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Patients Perception on the Use of Modern Technology to Herbal Prescription in Nigeria

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***Abstract*—** The study is to exploring patient's perception on the use of modern technology for herbal healthcare delivery provided by herbal practitioners in Nigeria. A comprehensive survey was conducted in some selected States in Nigeria to know the opinion of patients towards the application of modern technology for healthcare services. A quantitative questionnaire was set up to know the patients'' perceptions on the satisfaction derived from the use of the technology. The study was conducted in Western and North-Central Nigeria. The hypothesis derivative crouch coefficient ranges between 0.71 and 0.81 validity and reliability of the system. The majority (68%) prefer the use of modern technology application in terms of improving in their health needs. Some have reservations about the technical reliability, privacy, practice expenses, cost of pay their diagnosis, time, trust, skill, and diagnostic accuracy of diagnosis. In conclusion, the majority of patients agreed and supports the concept of the modern technology and its integration into the current herbal practitioner's practice.

***Keywords*—** Patient's perception; modern technology; herbal medicine; Prescription; healthcare delivery

I. INTRODUCTION

In the modern day technology, patients can receive herbal medication through telephone, internet, short message service and videoconferencing provided by herbal practitioners depending on patients' accessibility [1]. Patients are the end users who receive treatment, therefore, comfortability and attention should be given during healthcare delivery. Herbal practitioners strive to provide healthcare services to patients using the modern tools to patients at distance [1]. An information and communication technology has really offered an opportunity for good innovation in herbal healthcare through a technologically based therapeutic and care coordination systems that patients can receive healthcare service at a distance [2].

Peoples always confusion patient perceptions and patient satisfaction to mean same and it's often been used interchangeably. Satisfaction is an integral of perception, for the fulfillment expectations, the needs, or desires. Satisfaction is what a patient expects and what the treatment received in returns. In other word, satisfaction is determined by the patient's standard of expectancies, ideals, or norms to patient's perceptions of experiences the care, with satisfaction received from the positive expectation or negative expectations. Patient perceptions on the use of modern technology are the quality of service provided by practitioners [2].

Why patient perceptions of application of modern technology for herbal prescription in Nigeria important? According to [2], there are six perspectives way to answer this question. Firstly, it could be normative that patient perceptions accessibility to healthcare to delivery is inherently meaningful and be focus of attention within the herbal healthcare system. Secondly, serious attention needs to be given to patient perceptions on privacy; the system should offer privacy in terms of confidentiality, integrity and availability to only authorized persons. Thirdly, the cost of affording the service rendered transportation and payment of herbal drugs prescribed. The fourth point is patients' satisfaction as a major perception of patients as expectation fulfillment, desires or needs in the use of modern technology. The fifth consideration is the convenience and time it takes the herbal practitioners to attain to patient to be diagnosed and get feedback and finally, the sixth perception is that patient's want healthcare to be more efficient and reliable provided by the herbal practitioners involved within a geographical location.

Patents always want the healthcare information about them must be kept secret and well protected. For instance, in the case of monitoring or tracking a patient recovering at home by the healthcare providers, the patient must be given assurance that personal information is securely kept as privacy documents and no such information is made available or accessed in any way without consent of the patient [3]. The use of wireless communications in the past to take care of elderly person has been seen over many

years back that uses related technologies has now become more advanced. Whence, the cost of service to the patients has reduced drastically that made it affordable and portable with smaller devices and user-friendly [4]. Through with the use of IT, patient can now receive treatment at home with full medical attention provided by practitioners through IT devices connected with computers [5].

The perceptions of patients to modern technology in herbal medicine prescription in Nigeria need to be investigated to know the views of the end-users (patients). Patient perceptions can be deduced from result from the expectations and experiences received from the herbal practitioners that provides the healthcare services. During the spread of Coronavirus pandemic (Covid-19), many Nigerian get prevention and curative solutions through the dissemination of information and awareness through this modern technology such as telephone, internet, radio, television and internet from various practitioners. Therefore modern technology really helps the patient during this period of Covid-19 for prompts information concerning the prevention and cure of the disease.

II. RELATED WORK

Recently, World Health Organization (WHO) proposed that primary healthcare should ‘‘put patients first, since good care is about patients,’’ indicating globally that there should be emphasis on patient-centered healthcare services technically and interpersonal effectiveness are very important elements of high-quality primary healthcare [6]. In one of the WHO reported that nearly 80% of people living in Africa Countries uses and consumed herbs for the management health and prevention of disease [7] and [8].

The desire of patients for herbal medication may be due to accessibility, affordability and availability of herbs in the majority of rural areas especially in developing countries. In Nigeria, majority of the population in the rural area makes use of herbs for treatment of malaria [9]. The healthcare delivery, its availability, affordability and mechanisms differs in various parts of the world as also the choices of treatments vary. However, there are different needs and driving forces that make patients seek for herbal medicine based on healthcare delivery and treatments. Herbal medicine are unregulated in most countries, communication between patients and healthcare providers is generally poor that there is an urgent need to develop information system to minimize the risks and maximize the benefits of herbal medicine use [10].

In Nigeria, so religious with high standard education, urbanisation and globalisation, all these does not affect the continuous usage of herbal medication being practiced in both urban and rural areas because of accessibility, availability, affordability, dependability and culture oriented taking care of the health needed by the people. With criticism and challenges face at different levels by herbal medicine people still patronise herbal medicine for preventions and treatments of diseases [11]. Most of the researchers do not consider the perception of the patient over the usage of the modern technology for healthcare delivery. In this paper, most of the patients cherish this investigation to know their perception towards the usage of modern technology application in herbal prescription and comparism analysis based on factors that could influence the patient’s choice of electronic means of prescription and diagnosis; the factors including cost, accuracy, privacy, and security [11]. These aspects include the patients’ concerns with the cost, time, security and diagnostic accuracy of the diagnosis setting, time, and the perceptions of usefulness perceived by patients. Some of the patients were of the opinion that the cost of treatment, time of attendance, privacy and security of patents’ information may hinder patients from going to herbal practitioners that uses modern technology for healthcare delivery [12].

Interaction between patients and herbal practitioners is considered as one of the major contributor to the nonspecific special effects of treatment on positive health outcomes, for instance, greater pain reduction and enhancement in physical functioning amongst patients with protracted body pain. Herbal practitioners frequently communicate with patients on face-to-face before invasive needle procedures.

III. METHODOLOGY

This includes the assessment factors, the research set questions, studied areas, sample size, data mode of collection, methods and tools used for analysis.

3.1 Assessment Factors

The factors that could affect the functioning of the established herbal organization with respect to the technology include three aspects of collaboration: knowledge, trust, and institutions into the following reasoning:

- Perceived ease use of the telehealth technology effort.
- Perceived usefulness of the technology with respect to telediagnosis application.
- Usage Intention usage perceived by the patients.
- Technological efficacy and capability to use the telehealth application.
- Social trust of the patients.
- Institutional trust among the patients.
- An attitude of patients towards the modern technology.
- Technological complexity of patients’ perceptions in adapting to the technology.
- Compatibility of the modern technology’s consistency with the existing face-to-face and experience
- Expected patient’s satisfaction in terms of use, which can serve as an indicator of acceptance of the new technology.
- Perceived risk perspective that could affect expected patient’s satisfaction.

3.2 Research Questions

- Will the usage of the modern technology reduce the cost of treatment to face-to-face?
- Will patient information be more secure in adopting the modern technology compare to face-to-face treatment?
- Is there any level of privacy when using the modern technology for herbal healthcare delivery?
- Is there any mobility level of the modern technology when deployed?
- How easy it is when using modern technology?
- What is your opinion in terms of scientific level/merit of using the modern technology?
- What is the effect of this modern technology compare to face-to-face technique?

And research opinion of the patients is shown in Table 2.

3.3 Measurement

The measurements items of the questionnaire in the study were generated from in-depth interviews with herbal practitioners and patients in the studied areas who have used the modern technology introduced to herbal telehealth system.

3.4 Study Areas and Population Size

The size of the population of study comprises of the patients at eight selected States of Nigeria which includes Kogi, Kwara, Ondo, Lagos, Ogun, Ekiti, Oyo, and the Osun States that patronize the herbal care providers such as Ogi Herbs, Bitter Herbs, Ayodele slimmers, Help Herbal solutions, Lambo Herbs, and Anajinono Herbs. Hundred copies of administered questionnaire were distributed to patronized patients from the studied herbal organizations. Ninety-five (95) patients returned the questionnaire sheets representing response rate 95% as shown in Table 1. The patients were asked to be free in expressing opinion about the questionnaire on how significant the influence of the choice of modern technology in herbal healthcare delivery. The study is limited to the studied areas in Nigeria due to the same tropical medicinal plants for curing tropical diseases like malaria, typhoid, sexually transmitted diseases etc.; the availability of herbal healthcare providers and high rate of patronage of patients that use herbal medication.

3.5 Data Collection Instrument

The study started from January, 2015 to July 17, 2016 involving group discussions, unstructured interviews in Appendix B, personal observations and verbal talks with informers to obtain information about the preparation of herbs from the local community, reginal vegetation locality, use, conservation, treatments and the idea of using modern technology diagnosing and prescriptions. Well-structured questionnaires (in Appendix A). Primary data source employed for the study was administered to the 100 patients. 95 patients compiled and returned the administered questionnaire [11].

3.6 Method of Data Analysis

Descriptive method survey was used in obtaining the view of the patients' reaction from the studied areas which served as a sample of the targeted population perception of herbal practitioners for the usage of the new technology. Microsoft Excel was used for the analyzing of the captured data obtained from the respondents.

IV. RESULTS AND DISCUSSION

The result obtained from patients response' data was analysed with the use of Microsoft excels to get the frequency and response mean depicts the patient's satisfaction with application of modern technology for receiving herbal healthcare delivery. The statistics of data sources are summarized in Tables. Table 1 show detail descriptive demographic showing the sex, ages, qualification and the preferred mode of medication among the patients, Table 2 show patients opinions on the factors to be considered on adopting the technology towards medications and Table 3 show the hypothesis from the Reliability and validity analysis results. Figure 1 shows Bar Chart Representation preferred diagnosis, Figure 2 shows Bar Chart of diagnoses and Prescriptions and Figure 3 show the Graphical Reliability and validity analysis results of the hypothesis derivative crouch coefficient that ranges between 0.72 and 0.85.

This study evaluates patient's perceptions on the usefulness of modern technology in herbal medication. Generally, most of the patient were optimistic that application of modern technology be advantageous compared to advantages derived from face to face herbal care delivery. On the aspects of patients perceptions concerns with cost, time, security and privacy of their information was highly considered. But some attributes which include the cost of medication and diagnoses time, perceptions of usefulness was lower, because of some of the inability of patients to express strong views [12].

This study has really shows the patient's perceptions of the modern technology, and has explicitly showed as in its perceived strengths in terms of patient care, safety, efficacy, empowerment of patient, and treatment effectiveness of tropical diseases. There were different opinions regarding the safety and efficacy among patients; however, the majorities were in favour of introduction of modern technology application in herbal care delivery. The limitations of the study include small sample sizes of the patients be interviewed and also served as respondents of the administered questionnaire. Probably it will reduce the individual opinions; thereby limiting the understanding of the major contributing factors to discrepant views. This could be biased to patients to create equality between strengths and weaknesses.

Table 1: Sociodemographic of Level Patients

Characteristics	Frequency
Gender	
Male	84
Female	11
Ages (in Years)	
15 - 25 yrs	22
26 - 35 yrs	30
36 - 45 yrs	15
46 - 55 yrs	10
≥ 56yrs	18
Qualification of patients	
Post Graduate	21
Graduate/HND	30
NCE/OND	31
SSCE	8
Others	5
Preferred Diagnosis	
Face-to – Face	12
Internet/Web	24
Telephone	12
Telediagnosis	47

Table 2: Patients perception rating of the Means of Prescriptions

Strength	**Face to Face**		**Internet/Web**		**Telephone**		**Telediagnosis**	
	Y	N	Y	N	Y	N	Y	N
Accessibility	20	15	30	25	20	26	30	34
Cost	60	50	10	20	20	15	10	15
Satisfactory	19	30	31	10	10	35	40	25
Efficient/ Reliable	10	35	25	30	30	15	25	20
Privacy	10	30	15	35	15	25	60	10
Convenient/Time	15	30	25	20	15	25	35	25

Table 3. Reliability and Validity of Analysis Results

items	**Hypothesis**	**Cronbach's ∝**
Xi	Perceived ease of use of the collaborative system	0.81
X2	Perceived usefulness of the collaborative with system	0.75
X3	Usage intention to use the collaborative systems.	0.76
X4	Self-efficacy capability to use the collaborative systems.	0.76
X5	Social trust with other health-care providers.	0.71
X6	Institutional trust to an individual's trust.	0.77
X7	Social participation of actively a person	0.72
X8	Attitude of herbal practitioner with the system	0.77
X9	Technological complexity perceptions technology	0.73
X10	Compatibility with the existing values	0.76
X11	Patient satisfaction & acceptance of technology	0.74
X12	Risk perspective that may affect patients satisfaction	0.73

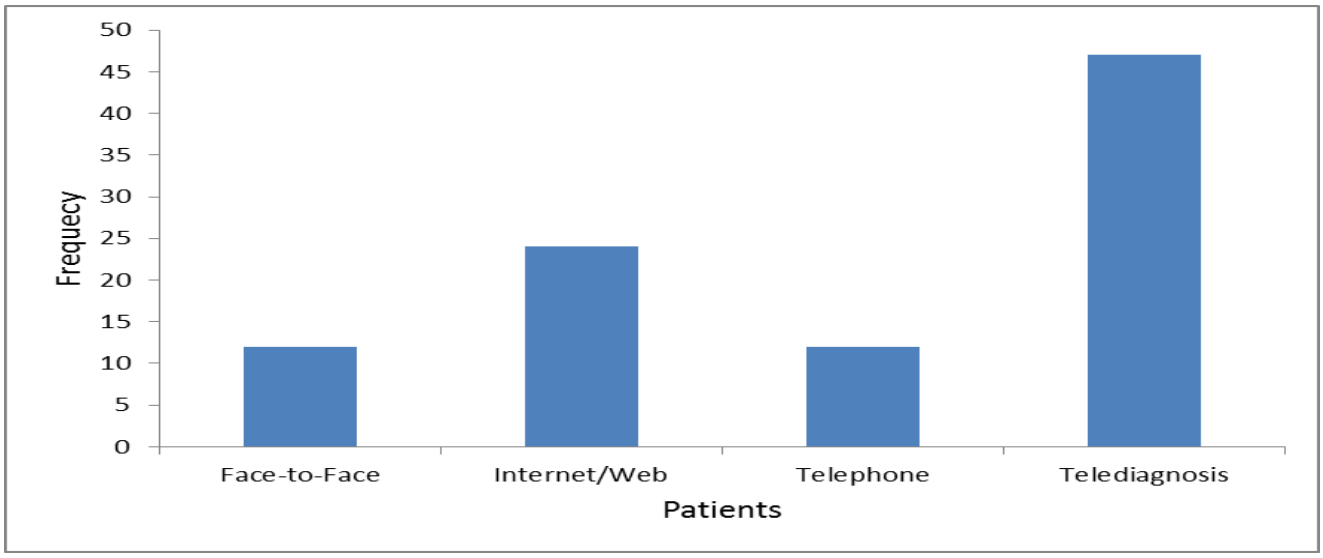

Figure 1: Bar Chart Representation preferred diagnosis

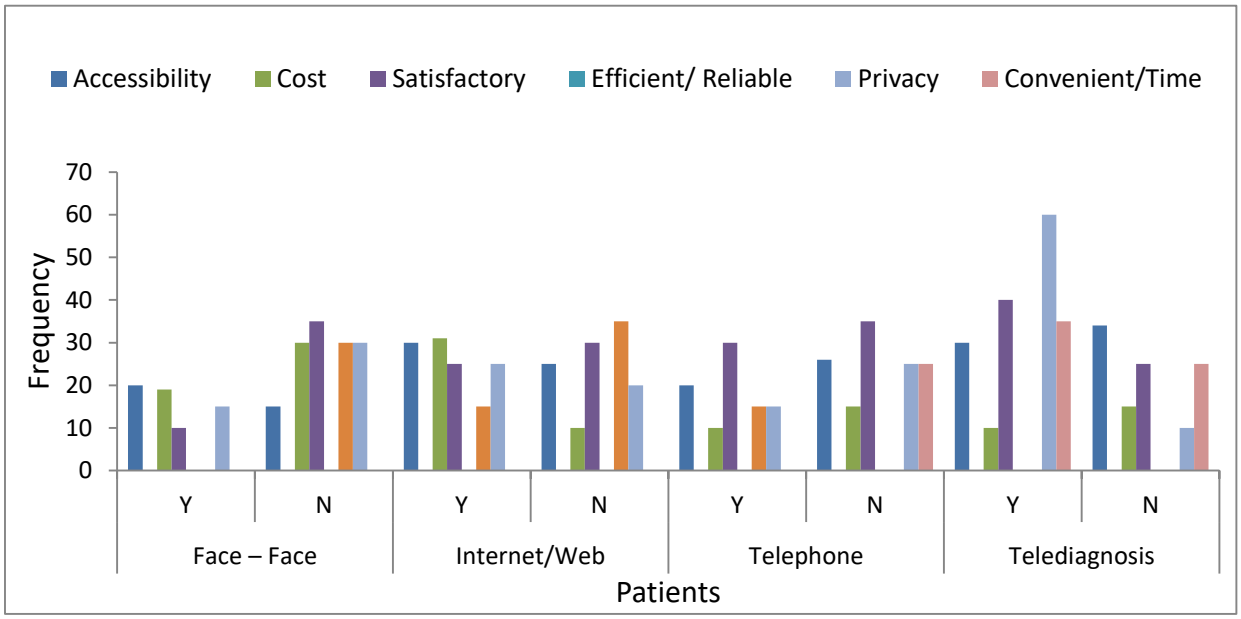

Figure 2: Bar Chart of diagnoses and Prescriptions

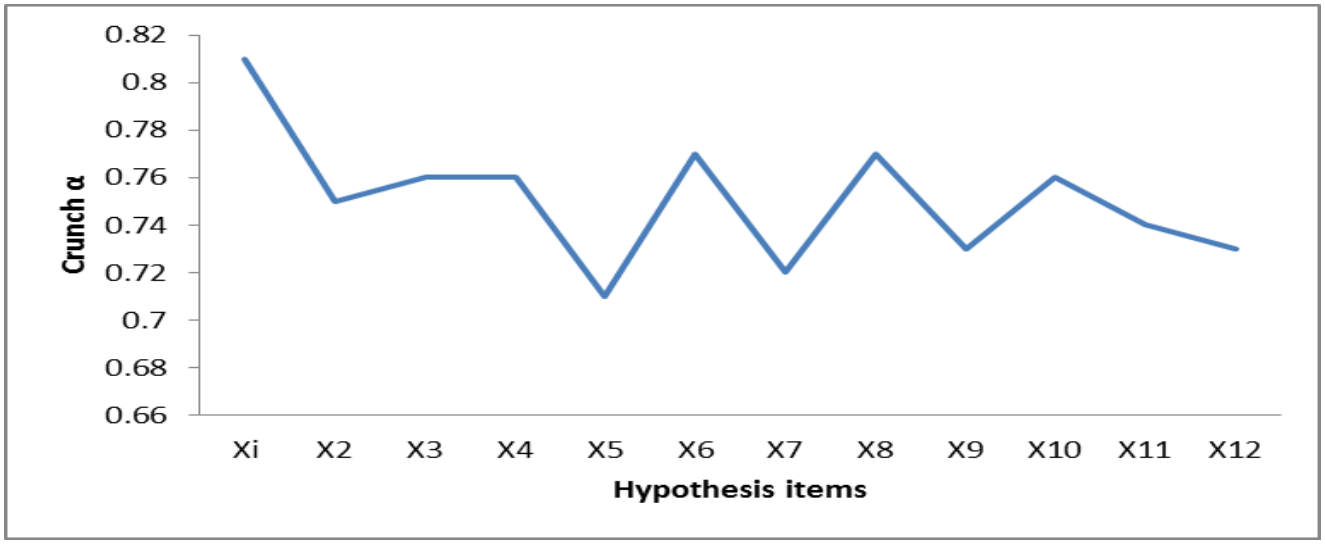

Figure 3: Graph showing Reliability and validity analysis results of the hypothesis

V. CONCLUSION AND FUTURE SCOPE

Generally patients expressed positive views on the technology-based solutions and equipment that can used to bring values to herbal practitioner's practice in Nigeria that will make patient to enjoy herbal healthcare delivery. Though some certain barriers were identify in the application of the modern technology, but patients could be encourage on the adoption of modern technology for healthcare delivery, especially in aspects related to cost of treatment, schedule time, security and privacy of patient information. It has been established that transmission of information about patient to other herbal consultants can be secure, and the interactivity of telediagnosis makes it be keep secret from unauthorized person in real time. From the results obtained, it is clearly shown that patients' perception towards the application of modern technology in herbal healthcare delivery is highly satisfied with acceptance rate of 68%. Also, in order to verify the application of the technology acceptance from the perspective, variables was presented to check from the Cronbach'sα of the mean reliability analysis of the hypothesis that ranges between 0.71 and 0.81. For future scope, there is need to consider the perception of herbal Practitioners on the application of modern technology on healthcare delivery in Nigeria.

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