Patients Perception on the Application of Modern Technology for Herbal Prescription in Nigeria

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Abstract

The study is to exploring patient’s perception on the application of modern technology for herbal prescription in Nigeria provided by herbal practitioners for healthcare delivery. 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 South Western and North-Central part of Nigeria. The hypothesis derivative crouch coefficient ranges between 0.71 and 0.81 validity and reliability of the system. The majority (68%) prefer the 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. However, this study is to find out what patients want, need and experience in the application of modern technology for their health care, identified certain barriers to the application and identified where patient were of the fear that sharing of information online and its treatment on a database using the electronic medium for herbal medications kowtow their privacy.

Keywords

Patient’s perception; modern technology; herbal medicine; Prescription; Nigeria

1. 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 (Ogirima et al; 2013). An information and communication technology has really offered the opportunity for tremendous innovation in herbal healthcare. Technology-based therapeutic and care coordination systems, that embrace web(internet), mobile, sensing, computing, and bioinformatics technologies, offer considerable promise for enabling entirely new models of healthcare both within and outside of formal systems of care and offer the opportunity to have a large public health impact (Ogirima, 2018).

Peoples always confusion between patient perceptions and patient satisfaction to mean the same and it’s often been used interchangeably. Satisfaction is an example of a perception, as fulfilling expectations, needs, or desires. Satisfaction is based on the difference between what one expects and what occurs. Within the disconfirmation paradigm, satisfaction is determined by the difference between a patient’s standard of expectancies, ideals, or norms and the same patient’s perceptions of their experiences of care, with satisfaction arising from either confirming positive expectation or disconfirming negative expectations. Patient perceptions of the modern technology are the quality of service provided by practitioners, to some extent, expressed in items included in surveys of their experiences in health plans ( Ogirima, 2018).

Why patient perceptions of application of modern technology for herbal prescription in Nigeria important? According to Ogirima, 2018, there are six perspectives one can take in answering this question. First, one can be normative and say that patient perceptions of accessibility are inherently meaningful and should be a primary focus of attention within the herbal health care system. Second, one can take the position that one has to pay attention to patient perceptions privacy; the system should offer privacy in terms of confidentiality, integrity and availability to authorized entities. 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 fulfilling expectations, needs, or desires in the application 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 Patients expected care to be efficient and reliable with coordination among the herbal practitioners involved in its care, such as multiple providers within a geographical location.

Patients are the end users who must feel comfortable receiving the treatment given. The provision of a technically feasible solution is not the only obstacle to deal with but other important issues including patients’ acceptance and accessibility need be addressed. Herbal practitioners strive to look at providing healthcare solutions to patients using information technology (IT) from the perspectives of both providers and patients. Patients, particularly children and the elderly, may not be too keen on accepting technology as a tool for healing. Convincing patients of the benefits of IT in healthcare may involve liability, security and privacy issues ( Ogirima; et al; 2013). Take for example, in the case of monitoring or tracking a patient recovering at home, the patient must be assured that personal information is securely kept and no such information is accessed in any way without consent (Setyono, et al; 2014).

A significant increase in the application of wireless communications in elderly care has been seen over the past few years as related technologies become more mature. The cost of service becomes more affordable and portable devices become smaller and more user-friendly. As pervasive computing technology advances, more comprehensive and automated services will become available to the ageing population in the years to come (Stanford, 2002). Through utilization of IT, a patient can rest at home while receiving full medical attention. Reviewing the level of medical support provided over the past two to three decades, IT has certainly provided tremendous benefits to the general public as a whole. The advancement of faster computers and more efficient bandwidth usage has allowed more types of services to be extended to more users. For example, a few decades ago a simple request for medical advice could be obtained by finding a fixed line telephone and dialling in to the clinic where a physician was stationed. With the availability of mobile Voice over Internet Protocol (VoIP) technology, one can now simply pick up a mobile phone and place a video-enabled call to a physician; the physician does not necessarily have to be situated inside the clinic in order to provide advice. This is just one amongst numerous examples where IT advancements have made healthcare more readily available (Ogirima et al 2013; Jing, 2016; and Ogirima 2018).

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 result from the interaction of the expectations and experiences 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-1 for prompts information concerning the prevention and cure of the disease.

1. Review of Related Works

 Recently, World Health Organization (WHO) report proposed that primary care should ‘‘put patients first, since good care is about patients,’’ indicating a global emphasis on patient-centered care. Both technical and interpersonal effectiveness are important elements of high-quality primary care. Empathy is a central component of patient-centred care, and can be defined as the ‘‘competence of a physician to understand the patient’s situation, perspective, and feelings; to communicate the understanding and check its accuracy; and to act on that understanding in a helpful therapeutic way’’ and patients across cultures (Vincent, et al; 2016). The WHO reported that about 80% of people living in African use herbs for the management and prevention of disease (WHO, 2006).

The desire of patients for herbal medicine may be due to accessibility, affordability, availability and acceptability of traditional herbal medicines by majority of rural population especially in developing countries. In Nigeria, most first line of treatment of malaria by the majority of the population in the rural area make use of herbal medicine (Okonkwo 2002). 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 (Zhang, 2004 and Ogirima, et al; 2014).

 In Nigeria, so religious, education, urbanisation and globalisation, all these does not affect the continuous usage of herbal medicine as practiced in both urban and rural areas because it is easily accessible, available, acceptable, affordable, dependable and culture oriented taking care of the health needed of both educated and uneducated Nigerians. With criticism and challenges face at different levels by herbal medicine people still patronise herbal medicine for preventions and treatments of diseases (Ogirima, 2018). 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 (Ogirima, et al., 2013). These aspects include the patients’ concerns with cost, time, security and diagnostic accuracy was conducted on telediagnosis setting, and diagnoses time, the perceptions of usefulness was perceived lower, because of some patients’ opinions. Some were of the opinion that cost, time, privacy and security has hindered from going to herbal practitioners that were using modern technology for diagnosis and prescriptions (Estai, et al., 2016) and (Ogirima, 2018).

The interaction between herbal practitioners and patients is considered to be a major contributor to the nonspecific effects of treatment on positive health outcomes, such as greater pain reduction and improvement in physical functioning among patients with chronic pain in the body. Herbal practitioners usually communicate with patients face-to-face before invasive needle procedures. For massage therapists, lower patient perceptions of empathy could be related to herbal medicine massage practitioners’ focus on manipulative techniques over establishing a therapeutic relationship with patients. As herbal medicine massage often takes place in communal treatment spaces separated by curtains, a lack of privacy may pose difficulties for massage therapists in terms of communicating effectively with patients (Ogirima, 2018).

1. Methodology

This section comprises of assessment factors, the research questions, the study area, and sample size, data collection instrument, method and tools for data analysis for the user-preferred platforms to access electronic prescription applications are discussed.

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:

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

* 1. Research Questions
1. Will the usage of the modern technology reduce the cost of treatment to face-to-face?
2. Will patient information be more secure in adopting the modern technology compare to face-to-face treatment?
3. Is there any level of privacy when using the modern technology for herbal healthcare delivery?
4. Is there any mobility level of the modern technology when deployed?
5. How easy it is when using modern technology?
6. What is your opinion in terms of scientiﬁc level/merit of using the modern technology?
7. 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.

* 1. 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 (Ogirima, 2018).

* 1. Study Areas and Sample Size

The population of the 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, Yoyo Bitters, Yemkem, Ayodele slimmer, Oko Oloyun, Lambo Herbs, and Anajinono Herbs. Hundred (100) copies of the 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.

* 1. 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) were used to gather primary data for the study. Primary data source employed for the study was administered to the 100 patients. 95 patients compiled and returned the administered questionnaire (Ogirima, et al; 2017).

* 1. Method of Data Analysis

The descriptive survey was adopted in obtaining the opinion of the patients’ response 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 analysing of the captured data obtained from the respondents.

1. 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 (Estai, et al., 2016).

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 majority 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 – 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

1. Conclusions

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. The study was able to identify certain barriers to the application of technology, and identified where patients could be encourage for the adoption usage of modern technology, especially in aspects related to expenses, time, security and privacy of their 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 shows that patients’ perception towards the application of modern technology in herbal healthcare delivery is highly satisfied. Also, in order to verify the application of the technology acceptance from the perspective, variables was presented to check from the Cronbach’s ∝ of the mean reliability analysis of the hypothesis that ranges between 0.71 and 0.81.

**Conﬂict of interest**

There is no conﬂict of interest

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