



Attitude, Utilization Status and Perceived Effect of Information Communication Technology (ICT) on Healthcare Delivery in Federal Medical Centre Owo, Ondo State

¹Omokanye SA; ²Adepoju IK. (PhD); ³Adediran F; ⁴Adeniregun AK

¹School of Health Information Management, OAUTHC Ile-Ife, Nigeria

²University of Medical Sciences, Ondo State, Nigeria

³ Achiever University, Owo, Ondo State, Nigeria

⁴ School of Health Information Management, OAUTHC Ile-Ife, Nigeria

ABSTRACT

Introduction: The utilisation of ICT devices such as mobile devices (for example, smartphones and tablets) and PC computers has brought about a great transformation in the areas of communications, commerce, and entertainment, among others and has also contributed to improvement in their service delivery. The healthcare delivery is not left behind by the transformation the Information and Communications Technology has brought to bear especially in areas of information access, storage, retrieval, analysis and dissemination. This technology has brought an alteration in how healthcare services are delivered, the quality of care, patient experience and the cost of healthcare services. This study therefore aims at assessing the perceived effect of attitude and utilization status of ICT on healthcare delivery in Federal Medical Centre, Owo, Ondo State.

Methods and Materials: This study adopted a descriptive survey research design. Stratified random sampling technique was used in selecting 244 respondents for the study. The instrument for data collection was a self-developed structured questionnaire. The questionnaire was divided into two sections with section A contain the demographic characteristics of the respondents and section B contains general information about variables of interest in the study and sub-divided into three parts

Results: The study revealed that the rate of utilization of ICT among the majority (66.16%) of healthcare professionals is high, while a little above one-third (33.33%) of the respondents have moderate utilization status. The result also indicated that the attitude of healthcare professionals to ICT has significant effect on their utilization status ($F=10.615$, $P<0.05$).

Conclusion: The study concluded that having a positive attitude towards ICT and its features is a signal that healthcare professionals are ready and prepared to take up the new challenge in the electronic health records system. It also indicates that ICT has great potential to improve the quality of patient care and healthcare delivery in Nigeria.

INTRODUCTION

Recently, attention has been shifted towards the use of ICT in healthcare delivery, and this phenomenon is known as e-Health (Moghaddasi et al., 2012). World Health Organisation defined *e-health* as "the collective use of electronic communication and information technology in the health sector" (WHO, 2006; Al-Khatlan, 2017). *E-health* is defined as the use of Information and Communication Technologies (ICTs) in support of healthcare services so as to improve the efficiency and effectiveness of healthcare management and treatment options. E-health improves health surveillance, health system management, healthcare planning and decision making, streamlined health information sharing, and promotes equity in healthcare delivery.

The utilisation of ICT devices such as mobile devices (for example, smartphones and tablets) and PC computers has brought about a great transformation in the areas of communications, commerce, and entertainment, among others and has also contributed to improvement in their service delivery, business empowerment and changes in the way people access information and make transactions. The healthcare profession is not left behind by the transformation the Information and Communications Technology has brought to bear especially in areas of information access, storage, retrieval, analysis and dissemination. This technology has brought an alteration in how healthcare services are delivered, the quality of care, patient experience and the cost of healthcare services (Olufunmilayo, 2017). ICT devices can be utilised in healthcare delivery systems, such as health promotion and disease prevention, patient care and treatment, training and supervision, electronic payments and information systems. The ICTs can promote patient-centred healthcare at a

reduced cost, increase quality care and information sharing, educate health professionals and patients, stimulate different interactions with patients and health providers, and minimise travel time (Hailegebreal, 2022).

Despite the positive impact of ICT on effective healthcare delivery globally, the utilisation rates of ICT devices have been found to be low in major parts of developing nations. In spite of the limited studies conducted in the developing world, especially in Africa, some of the studies found that the skill and utilisation of ICT among medical students as well as health care providers could be better. In agreement with this assertion, a study from Nigeria teaching hospital on Computer and Internet use by first-year clinical and nursing students showed that only 43% of students could use the computer. Similarly, in Ethiopia, only 33% of health workers use computers for various purposes. The single most important purpose of using computers was found to be word processing and related activities (office tools), as indicated by 81% of the respondents. As low as 26% of the sample respondents use the Internet, and as expected, e-mail is the most important reason for using the Internet, with a response rate of 90% (Adane, 2010).

The successful adoption, implementation and utilisation of ICT for the purpose of healthcare delivery are hinged on the attitudes of healthcare professionals toward this innovation. E-health has the ability to improve access to quality healthcare and effectively minimise professional isolation, minimise healthcare worker turnover rates and improve retention in resource constraint milieus. Potentials for online health education, widening of the scope of healthcare delivery, health compliance, follow-up and appointments are other benefits of e-health. However, the effective utilisation of e-health tools may be possible if healthcare professionals have positive attitudes towards e-health and possess the relevant abilities to use information and communication technology tools. Although e-health has the prospective to improve the efficiency and effectiveness of healthcare management and delivery, findings have shown that acceptance of e-health among healthcare professionals was limited despite its critical role in healthcare practices (Olok, 2015). The longitudinal study conducted in Aarhus, Denmark, indicated that 86% of male and 76% of female students had a positive attitude towards the use of ICT resources as a supplement for their medical education (Dorup, 2004). Contrary to this, a study from a Nigeria teaching hospital showed that from the total respondents, only 40% of the medical students had a positive attitude towards Information Technology (Ibrahim et al., 2004).

Positive attitudes are important, and the willingness of health workers to use any HIT system is influenced by their perceptions of its value, clinical benefits, and ease of use. In developing countries, the successful adoption of HIT is hindered by, among other things, insufficient technical infrastructure. Solar power can offer an alternative, where this is due to the non-existence or lack of reliable electricity. Moreover, adverse attitudes and inadequate computer knowledge and skills among healthcare workers can also negatively impact the adoption of computer systems (Sukums, 2014).

Promoting the acceptance of e-health use entails having an understanding of the relationships between e-health attributes, as articulated by Rogers in the Diffusion of Innovation Theory. Rogers proposes that an individual's response to new ideas influences the rate of diffusion of that idea through a social grouping such as healthcare professionals. The characteristics of an innovation influence its rate of adoption through five steps: a) awareness of the innovation and having some abstract idea of how it functions (knowledge); b) developing favourable or unfavourable attitudes toward the innovation (persuasion); c) engaging in activities that lead to a choice to adopt or reject the innovation (decision); d) thoughtful action to put the innovation into use (implementation); and e) assessing the results of the decision made toward the innovation.

The process of adopting an innovation such as ICT is complex, and it involves a critical evaluation of five characteristics of the innovation, which include: relative advantage, compatibility, complexity, trialability and observability. In deciding to adopt e-health in professional practice, individual healthcare professionals may need to ask and ruminate on the following questions: a) Can e-health improve healthcare delivery (advantage)? b) Does e-health technology fit well with the needs and current practices of healthcare professionals (compatibility)? c) Is e-health technology easy to use and understand (complexity)? d) Can e-health technology be tested or tried by healthcare professionals before making a commitment to use it (trialability)? e) Can individual healthcare professionals see the benefits of using e-health technology in professional practice at the workplace (observability)? If an evaluation of the attributes of e-health results in its approval, healthcare professionals may consider putting the innovation into use to improve the quality of healthcare service delivery (Olok, 2015). The study carried out by Olok et al. (2015) on the knowledge and attitudes of doctors towards e-health use in healthcare delivery in government and private hospitals in Northern Uganda revealed that healthcare professionals had moderate to strong positive attitudes toward ICT with a "relative advantage" mean of 4.3; "compatibility" mean of 3.8; "trialability" mean of 3.2; and "observability" mean of 3.5.

The invention of ICT has also brought progressive changes and offered great advantages to providing effective and efficient services in the healthcare setting (Okonkwo, 2021). It is important to note that information communication technology is different from health information technology. The initial is utilised when the use of health information technology has a strong networking and communication component, while the latter is used to describe the application of computers and technology in healthcare (Hersh, 2009). According to Farnan (2013), the field of medicine is one of the leading information-demanding and accessing meadows. Therefore gaining access to up-to-date and timely information by health professionals remains an important factor for the proper diagnosis, prevention and treatment of diseases. Timely available information that affects the well-being of patients is always germane. Over the last decade, Information and Communication Technologies (ICTs) have given more impetus towards the continuous learning, sharing and dissemination of health information among medical doctors (Furusa & Coleman, 2018). Various activities in healthcare settings (patient registration, medical consultations, medical diagnosis, therapy, and drug prescriptions, among others) are carried out mostly by ICT via gathering, storing, processing and sharing information electronically. An information-proficient workforce with a favourable attitude towards ICT and motivation to use well-designed clinical systems would be necessary for a health institution, particularly in a developing country such as Nigeria. It is pertinent to find out the perceived effect of the attitude and utilisation of ICT on healthcare delivery.

Review of the Literature

The Technology Acceptance Model (TAM) by Davis (1989) predicts and explains ICT usage behaviour, that is, what causes potential adopters to accept or reject the use of information technology. The two theoretical constructs in TAM include perceived usefulness and perceived ease of use. These are the fundamental determinants of system use and predict attitudes toward the use of the system, that is, the user's willingness to use the system. The Unified Theory of Acceptance and Use of Technology (UTAUT) by Venkatesh et al. (2003) explain a user's intentions to use ICT and the subsequent user behaviour. The model considers four constructs as direct determinants of user acceptance and usage behaviour: performance expectancy, effort expectancy, social influence, and facilitating conditions.

1.1 Objectives of Study

This study aims at assessing the perceived effect of attitude and utilization status of ICT on healthcare delivery in Federal Medical Centre, Owo, Ondo State. The specific objectives are to:

- a. Assess the attitude of healthcare professionals towards e-health attributes in Federal Medical Centre, Owo, Ondo State.
- b. Assess the level of utilisation of ICT in Federal Medical Centre, Owo, Ondo State .
- c. Examine the perceived effect of ICT on healthcare in Federal Medical Centre, Owo, Ondo State.

1.2 Hypothesis

Ho: There is no significant relationship between healthcare professionals' attitude to ICT and its utilization status

2. MATERIALS AND METHODS

2.1 Research design

This study adopted a descriptive survey research design in which self-reported data were collected from sampled participants in order to describe the population based on the variables of interest in the study.

2.2 Study population

The population for this study comprised of healthcare professionals in the selected hospital. The aggregated number of the target professionals in FMC was 667. This is categorized as follow; Doctors 213, Nurses 245, Health Records Professionals 68, Medical Laboratory Scientists 74 and Pharmacists 67.

2.3 Sampling Technique and Sample Size

Stratified random sampling technique was adopted for the study because of the composition of the study participants. The strata (that is, the study participants) are heterogenous in nature and the composition of each stratum is homogenous in nature. Online sample size calculation software (www.surveysystem.com) was used to compute the sample size with the formula read thus.

$$SS = \frac{Z^2(p)(1-p)}{C^2} \quad \text{When } Z = z\text{-value (for instance, 1.96 for 95\% confidence level)}$$

P= percentage picking of a choice, expressed as decimal (.5 used for sample size needed).

C= Confidence interval expressed in decimal (0.05).

The sample categories of selected employee were determined by:

Category sample size = category population x total sample size

Total population

The total sample size (n) = 244

The proportionate stratified sampling was however gotten as follows:

$$\text{Sample fraction} = \frac{n}{N}$$

To pick 244 from 667, Sample fraction = $\frac{244}{667} = 0.3658$

Table 1: Distribution of Study Population and Sample

Cadre	Total	Sample Population (%)
Nursing	368	$0.3658 \times 245 = 90$
Health Information Managers	56	$0.3658 \times 68 = 25$
Medical Laboratory Scientists	49	$0.3658 \times 74 = 27$
Doctors	315	$0.3658 \times 213 = 78$
Pharmacists	67	$0.3658 \times 67 = 24$
Total	667	244

Thus, a total of 244 questionnaires were distributed

2.4 Research Instrument

The instrument for data collection was a self-developed structured questionnaire. The questionnaire was divided into two sections with section A contain the demographic characteristics of the respondents and section B contains general information about variables of interest in the study and sub-divided into three parts: Part A contains information on the level of utilization of ICT in Federal Medical Centre, Owo, Ondo State; part B contains information on the attitude of healthcare professionals toward e-health attributes and part C contains information on the perceived effect of ICT on Healthcare Delivery. The questionnaires were designed in English Language and were administered personally to the participants by the researcher and research assistant.

2.5 Data analysis and management

Data were analyzed using the Statistical Package for Social Sciences (SPSS) version 20.0. The baseline characteristics of the respondents were analyzed in a spreadsheet using a simple proportion of respondents. Descriptive data including frequency, percentage and mean score was obtained. The inferential statistical data analysis using Chi-square statistic and regression analysis was carried out to establish relationships between ICT knowledge and skill of healthcare professionals and its perceived effect on healthcare delivery; the relationships between ICT knowledge and skill of healthcare professionals and its effect on ICT utilization status, testing the significance of the contingency coefficient. All levels of significance were set at $p < 0.05$.

2.6 Ethics considerations

An informed consent was obtained from the healthcare practitioners who participated in the study. Strict anonymity was ensured.

3.0 RESULT

3.1 Response rate

A total of 244 questionnaires were distributed and 200 questionnaires were retrieved back giving a total response rate of 81.97%.

Table 2 Socio-demographic Characteristics of the Respondents

Variable	Freq. n=200	%	Relationship between socio-demography and ICT Utilisation Status			
			α^2	P-value	df	% of Perfect Utilisation Status
Age group			7.084	0.313	6	
21-30	68	34.0				55.2
31-40	68	34.0				70.1
41-50	51	25.5				74.5
51-60	13	6.5				69.2
Gender			11.372	0.023	4	
Male	56	28.0				81.8
Female	140	70.0				59.0
Academic Qualification			13.302	0.038	6	
ND/PD						
HND/BSc	27	13.5				44.0
MBBS	110	55.0				66.4
PhD	50	25.0				74.0
	13	6.5	76.9			
Professional Designation			7.978	0.436	8	
Doctors						

Nurses	64	32.0				76.6
HIM Professionals	73	36.5				63.0
Medical Laboratory Scientists	20	10.0				60.0
Pharmacists	23	11.5				50.0
	20	10.0				68.4
Years of Work Experience			15.869	0.321	14	
≤ 5						
6-10	69	34.5				51.5
11-15	32	16.0				77.4
16-20	36	18.0				77.7
21-25	31	15.5				74.2
26 and more	15	7.5				80.0
	12	6.0				58.3

Table 2 shows the socio-demographic characteristics of the respondents and the relationship between the socio-demographic characteristics and the ICT utilisation status of the respondents. It was revealed from the table that the majorities are within the age range of 21-30 and 31-40, with percentage response rates of 34.0%, respectively. The chi-square test result revealed that age does not significantly influence the ICT utilisation status of the respondents with (p-value 0.313) greater than 0.05 level of significance (S.L.). However, the chi-square test further showed that the respondents with an age range of 41-50 have the highest rate of ICT utilisation status with 74.5%. In addition, the majorities (70.0%) of the respondents are female. The chi-square test result revealed that gender is significantly related to ICT utilisation status as (p-value 0.023) is less than 0.05 level of significance. The chi-square test further showed that male respondents have the highest rate of ICT utilisation status of 81.8%. The study further revealed that the highest academic qualification of the respondents is HND/BSc, with a response rate of 55.0%. The chi-square test result revealed that academic qualification is significantly related to ICT utilisation status (since p-value 0.038 < 0.05 S.L.). The chi-square test further showed that the PhD certificate holders have the highest rate of ICT utilisation status of 76.9%. Furthermore, the study revealed that the majority (36.5%) of the respondents are Nurses, closely followed by Doctors (32.0%). The chi-square test result revealed that professional designation is not significantly related to ICT utilization status (since p-value 0.436 > 0.05 S.L.). The chi-square test further showed that Medical Doctors have the highest rate of ICT utilisation status of 76.6%. Finally, the study showed that the majorities of the respondents have less than 5 and 11-15 years of work experience, with response rates of 34.5% and 18.0%, respectively. The chi-square test result revealed that the years of work experience are not significantly related to ICT utilisation status (since p-value 0.321 > 0.05 S.L.). The chi-square test further revealed that the professionals with 21-25 years of work experience have the highest rate of ICT utilisation status of 80.0%.

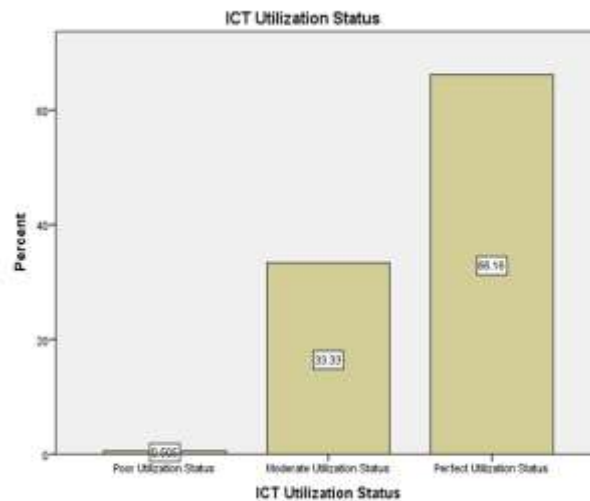


Figure 1 shows the ICT Utilisation status of healthcare professionals. As revealed in the chart, the majorities (66.16%) of healthcare professionals have perfect/high utilization of ICT, while a little above one-third (33.33%) of the respondents have moderate utilisation status. ICT Utilization parameters are shown in Table 3.

Table 3 Utilisation Status of Information Communication Technology by healthcare professionals

S/N	PARAMETERS	Mean Score	Remark
1.	Have used computer for more than five years	4.03	Strongly Agreed
2.	Have used Internet for more than five years	4.26	Strongly Agreed
3.	Have used computer for more than five times in the last one month	3.95	Strongly Agreed
4.	Have used Internet for more than five times in the last one month	4.15	Strongly Agreed
5.	Have never used computer	1.95	Disagreed

6.	Have never used Internet	1.81	Disagreed
7.	I have email account	4.02	Strongly Agreed
8.	I have personal laptop computer	3.61	Strongly Agreed
9.	Use computer for healthcare services functions	3.69	Strongly Agreed
10.	Use computer more at work	3.57	Strongly Agreed
11.	Use computer more at home	3.58	Strongly Agreed
12.	I perform better using ICT device	3.66	Strongly Agreed
13.	I have better output using ICT device	3.63	Strongly Agreed
14.	ICT is not applicable to my work	2.67	Agreed

As shown in Table 3, the vast majority of the respondents have used the Internet for more than five years; have used the Internet more than five times in the last month; have used a computer for more than five years and have a personal email account with the average response rates of 4.26, 4.15, 4.03 and 4.02 respectively. The majority have also used computers more than five times in the last month; have used computers for healthcare services functions; have perform better using ICT devices, and have better output using ICT device with average response rates of 3.95, 3.69, 3.66 and 3.63 respectively.

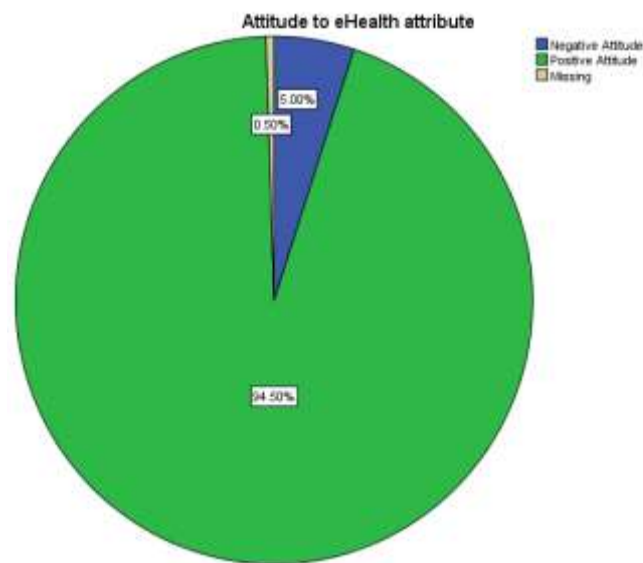


Figure 2 showed the attitude of healthcare professionals toward e-health attributes. As revealed in the chart, the vast majorities (94.50%) of the respondents have positive attitude towards e-health attributes while only 5% have negative attitude. The attitudes parameters is shown in table 4

Table 4 Attitude of Healthcare Professionals towards E-Health Attributes

S/N	PARAMETERS	Mean Score	Remark
1.	ICT Relative Advantage	2.81	Agreed
2.	ICT Compatibility	2.75	Agreed
3.	ICT Complexity	2.61	Agreed
4.	ICT Trialability	2.74	Agreed
5.	ICT Observability	2.81	Agreed

As shown in Table 4, the attitude of healthcare professionals towards the relative advantage of ICT and ICT observability take the lead with a mean of 2.81 apiece. Others include attitude towards ICT compatibility (mean 2.75), ICT trialability (mean 2.74) and ICT complexity (mean 2.61).

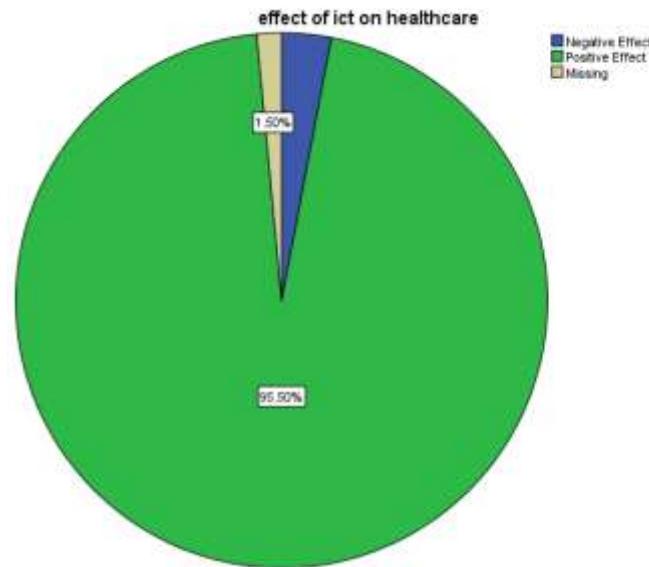
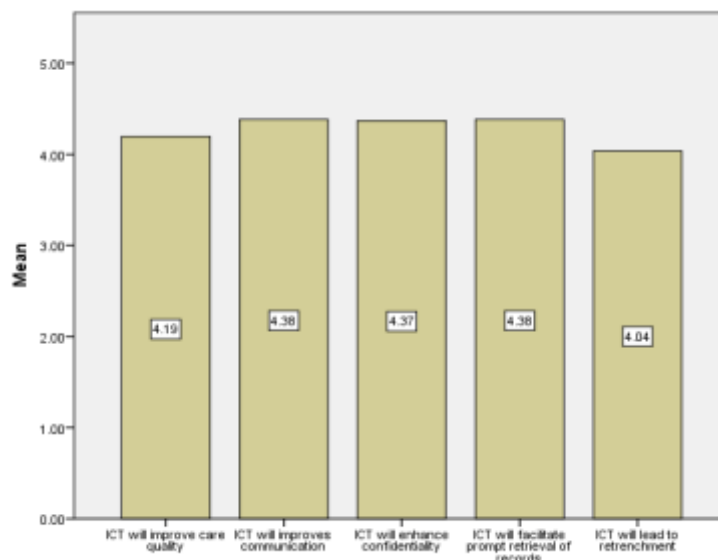


Figure 3 shows the perceived effect of ICT on healthcare. As revealed in the table, the vast majority (95.50%) of respondents believe that ICT has a positive effect on Healthcare delivery. The parameters for measuring the perceived effect of ICT on healthcare are shown in Table 5

Table 5 Parameters for Measuring the Perceived effect of ICT on Healthcare

Parameters	Freq	Agree %	Freq	Disagree %	Freq	Neutral %	Mean
ICT will improve care quality	172	87.3	15	7.7	10	5.1	4.19
ICT will improves communication	177	89.9	7	3.5	13	6.6	4.38
ICT will enhance confidentiality	176	89.8	6	3.1	14	7.1	4.37
ICT will facilitate prompt retrieval of records	181	91.8	6	3.0	10	5.1	4.38
ICT will lead to retrenchment	154	78.2	27	13.7	16	8.1	4.02



As shown in Table 5 and Figure 4, the vast majority of healthcare professionals believed that ICT would facilitate prompt retrieval of records (mean 4.38; % Agree 91.8), it will improve communication among healthcare professionals and between patients and healthcare professionals (mean 4.38; % Agree 89.9). The majority of the respondents also believed that ICT would enhance confidentiality (mean 4.37; % Agree 89.8), it will improve care quality (mean 4.19; % Agree 87.3), and on the negative side, it will lead to retrenchment (mean 4.02; % Agree 78.2).

3.2 Result of Hypotheses

Hypothesis: The attitude of healthcare professionals to ICT has no significant effect on their ICT utilization status

Table 6 The attitude of healthcare professionals to ICT has no significant effect on their ICT utilisation status					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1	(Constant)	1.567	.337		
	Attitude to eHealth attribute	.558	.171	.227	.001

a. Dependent Variable: ICT Utilization Status

R=0.227, R²=0.052, Adjusted R²= 0.047, F=10.615, P < 0.05

Table 6 revealed the effect of the attitude of healthcare professionals to ICT on ICT Utilisation Status. The result indicates that the attitude of healthcare professionals to ICT has significant effect on their utilization status (F=10.615, P< 0.05). Moreover, the result shows that an additional increase in the kind of attitude shown by healthcare professionals towards ICT will lead to 0.558 units of increasing effect on the ICT Utilisation status (B=1.567, P<0.05). The value R=0.227 for the model produced by the regression analysis indicates positive effects. The model reveals that the attitude of healthcare professionals to ICT has increased by 4.7% to the variation in the ICT Utilisation Status (Adjusted R²= 0.047).

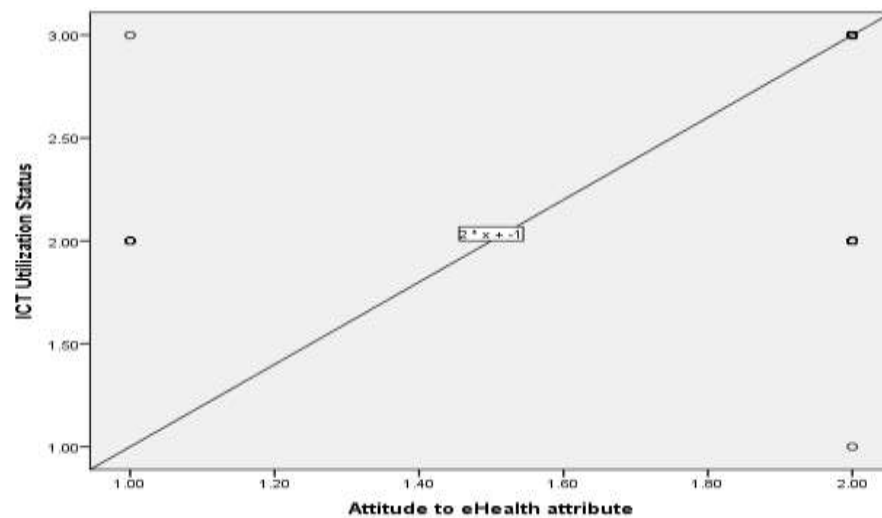


Figure 5 shows that there is a perfect positive relationship between the attitude of healthcare professionals to ICT and its utilisation status in Federal Medical Centre Owo, Ondo State.

4. Discussion of Findings

The findings of this study revealed that healthcare professionals have perfect ICT utilization status as the vast majority of the respondents claimed to have used the Internet for more than five years, have used the Internet more than five times in the last month, have used a computer for more than five years and have a personal email account. The majority have also used computers for more than five times in the last month, have used computers for healthcare services functions, have performed better using ICT devices and have better output using ICT devices. The study is in agreement with Adane (2010), who opined that there is an encouraging trend of ICT utilization in some of the East and Central Asia countries like 94% and 95% of medical students in Malaysia and Saudi Arabia, respectively, use computers for their medical education (Ibrahim, 2002; Grace, 2003). (Adane, 2010). On the contrary (Ibrahim et al., 2004; Samuel et al., 2004) concluded that utilization of ICT was poor amongst the resource-poor sub-Saharan African countries. Similarly, in Ethiopia, only 33% of health workers use computers for various purposes. The single most important purpose of using computers is word processing and related activities (office tools) for 81% of the reporting respondents. Some 26% of the sample respondents use the Internet. As expected, e-mail is the most important reason for using the Internet (90%). (Adane, 2010).

In addition, the findings of this study revealed that healthcare professionals have a good/positive attitude towards e-health attributes. They have a positive attitude towards the relative advantage of ICT and ICT observability and also towards ICT compatibility, ICT trialability and ICT complexity. The study is in tandem with Olok et al. (2015), who conducted a study on the Knowledge and attitudes of doctors towards e-health use in healthcare delivery in government and private hospitals in Northern Uganda. His findings indicated that healthcare professionals had moderate to strong positive attitudes toward ICT with a “relative advantage” mean of 4.3; “compatibility” mean of 3.8; “trialability” mean of 3.2; and “observability” mean of 3.5. According to him, the effective utilisation of e-health tools may be possible if healthcare professionals have positive attitudes towards e-health and possess the skills to use information and communication technology tools. Although e-health has the potential to improve the efficiency and effectiveness of healthcare

management and delivery, it has been reported that acceptance of e-health among healthcare professionals was limited despite its critical role in healthcare practices (Olok, 2015).

Moreover, the findings of this study revealed that there is positive/good effect of ICT on healthcare, as the majority of healthcare professionals believed that ICT would facilitate prompt retrieval of records. It will improve communication among healthcare professionals and between patients and healthcare professionals. The ICT will also enhance confidentiality; it will improve care quality, and on the negative side, it will lead to retrenchment. According to Ibrahim (2004), since the development of the computer and the evolution of the Internet, Information Technology (IT) has positively impacted healthcare delivery systems worldwide, particularly in disease control, diagnosis, patient management and teaching. Jha (2004), cited in (Adane, 2010), submitted that revolution in the application of ICT, especially in the areas of information access, storage, retrieval, analysis, and dissemination of information is becoming a routine activity in the health care system (Adane, 2010).

5. CONCLUSION

It is concluded from the study that assessing the attitude, utilisation status, and perceived effect of ICT on healthcare delivery will help in determining the level of preparedness of the hospitals and healthcare professionals towards the adoption and implementation of electronic health records.

Having a positive attitude towards ICT and its features is a signal that healthcare professionals are ready and prepared to take up the new challenge in the electronic health records system. It also indicates that ICT has great potential to improve the quality of patient care and healthcare delivery in Nigeria. In addition, having ICT in place for healthcare delivery will facilitate prompt retrieval of records and improve communication among healthcare professionals and between patients and healthcare professionals. The ICT will also enhance confidentiality; it will improve care quality. However, the seeming negative side of it is that it may lead to retrenchment.

RECOMMENDATION

Based on the findings of this study, the following recommendations are made.

- a. Advocacy for adopting and implementing ICT-based applications for managing healthcare delivery, such as electronic health records, electronic medical records, eHealth, and mHealth, among others.
- b. Continuing training and retraining on the use of information and communication technology by healthcare professionals.
- c. Formulation of policy on the uniformity in the nationwide adoption and implementation of electronic health records in order to ensure standardization of healthcare services delivery and to facilitate comprehensive and accurate data collection and availability.

Limitation

The study contended with the level of apathy shown by the respondents towards filling out the questionnaires.

Authors' Contributions: OSA conceived of the study, initiated its design, participated in data collection, data analysis and coordination and drafted the manuscript. AIK participated in the coordination and reviewed the manuscript. AF participated in the design, coordination and reviewed the final manuscript. AAK participated in the design, coordination and reviewed the manuscript.

Compliance with ethical standards

Acknowledgments: The constructive criticism and insightful comments of Mrs Baruwa Tolulope of School of Health Information Management and Mr Olalude Wale of Health Information Management Department, OAUTHC Ile-Ife Osun State Nigeria is gratefully acknowledged. We also wish to thank all the students of SHIM, OAUTHC who took their time to complete the survey questionnaire.

Disclosure of conflict of interest: The authors wish to state categorically that there is no competing interest in this study.

Statement of informed consent: Informed consent was obtained from all the students who participated in the study.

References

- Adane, M., Lessa, L., & Shiferaw, S. (2010). Knowledge, attitude and utilization of information communication technologies (ICTs) in an Ethiopian Medical Teaching Hospital. *NesglobalOrg*, 10, 105-10.
- Al-Khatlan, H., Alazmi, S., & Almutairi, B. (2017). Knowledge, attitude and practice of e-health among health care providers in Kuwait. *Green J Med Sci*, 7(5), 42-51.
- Dørup, J. (2004). Experience and attitudes towards information technology among first-year medical students in Denmark: longitudinal questionnaire survey. *Journal of medical Internet research*, 6(1), e15.
- Farnan, J. M., Snyder Sulmasy, L., Worster, B. K., Chaudhry, H. J., Rhyne, J. A., Arora, V. M.,... & Federation of State Medical Boards Special Committee on Ethics and Professionalism*. (2013). Online medical professionalism: patient and public relationships: policy statement from the American College of Physicians and the Federation of State Medical Boards. *Annals of internal medicine*, 158(8), 620-627.

Felix Sukums, Nathan Mensah, Rose Mpembeni, Jens Kaltschmidt, Walter E. Haefeli & Antje

Blank (2014) Health workers' knowledge of and attitudes towards computer applications in rural African health facilities, *Global Health Action*, 7:1, 24534, DOI: 10.3402/gha.v7.24534

Furusa, S. S., & Coleman, A. (2018). Factors influencing e-health implementation by medical doctors in public hospitals in Zimbabwe. *South African Journal of Information Management*, 20(1), 1-9.

Grace, J., Kenny, C., Qiang, C. Z. W., Liu, J., & Reynolds, T. (2003). Information and communication technologies and broad-based development.

Hailegebreal S. (2022). Utilization of information and communication technology (ICT) among undergraduate health science students: a cross-sectional study. *BMC Medical Education* (2022) 22:215

Hersh, W. (2009). A stimulus to define informatics and health information technology. *BMC Medical Informatics and Decision Making*, 9(1), 1-6.

Ibrahim SB. Et-al (2004). Knowledge and Utilization of Information Technology among Healthcare Professionals and Students in Ile-Ife, Nigeria: A Case Study of a University Teaching Hospital. *Journal of Medical Internet Research*, 2004 Oct-Dec 6(4): e45

Moghaddasi, H., Asadi, F., Hosseini, A., & Ebnehoseini, Z. (2012). E-health: a global approach with extensive semantic variation. *Journal of medical systems*, 36(5), 3173-3176.

Okonkwo OC (2021). ICT knowledge and utilization as determinants of job performance of Health Information Managers in health institutions in South-East Nigeria. *International Journal of Library and Information Science*, vol. 13 (2), pp. 21-33, July-December, 2021.

Olok, G. T., Yagos, W. O., & Ovuga, E. (2015). Knowledge and attitudes of doctors towards health use in healthcare delivery in government and private hospitals in Northern Uganda: a cross-sectional study. *BMC medical informatics and decision making*, 15(1), 1-10.

Olufunmilayo et-al (2017). Knowledge, Attitude and Willingness to Use mHealth Technology among Doctors at a Semi Urban Tertiary Hospital in Nigeria. *Journal of Advances in Medicine and Medical Research*, 22(8): 1-10, 2017; Article no.JAMMR.33232

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS quarterly*, 425-478.