveness of healthcare systems, therefore is need to consider the factors or determinants that influence patient satisfaction such as treatment effectiveness, communication and behavior, doctor's time with patients, waiting time, technical staff availability, effectiveness in handling patient complaints,

comfortability at the reception, confidence and trust, organized care setting, and type of health insurance (**Akuamoah-Boateng, 2019**).

A cross-sectional survey was adopted to know the convenience as well as examining the quality dimensions and patient satisfaction from the services rendered from the practitioner and the data collated was used to examine the psychometric properties of the SERVQUAL dimensions, which is a standardized tool to measure service quality applied in different settings to find responsiveness, reliability, tangibility, empathy and assurance that influence patients' satisfaction and loyalty (**Berry, et al., 1998, Senel and Senel, 2006, Essiam, 2013, Khamis and Njau, 2014, Ahenkan and Aduo-Adjei, 2017, Boadi, et al., 2019, Bentum-Micah, et al., 2020, Umoke, et al., 2020, Boadi and Wenxin, 2020, Dayan, et al., 2021, and Rashid and Al-shami, 2022**). A study was conducted to assess the responsiveness of tertiary care hospitals providing super specialty care in Nigeria after Universal Health Coverage was implemented in Nigeria. It was concluded that certain domains like autonomy and choice of care provider did not perform well and need to be improved as much as the quality of basic amenities needs improvement (**Ughasoro, et al., 2017**). Good patient and practitioner relationship comes from the understanding of patients' expectations and what factors lead to patient satisfaction. With the introduction of responsiveness concept, this deal with meeting the universal, legitimate expectations of the patients. The element of this responsiveness includes dignity, autonomy, confidentiality, prompt attention, quality of basic amenities, the choice of care provider and communication. Responsiveness facilitates that the information flows between the health system and the patient. It is related to basic human rights and is a goal for all health systems. Definitely a satisfied patient is possibly carry on with the same healthcare provider in the long term and attract others to the provider, consequently the cost of retaining patients is somehow cheaper compares to the cost of attracting new patient. Unsatisfied patient will change to another healthcare provider which may likely affect the business negatively Responsive of the provider saves money, that could have been used to solve patient complaints (**Sood, et al., 2021**).

Most of these researchers make uses SERVQUAL model which was used in on the patient perception but the expectations was not considered in the modified model as a good measure of patient satisfaction with the quality of healthcare delivery. The model was used on a regular basis to track patients' perceptions of healthcare quality at a hospital compared with other hospital. The data analyzed can be visually to know the strengths and weaknesses relative to its competition. This will help the hospital to assess its service performance on the basis of each dimension compare to overall dimensions of service quality (Figure 1). Patient satisfaction is fundamental to healthcare delivery; hence healthcare services intend to serve the expectations of patients who utilize them (**Ahenkan and Aduo-Adjei, 2017**). Therefore, in the healthcare setting, patient satisfaction is usually view as an important health service policy tool and indicator for measuring the quality of health care (**Iddrisu, et al., 2019**). Patient satisfaction is not just the measurement of the effectiveness of healthcare services but a suggestion proportion to the problem areas and a reference point to take management decisions. It serves as mean of holding practitioner accountable for any wrong medication. At times patient satisfactions are very complex and even patients are unable to determine what constitutes patient satisfaction. It is important for any health care organizations take note before embark on research investigating factors contributes to patient satisfaction (**Olowe and Odeyemi, 2019**). Patient satisfaction data can be used to document health care quality for accrediting organizations. This will enhance loyalty of patients by demonstrating the healthcare from the patient perceptions and looking for ways to improve in the delivery of service (**Shah, 2017 and Fatima, et al., 2017**). There is usually an interpersonal relationship and communication between patient and practitioner in any healthcare organization, convenience of facility and technical aspect of care; and to assess patients' general satisfaction and willingness to recommend the facility to others willing to seek medication from such a healthcare organization (**Afolabi, et al., 2021**).

Evaluation of the healthcare facilities can be carried out to measure patient satisfaction which can provide details information about patient expectations if it met healthcare services rendered to patient. These indicators such as patient satisfaction, loyalty, quality of service provided by the practitioner are directly linked to the effectiveness of the offered healthcare service (**Gavurova and Kubak, 2022**). Patient satisfaction can also be regarded as a critical indicator that is commonly use to evaluate health service outcomes (**Auras, et al., 2016, Batbaatar, et al., 2016, and Gao et al., 2022**). There was an intense competition among the healthcare providers in Sabah Malaysia, the healthcare industry resulted in increasing pressure among private hospitals to provide high quality services to patient. In Sabah, the number of private hospitals is on the rise particularly when the state government has announced its strategic plan to become a medical tourism hub by offering medical treatments to the neighbouring countries. Therefore, the government of Sabah decided to set a modality to measure the service quality provided by hospitals to determine the relationship between service quality and patients' satisfaction among outpatients of the private hospitals in Kota Kinabalu, Sabah Malaysia (**Annur and Jaffery, 2018**).

Satisfaction is considered a predictor of behavioral intentions. Satisfied patients are more likely to come back next time due to a good

treatment received from the same healthcare provider and recommend it to families, relatives and friends (positive word-of-mouth) (Lacap and Alfonso, 2022). Healthcare quality demands more contextualized and patient-perspective research, a model was developed for developing on private healthcare services in Vietnam explores the dimensions of service quality in private healthcare and how it impact in-patient satisfaction, perceived value, and patient loyalty in Vietnam (Nguyen, et al.,2021). This model was adopted in this research to check patient satisfaction on the application of modern technology for herbal medication in Southwestern Nigeria. Patient satisfaction in healthcare constitutes an important component of organizational performance in the hospital setting with the aim to determine the dimensions of patient satisfaction, and to analyze the individual and organizational determinants of satisfaction dimensions in hospitals (Kone Pefoyo, 2013).

Though, many research studies examine the factors and the processes for measuring the patient satisfaction in the healthcare facilities as well as its impacts. Measuring and assessing satisfaction has implications for policymaking in the health system depending on the individual countries factors of measurement and assessment. Satisfied patients are likely to exhibit positive behavioral intentions over the healthcare delivery. These will help the healthcare provider’s long-standing success for patronage. The major obstacle to better healthcare in Nigeria is lack of accessibility to basic healthcare services. The Government of Nigeria is currently making effort through the Ministry of Health and Social Welfare to improve the quality of healthcare through different approaches such as the use of modern technology to provide healthcare delivery to patients (Ogirima et al, 2021).

Therefore, this research make uses of modified SERVQUAL model on nine dimensional variable items as a good measure for patient satisfaction of quality of herbal healthcare received based on the quality of service on the dimensional variable items such as tangibles, responsiveness, reliability, empathy, assurance, communication, loyalty, culture & belief, and affordability & accessibility. The modified service quality dimensions of the study from some related literatures is shown in Table 1.

**Table 1 Modified service quality dimensions of study of some related literature**

Author(s)	Tangible	Responsiveness	Reliability	Empathy	Assurance	Communication	Loyalty	Culture & Belief	Accessible & Affordable
Ahmad and Uddin (2010)	✓	×	×	×	×	×	×	×	×
Sharma (2013)	✓	×	×	×	×	×	×	×	×
Kone Pefoyo (2013)	✓	✓	✓	✓	✓	✓	✓	×	✓
Auras, et al. (2016)	✓	✓	✓	✓	✓	✓	✓	×	✓
Batbaatar, et al. (2016)	✓	✓	✓	✓	✓	✓	×	✓	✓
Ughasoro, et al. (2017)	✓	×	×	×	×	×	×	✓	✓
Annur and Jaffery (2018)	×	×	×	×	×	×	✓	×	✓
Akuamoah-Boateng (2019)	✓	✓	✓	✓	✓	✓	×	×	✓
Odonkor, et al. (2019)	✓	×	×	×	×	×	×	×	×

Afolabi, et al. (2021)	✓	×	✓	×	×	✓	×	×	×
Nguyen, et al. (2021)	×	×	×	×	×	×	×	✓	×
Ogirima et al. (2021)	×	×	×	×	×	×	✓	×	✓
Sood, et al. (2021)	×	✓	×	✓	✓	✓	×	✓	✓
Babatola, et al. (2022)	×	✓	×	×	✓	×	×	✓	×
Gavurova and Kubak (2022)	✓	×	✓	×	×	×	×	×	×
Gao et al. (2022)	✓	✓	✓	✓	✓	✓	✓	×	✓
Lacap and Alfonso (2022)	×	✓	×	×	×	×	×	×	×
Ogirima, et al. (2022)	×	×	×	×	×	×	✓	×	×

✓ indicates that the dimension is captured by the author patients' satisfaction

× indicates that the dimension is not captured by the author and patients' dissatisfaction

### 3. METHODOLOGY

The approach provides the opportunity for a herbal centre to assess its service performance on the basis of each dimension as well as the overall dimensions of service quality shown in Figure 1.

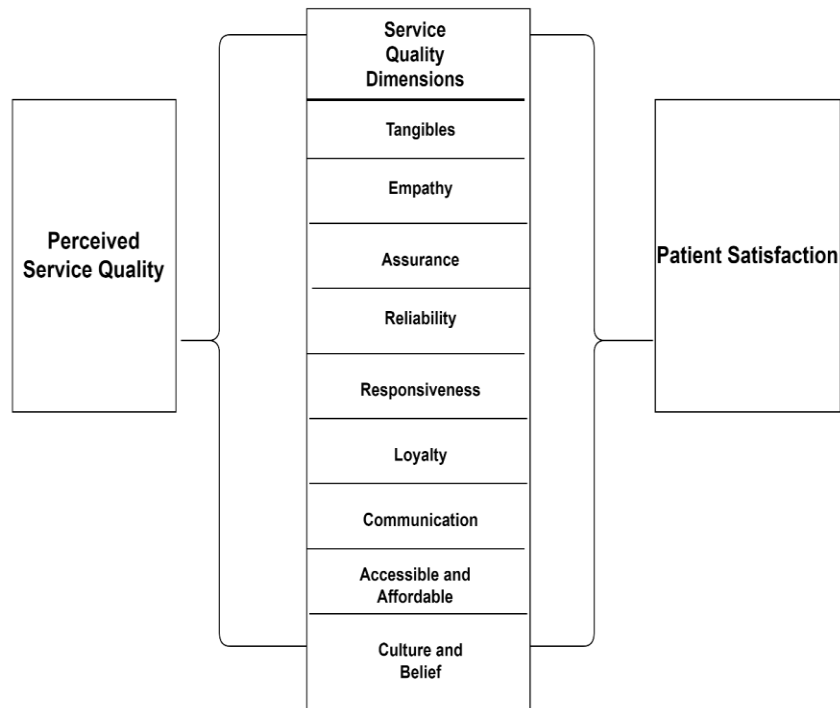


Figure 1: Dimensional Framework for Measuring the SERVQUAL Model

The data analysis will help in developing the four dimensions of service quality such as emotion, function, social influence, and trust in

Figure 2. Each developed construct shares many similar themes among interviewees, providing some first insights about the patients' expectations of the service quality of private healthcare in Vietnam and what factors determine their patient loyalty. In any healthcare centre, the quality of service received by patient will enhanced the patient's satisfaction. The continuous satisfaction received by patient, this will make the patient to be loyal to that healthcare centre. Figure 3 and Figure 4 provides the Independent variables that determine the patient's satisfaction of the services rendered and the Loyalty of patient depends on the satisfaction received, words of encouragement, image of herbal centre, and practitioner-patient relation received during medication respectively.

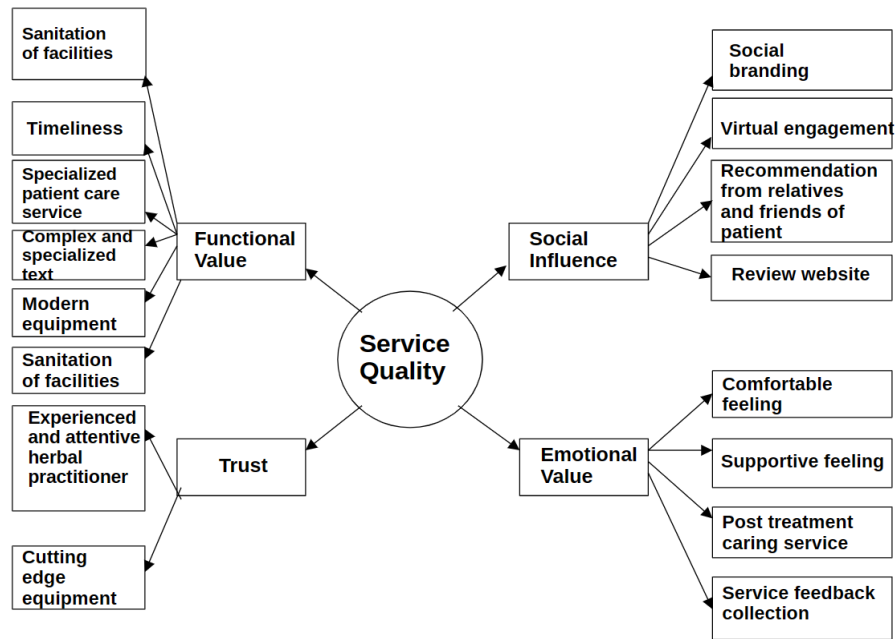


Figure 2: Service Quality

### Independent Variables

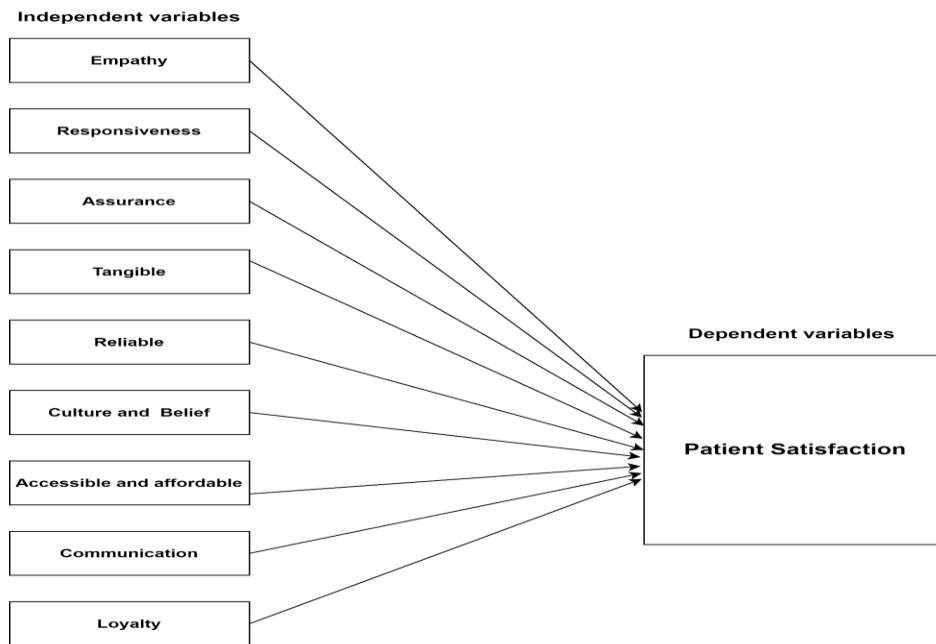


Figure 3: Independent variables for patient's satisfaction

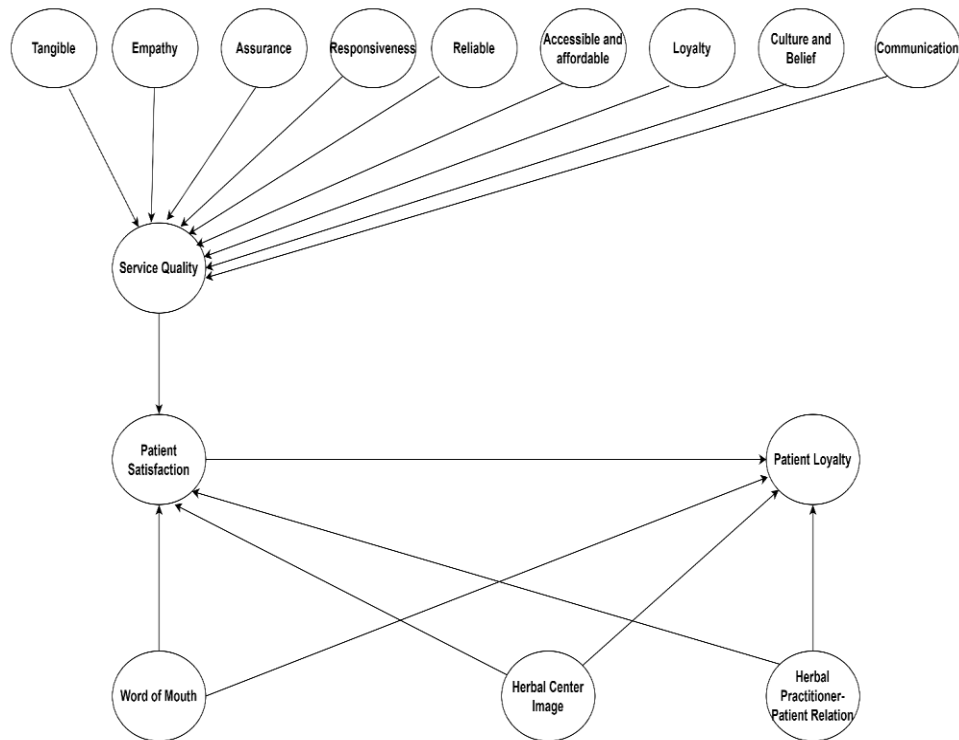


Figure 4: Loyalty of patient due to Satisfaction received

### Study Setting, Location and Design

A comprehensive study was conducted to understand the patient’s satisfaction on application of modern technology on herbal healthcare delivery. The theoretical foundation of the survey was based on primary sources questionnaires on a 5-point scale from six herbal medical centres of the region and sources are from research papers, and on patient’s expectations and satisfaction based on the SERVQUAL dimensional variable items used. The sample of administered questionnaire was given to the six centres designated in Southwestern Nigeria. 305 administered questionnaires were printed for distribution among the stakeholders. A total of 300 responses were received from the centres. The remaining 5 unengaged (not received) responses were excluded from the analysis. The approach provides an accurate measure of patient satisfaction derived from practitioner’s communication behavior, trust, and patient satisfaction on the application of modern technology on herbal care delivery.

### Study Design

This cross-section of patients receiving herbal healthcare services from the centres was recruited into the study. A structured questionnaire and information was sought from participants regarding their perceived assessment of the quality of healthcare services received from the centre. The summarizes of socio-demographic characteristics of all studied participants frequencies of responses to various items on the questionnaire were tallied, and presented in frequency distribution in Table 2.

Table 2: Socio-Demographic Characteristics of Patients

Demographic Characteristics	Sample Specific Number 300	
	Frequency	Percentage
<b>Sex</b>		
Male	101	33.6
Female	199	66.4

<b>Religion</b>		
Christian	41	13.6
Muslim	137	45.5
Traditional	95	31.8
<b>Age</b>		
Adolescents (18-21)	11	3.6
Young (22-28)	93	30.9
Middle Age (29-38)	85	28.2
Elderly (39-55)	76	25.5
Aged adults (56 and above)	35	11.8
<b>Civil Status</b>		
Single	150	50.0
Married	134	44.5
Divorced	5	1.8
Separated	3	0.9
Widowed	8	2.7
<b>Educational Background</b>		
Secondary School	30	10.0
University/Polytechnic	221	73.6
Graduate	49	16.4
<b>Occupation</b>		
Employed	199	66.4
Self Employed	52	17.2
Unemployed/Applicant	49	16.4
<b>Visit Category</b>		
Inpatient	22	7.3
Outpatient	278	92.7



**Table 3: Service quality dimensions Mean and Standard Deviation of patient's satisfaction**

SN	Variables	Mean(M)	Standard deviation
	<b>Tangible</b>		
1	Neat appearance of herbal practitioners	2.51	0.89
2	Waiting facilities for herbal practitioners	2.85	0.79
3	Hygienic condition at herbal center	2.23	0.68
	<b>Grand mean</b>	<b>2.53</b>	<b>0.79</b>
	<b>Empathy</b>		
4	Herbal workers willingness to attend to patients	3.13	0.96
5	Given individual attention	3.02	0.80
6	Concern to patients' family	2.88	0.76
	<b>Grand mean</b>	<b>3.01</b>	<b>0.84</b>
	<b>Assurance</b>		
7	Comprehensiveness of herbal examination using modern technology	2.45	0.86
8	Instructions on herbal medication/follow-up care	3.12	1.01
9	Ability of herbal practitioners	2.88	0.94
	<b>Grand mean</b>	<b>2.82</b>	<b>0.94</b>
	<b>Reliable</b>		
10	Maintaining error-free records	2.86	0.97
11	Providing services as promised	3.21	1.05
12	Following treatment protocols as outlined	2.20	0.82
	<b>Grand mean</b>	<b>2.76</b>	<b>0.95</b>
	<b>Communication</b>		
13	Instructions are clearly transmitted	2.69	0.94
14	Herbal practitioners are clearly understood during the treatment process	2.31	0.78
15	Information shared is free from ambiguity	2.53	0.99
	<b>Grand mean</b>	<b>2.51</b>	<b>0.90</b>
	<b>Accessible and Affordable</b>		
16	Herbal treatment centers are within locality	2.46	0.91
17	Herbal treatment is cost friendly	2.69	1.05
18	Information regarding herbal treatment is made available	2.86	1.15
	<b>Grand mean</b>	<b>2.67</b>	<b>1.04</b>

	<b>Culture and Belief</b>		
19	Cultural practices prohibit use of herbal medicine	3.11	0.63
20	Christian and Islam practices forbid the use of herbal medicine	3.28	0.96
21	Lack of conviction in efficacy of herbal medicine	3.74	1.14
	<b>Grand mean</b>	<b>3.38</b>	<b>0.91</b>
	<b>Loyalty</b>		
22	Patients affinity towards herbal workers	2.12	0.53
23	Preference for herbal treatment given a number of treatment options	2.58	1.02
24	Devotion to herbal practices	2.87	1.13
	<b>Grand mean</b>	<b>2.52</b>	<b>0.89</b>
	<b>Responsiveness</b>		
25	Patients are promptly responded to	2.31	0.87
26	Tests, diagnosis and treatment are well outlined	2.67	0.99
27	Willingness of health workers to listen	3.02	1.05
	<b>Grand mean</b>	<b>2.67</b>	<b>0.97</b>

**Table 4:** Reliability and Validity of Analysis of SERQUAL Dimensions

<b>Dimension Variables</b>	<b>Cronbach's <math>\alpha</math></b>
Tangible	0.78
Empathy	0.78
Assurance	0.73
Reliable	0.79

Responsiveness	0.74
Loyalty	0.79
Communication	0.75
Accessible/Affordable	0.78
Culture and Brief	0.76

**Table 5:** Cronbach's alpha reliability coefficient values

Dimension Variables	Cronbach's $\alpha$	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Tangible	0.78	0.79	0.81	0.68
Empathy	0.80	0.82	0.84	0.71
Assurance	0.73	0.74	0.77	0.62
Reliable	0.79	0.79	0.84	0.66
Responsiveness	0.74	0.76	0.81	0.70
Loyalty	0.79	0.83	0.87	0.74
Communication	0.75	0.73	0.78	0.61
Accessible/Affordable	0.78	0.91	0.95	0.79
Culture and Brief	0.76	0.81	0.84	0.63

**Table 6:** Discriminant Validity

Dimensions	M	SD	1	2	3	4	5	6	7	8	9
Tangible	4.46	0.47	0.78								
Empathy	4.21	0.81	0.11	0.78							
Assurance	4.19	0.74	0.14	0.10	0.72						
Reliable	3.83	0.56	0.12	0.08	0.15	0.74					
Responsiveness	2.93	0.54	0.15	0.11	0.12	0.21	0.89				
Loyalty	4.23	0.78	0.10	0.14	0.13	0.14	0.11	0.75			
Communication	3.42	0.46	0.16	0.20	0.17	0.09	0.09	0.23	0.82		

Accessible/Affordable	2.89	0.51	0.19	0.23	0.15	0.12	0.05	0.13	0.20	0.81	
Culture and Brief	4.21	0.45	0.23	0.12	0.11	0.08	0.12	0.07	0.19	0.21	0.75

**Table 7: Dimension of service quality on Patient Satisfaction**

Factor	Statements	Loadings	Eigen Values	% of variance explained	Cronbach alpha
1	<b>Tangible</b>				
	Hospital has modern facilities	0.80			
	Hospital has modern-looking equipment	0.70	1.45	5.17	0.70
2	<b>Empathy</b>				
	Staff welcome Patients Weaknesses	0.78			
	Staff have patients' interests at heart	0.72	10.6	38.2	0.64
	Staff respond immediately when called by patients	0.70			
	Staff understand patients' specific needs at the hospital	0.66			
	Staff at hospital are caring	0.63			
3	<b>Assurance</b>				
	Patients are guaranteed to receive needed care	0.75			
	Patients are confident of being satisfied with provided care	0.72	1.35	5.34	0.79
4	<b>Reliable</b>				
	Healthcare will be provided by herbal medicine practitioner	0.79			
	Patients have their needs adequately met	0.76	1.45	6.46	0.89
5	<b>Responsiveness</b>				
	Patients receive timely care	0.78			
	Patient complaints are adequately addressed	0.71	1.67	4.67	0.65
6	<b>Loyalty</b>				
	Patients possess a commitment to their herbal care providers	0.86			
	Patients patronise a herbal care center at a time	0.83	1.82	5.92	0.82
7	<b>Communication</b>				
	Herbal care providers are able to effectively share information	0.72			
	Patients receive adequate information about medication	0.79	1.87	6.68	0.85
	Herbal care providers are able to answer illness-related questions	0.77			
	Patients are well informed of tests to be carried out	0.68			
8	<b>Accessible/Affordable</b>				
	Patients can easily get herbal care within their vicinity	0.85	1.73	10.1	0.94
	Herbal medication is pocket-friendly	0.78			
9	<b>Culture and Brief</b>				
	Staff use language patients understand	0.75			
	Staff do not discriminate based on religion	0.74	1.60	5.74	0.60
	Staff do not discriminate based on ethnicity	0.66			

## RESULTS AND DISCUSSION

Out of 305 questionnaires administered, 300 (99%) were received and while 5 questionnaire were not returned from the respondents. The patients' questionnaire analyzed comprised of 101 (33.6%) were male and 199 (66.4%) were females. Patients age ranges between 18 and 56 years above the rest result are indicated in Table 2. Table 3 highlight the results of service quality dimensions mean and standard deviation of variable Items, and its reliability and validity of analysis of SERQUAL Dimensions is shown in Table 4, The computational analysis of Cronbach's alpha reliability coefficient values are in Table 5, the diagonal computation of discriminant validity of the mean and standard deviation SERQUAL Dimensions is shown in Table 6 and Table 7 shows the details patient's satisfactions regarding SERQUAL Dimensions variable items.

On the analysis discussion regarding Patients' satisfaction with quality of care using the nine service quality dimension (SERVQUAL) variable items used viz:

**Tangible**, this focuses on infrastructural facilities used in the herbal centres such as equipment, laboratory, healthy condition of the centres environments, seating facilities for patients, and so on. The patients were satisfied with result outcome ( $M = 2.57 \pm 0.79$ ). In this case, Ahmad and Uddin (2010), Sharma (2013), Kone Pefoyo (2013), Auras, et al. (2016), and Ughasoro, et al. (2017) stated that tangibility has a very significant correspondence with patient satisfaction level. Contrarily, Annuar and Jaffery (2018), Lacap and Alfonso (2022) and Ogirima, et al. (2022) reported dissatisfaction of patients for tangibility and also no reports regarding information on patients' health status before seeking medical attention were indicated.

**Empathy**, it is about the individual attention and care provided to the customers by the service provider and its human resource. The result of the study showed that most respondents were satisfied with the attitude of the entire health workers ( $M = 3.01 \pm 0.84$ ). Similarly, Kone Pefoyo (2013), Auras, et al. (2016), Batbaatar, et al. (2016), Akuamoah-Boateng (2019) (2019), Sood, et al. (2021), and Gao et al. (2022) stated that empathy was very significant while Odonkor, et al. (2019), Afolabi, et al. (2021), Nguyen, et al. (2021) and Ogirima et al. (2021) reported dissatisfaction with service quality dimensions of SERVQUAL lowest satisfaction.

**Assurance**, this determines the knowledge, skills, and expertise of the herbal practitioners and other centres workers that were involved in delivering services and the aptitude to make trust and confidence among the patients. The result discovered that most patients were satisfied with the thoroughness of the medication received, and competence of health workers ( $M = 2.82 \pm 0.94$ ). Similarly, this was reported by Kone Pefoyo (2013), Auras, et al. (2016), Batbaatar, et al. (2016), Akuamoah-Boateng (2019), Sood, et al. (2021), Babatola, et al. (2022), and Gao et al. (2022) who observed high level of satisfaction with services of practitioners. Ahmad and Uddin (2010), Sharma (2013), Ughasoro, et al. (2017), Annuar and Jaffery (2018), Odonkor, et al. (2019), Afolabi, et al. (2021), Nguyen, et al. (2021), Ogirima et al. (2021), Gavurova and Kubak (2022), Lacap and Alfonso (2022) and Ogirima, et al. (2022) reported patients' dissatisfaction with assurance.

**Reliable**, it is the capability to execute the desired services consistently and accurately for reliability for the provision of the service rendered, most patients were satisfied ( $M = 2.76 \pm 0.95$ ) in line with the findings of Kone Pefoyo (2013), Auras, et al. (2016), Batbaatar, et al. (2016), Akuamoah-Boateng (2019) (2019), Afolabi, et al. (2021), Gavurova and Kubak (2022) and Gao et al. (2022) reported that reduction in waiting time and consulting time improves patients' satisfaction. The rest other related literature report stated that dissatisfaction was on waiting time, despite good overall quality of care.

**Responsiveness** is the degree of willingness to help patients and provide prompt service by the hospital's personnel is responsiveness. The findings of this study showed that most patients were very satisfied with some of the indices of responsiveness which are information by the health provider, explanation of test and diagnosis, treatment received, and willingness of the health worker to listen to them ( $M = 2.67 \pm 0.97$ ). This is in agreement with Kone Pefoyo (2013), Auras, et al. (2016), Batbaatar, et al. (2016), Akuamoah-Boateng (2019) (2019), Sood, et al. (2021), Babatola, et al. (2022), Gao et al. (2022) and Lacap and Alfonso (2022) is ok compare to the study revealed negative responsiveness low of patients satisfaction of the report of Ahmad and Uddin (2010), Sharma (2013), Odonkor, et al. (2019), Afolabi, et al. (2021), Nguyen, et al. (2021), Ogirima et al. (2021), Gavurova and Kubak (2022) and Ogirima et al. (2021) that responsiveness is insignificant with patient satisfaction.

**Communication**, most of the patients were very satisfied with the mode of communication because there is an interpreter between

patients and herbal practitioners that give details explanation of test and diagnosis ( $M = 2.51 \pm 0.90$ ) is similar to that of Kone Pefoyo (2013), Auras, et al. (2016), Batbaatar, et al. (2016), Akuamoah-Boateng (2019), Afolabi, et al. (2021), Sood, et al. (2021) and Gao et al. (2022) in terms of communication between patients and practitioners. But Ahmad and Uddin (2010), Sharma (2013), Ughasoro, et al. (2017), Annuar and Jaffery (2018), Odonkor, et al. (2019), Nguyen, et al. (2021), Ogirima et al. (2021), Babatola, et al. (2022), Gavurova and Kubak (2022), Lacap and Alfonso (2022), and Ogirima, et al. (2022) has different opinion in terms of communication between patients and practitioners.

**Accessible and Affordable**, the accessibility of herbal treatment centers is within the locality and the cost of treatments and other medications are affordable to patients. The patients were very satisfied with the low cost of treatment compare to orthodox medication ( $M = 2.67 \pm 1.04$ ). This is similar to that of Kone Pefoyo (2013), Auras, et al. (2016), Batbaatar, et al. (2016), Ughasoro, et al. (2017), Annuar and Jaffery (2018), Akuamoah-Boateng (2019), Ogirima et al. (2021), Sood, et al. (2021) and Gao et al. (2022). Ahmad and Uddin (2010), Sharma (2013), Odonkor, et al. (2019), Afolabi, et al. (2021), Nguyen, et al. (2021), Babatola, et al. (2022), Gavurova and Kubak (2022), Lacap and Alfonso (2022), and Ogirima, et al. (2022) reported that patients were dissatisfied due the cost of services rendered by the practitioners.

**Culture and Brief**, patient satisfaction regarding the herbal usage was very high interpersonal trust most patients were satisfied ( $M = 3.83 \pm 0.90$ ) similar to the report of Batbaatar, et al. (2016), Ughasoro, et al. (2017), Nguyen, et al. (2021), Sood, et al. (2021) and Babatola, et al. (2022)in with the efficacy while the rest were not satisfied based on religious brief especially Christians strongly disagree with usage of herbal medicine.

**Loyalty** of the patient satisfaction regarding the herbal services as a measure of patients' interpersonal trust most patients were satisfied ( $M = 2.52 \pm 0.90$ ). This the Patients commitment to the services from the healthcare providers that will enhance patients to patronise the herbal care center at a time. This report is similar to the reports of Kone Pefoyo (2013), Auras, et al. (2016), Annuar and Jaffery (2018), Ogirima et al. (2021), Gao et al. (2022) and Ogirima, et al. (2022) that indicated the level of patient satisfaction though it is low compare to other related literature from the responses in terms patient loyalty.

In this modern day, patients are more aware and educated in gaining access to information and expectations from the healthcare system. Hence, it is important than ever before to address issues related to service delivery in this circumstance. Patient with positive perceptions has a greater chance of translating it into positive outcomes. Whereas, negative attitudes in the patient and dissatisfaction with healthcare provided leads to poor compliance and, in extreme cases, patients resort to negative word-of-mouth that discourages others from seeking health care from the system. The reason for laying great emphasis on patient satisfaction is that it is linked to improved compliance of practitioner's instructions, timely care seeking by the patient, and greater comprehension and retention of information provided by the healthcare provider. This is to ensuring a favourable health outcome. Patient satisfaction is therefore one of the indicators of the quality of care. The assessment can help in the improvement of healthcare services and its delivery based on input from the patient.

## 5. CONCLUSIONS

Most of the herbal practitioners (respondents) expressed positive views on the technology-based solutions and equipment that can used to bring values to herbal practitioner's practice in Nigeria. The study was able to identify certain barriers to the application of tediagnosis, and identified where practitioners could need support of using modern technology, especially in aspects related to expenses, equipment setup costs, time, technical incompatibility and security. It has been established that transmission of information about patient to other herbal consultants can be more accurate, and the interactivity of tediagnosis makes it easier to discuss the information about a patient in real time, increasing diagnostic accuracy to up to 80%. Based on results obtained, the study clearly shows that in a collaborative tediagnosis user is highly satisfied. Also, in order to verify the new technology acceptance from the perspective, we presented variables to check from the Cronbach's  $\alpha$  of the mean reliability analysis of the hypothesis. The results obtained from the respondents perspective study shows that various herbal centres in Southwestern Nigeria, especially those from the studied areas are eager to use the new technology so that proper monitoring, diagnose and sharing information about a patient with other healthcare providers at distant. However, this study has identified certain barriers to the application of modern technology for prescription in herbal medicine, and identified where practitioners would need the support to use the technology, especially in aspects related to sharing of information about diseases and its treatment on a database using electronic medium for herbal medications.

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