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Application of ICT in health information management practices in selected tertiary hospitals in South- South States of Nigeria

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ABSTRACT

Background/Objectives: This study investigated the application of information communication technology to health information management (HIM) practices in two selected tertiary hospitals in South-South, Nigeria. **Design/Methods: :** Descriptive survey design was adopted and total enumeration of 78 HIM practitioners were recruited. Data was collected with the aid of a well-structured questionnaire. Mean and standard deviation were computed using SPSS Version ?? and the null hypothesis (Ho) was tested using independent sample T-test. **Results:** The study revealed that 33.8% of the participants were from NDUTH, Okolobiri and 66.2% were from FMC Asaba. It was reported that ICT was being applied in registration/documentation of patient. Manual method is however, still effective alongside with ICT application. The technology was being applied in case transfer within the hospital but, patient samples were not transferred to other hospitals due to none implementation of needed software. It was also noted that ICT was being applied in the analysis of patient data and management of patient/ clinical records in the hospitals but, manual system of preservation of records still persists. The null hypothesis tested was rejected and concluded that there is a significant difference between the mean responses of NDUTH staff Okolobiri and staff of FMC Asaba on application of ICT in the two selected hospitals. **Conclusion:** It is obvious to conclude that, there is more of ICTs application in FMC, Asaba in Delta State than NDUTH, Okolobiri in Bayelsa State. Based on these discoveries, government should provide stable electricity and adequate funding system to ensure full implementation of ICT in the hospitals to promote effective healthcare delivery as well as provision of needed ICT equipment and manpower for efficient healthcare services in tertiary hospitals across the South- South State of Nigeria.

Keywords: Clinical Documentation; Health Information Management; Information and Communication Technologies; Patient Registration; Nigeria

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INTRODUCTION

Information and Communication Technologies (ICT) refer to forms of technology used to transmit, store, create, share or exchange information. It includes radio, television, video, Digital Optical Disc (DVD), telephone, satellite systems, computer and network hardware and software[1]. Health administrators in their various sphere need to make the healthcare system move speedily at the pace at which human and capital infrastructure are to be employed. The use of ICT in health information management (HIM) practice is becoming a necessity as it can improve the quality of teaching and learning in any tertiary institution[2]. Oduma opined that ICT has impacted the quality and quantity of teaching and learning as well as research in healthcare[3]. Internet as a major component of ICT has strengthened teaching and learning as it provides powerful resources and services for people, thereby enabling them meet their healthcare needs[4]. Dickson noted that ICT can be seen to provide

resources and services that are used for accessing, processing, gathering, manipulation and presenting or communicating information[5].

The use of ICT in HIM practice is now growing in all parts of the world and their application is becoming an integral part of the practice in many parts of the globe[5]. Health facilities throughout the world keep consistent records of patients/clients. These health records are normally kept confidential and in confined places such as records unit or offices[6]. The record is a chronologically written account of a patient's examination and treatment that includes the patient's medical history and complaints, the physician's physical findings, the results of diagnostic tests and procedures, and medications and therapeutic procedures[6].

Health Information Management forms an essential part of patient's past, present and future healthcare services rendered. It is described as a written collection of information about a patient's health and treatment. The record so kept is used in the management the patients, planning of healthcare facilities and services for medical research[7]. Physicians, nurses and other healthcare providers contribute to the patients' health records so that previous medical information is available when the patient returns for follow-up cases or continuity of care. If the health information cannot be produced as and when needed for patient care, then the health system is not properly functioning and confidence in the overall work of the health information services will be tremendously affected. Health information must contain sufficient data to identify the patient, support the diagnosis or reason for attendance at the healthcare facility, justify the treatment and accurately document the results of the treatment[8]. The current health information system is accelerating and increasing in scope as it has come from nowhere to be almost everywhere in the health sector[9].

The emerging technologies should not displace but rather, supplement and complement other media[10]. Training and retraining in the deployment and application of ICT should be one of the priorities of the healthcare systems such that will enhance the urge to acquire more ICT-based skills among healthcare professionals. Thus this study aimed at assessing the application of ICT in HIM practices in two selected hospitals in South-South States of Nigeria.

METHODS

Study design

Cross-sectional design was employed for the study. This design was expedient for the study because it enabled the researchers to collect data at its natural setting and summarize, analyze and interpret so as to achieve the aims and objectives of the study.

Study population/Sample size

The study population comprised the total HIM Practitioners in the two selected hospitals across the South-South States. Niger Delta University Teaching Hospital, Okolobiri (NDUTH) in Bayelsa State has 26 and Federal Medical Centre, Asaba (FMC) in Delta State has 52 HIM professionals respectively. The total study population stood at 78 (Registry of NDUTH, Okolobiri and FMC, Asaba Medical Director's Office).

Instrument for data collection

A self-designed structured questionnaire deployed for data collection. The instrument is divided mainly into two (2) sections, I & II. Section I contains items on participants' demographic data, while section II consists of thirty (30) structured items under six (6) subheadings, labeled as: A, B, C, D, E & F. The instrument for data collection took the five (5) points rating Likert scale format which are represented as strongly agreed (SA), Agreed (A), Undecided (U), Disagreed (D) and Strongly disagreed (D). Every positively structured item in the instrument is to be scored as SA 5, A 4, U 3, D 2 & SD 1 while the negatively structured items were scored reversely as SA 1, A 2, U 3, D 4 & SD 5. The items were measured at a criterion Mean of 3.0. Any item above this Mean is considered perceived ICT application while any one below the criterion Mean is considered non-

ICT application. The instrument consisted of 19 positively phrased items and 11 negatively phrased items respectively.

Data analysis and management

Demographic data collected were presented on tables and simple percentage and analyzed using Mean and Standard deviation, while the null hypothesis was tested with Independent Sample T-Test at 0.05, level of significance.

Ethical Clearance

Informed consent was obtained from all participants upon vivid explanation of the purposes and users of the study. The participants were assured of confidentiality of any information generated from the study and that the data would be strictly used for the purpose of the study

RESULTS

The study shows that 77 of the 78 instruments distributed were retrieved, given an overall response rate of 98.72%. Table 1 shows the extent ICT is being applied in the documentation/registration of patient, with a grand Mean of 3.34. Again, each item gave a mean response greater than the decision criteria of 3.0. This implies that ICT is being applied in the registration/documentation of patients in the hospital. Item 5 however, gave a mean response less than 3.0, indicating that manual registration/documentation of patient is still effective alongside with ICT.

Table 2 reveals a grand mean of 3.52 on availability of ICT facilities/infrastructures. Furthermore, each item gave a mean response greater than the criteria mean of 3.0. This affirmed that, ICT facilities/infrastructures are available in the hospitals. Table 3 shows grand mean of 3.38 in respect to factors affecting application of ICT in the hospitals. More so, each item also returns a mean response greater than the decision criteria of 3.0. This clearly indicates that, there are identified factors affecting ICT application in the hospitals

DISCUSSION

This present study discovered that ICT is being applied in hospital in their day-to-day activities in enhancing the health sector. It was also revealed that grand mean of participants in respect to application of ICT in case transfer and data analysis was 3.10 and 3.29 and each item also gave a mean response greater than the criteria mean of 3.0. This signifies that ICT is being deployed in case transfer and analysis of patient's data in the hospitals. Nevertheless, item 9 gave a mean less than the decision criteria, portraying that patients' samples were not transferred to other hospitals with the aid of ICT. The grand mean on ICT application in records management was 3.14 and again each item gave a mean greater than the decision limit of 3.0.

This portrayed that, ICT is being applied in management of patient health records in the hospitals. Item 20 however, gave a mean less than the criteria mean, pointing that manual system is still applied in the management of patient/clinical records in hospitals. This discovery is in agreement with a previous study, which opined that "Given the sensitive nature of healthcare information and the high degree of dependence of high professionals on trust-worthy records, the issues of reliability of the data, security and privacy of the records are of particular significance and must be clearly and effectively addressed by health and health-related organizations and professionals"[11].

Similarly, grand means of 3.52 and 3.38 were recorded on availability of ICT facilities/infrastructures and factors affecting ICT application in the hospitals respectively. This clearly indicated that ICT facilities/infrastructures are available and also, there are identified factors, such as erratic/epileptic power supply, poor funding's, inadequate ICT oriented manpower etc. greatly affect ICT application in the hospitals. This finding is also in agreement with a study that identified three main factors of lack of connectivity, content and capacity as factors militating against successful application of ICT in health[12]. The study also revealed that among the

various parameters discussed, their standard deviations (SD) clustered around their means, indicating similar views of high variance towards ICT Application in the the health sector.

From the test of hypotheses, there is no significant difference between the mean responses of participants from the two centres but, a slight difference in the t-test, indicating difference in ICT applications. A significant difference between NDUTH Staff and Staff of FMC, Asaba on application of ICT. An indication that ICT application is growing higher in FMC Asaba that it is obtained in NDUTH Okoloibiri and that healthcare institutions and providers are becoming aware of the potential value of integrated services and the collaborative advantage of ICT in the place of healthcare services[13].

The fact is very important in the area of ICT and HIM in providing prompt service delivery to both patient and the entire healthcare system.

Study limitations include poor library system and internal services, distance to study areas/bad roads and non-payment of civil servant salaries. These factors limited the research work in their own way.

CONCLUSION

The contributions of tertiary health facilities cannot be over-stressed. It is obvious that ICT application received more attention in FMC, Asaba, Delta State than NDUTH, Okolobiri in Bayelsa State, therefore, the latter should double up while the former should not rest on their hoa

Recommendations

1. Hospitals should be adequately equipped with ICT infrastructural tools.
2. There should be stable electricity supply.
3. HIM Professionals should be adequately exposed to ICT in their work places, so that timely and more accurate information will be available for major healthcare decision makers.

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Authors Contribution:

DEL conceived of the study, initiated the design, participated in literature search, data collection, analysis and coordination. AV and EE participated in the design, literature search, technical process, data analysis and coordination and reviewed the final manuscript.

Table 1: Application of ICT in patients' documentation/registration

APPLICATION	RESPONSE LEVEL					X	SD	DECISION CRITERIA
	SA	A	U	D	SD			
Positively phrased	5 (35)	4(25)	3(2)	2(7)	1(10)	3.86	1.41	
Positively phrased	5(22)	4(30)	3(1)	2(9)	1(15)	3.45	1.49	
Positively phrased	5(15)	4(27)	3(10)	2(14)	1(11)	3.27	1.34	**3.0**
Negatively phrased	1(18)	2(10)	3(7)	4(29)	5(13)	3.12	1.45	
Negatively phrased	1(21)	2(13)	3(2)	4(38)	5(3)	2.86	1.37	
Positively phrased	5(18)	4(34)	3(0)	2(5)	1(20)	3.45	1.51	
GRAND MEAN							**3.34**	

Source: Field Work (2019)

Table 2: The extent ICT infrastructures availability in the hospital

AVAILABILITY OF	RESPONSE LEVEL					X	SD	DECISION CRITERIA
	SA	A	U	D	SD			
Positively phrased	5 (18)	4(31)	3(7)	2(10)	1(11)	3.45	1.35	
Negatively phrased	1(21)	2(10)	3(1)	4(26)	5(19)	3.16	1.59	
Positively phrased	5(31)	4(25)	3(3)	2(12)	1(6)	3.82	1.32	**3.0**
Negatively phrased	1(10)	2(5)	3(2)	4(39)	5(21)	3.73	1.29	
Positively phrased	5(21)	4(28)	3(0)	2(20)	1(8)	3.44	1.39	
GRAND MEAN						**3.52**		

Source: Field Work (2019)

Table 3: Factors militating against application of ICT in the hospitals

FACTORS AFFECTING	RESPONSE LEVEL					X	SD	DECISION CRITERIA
	SA	A	U	D	SD			
Positively phrased	5 (21)	4(27)	3(0)	2(19)	1(10)	3.39	1.43	
Positively phrased	5(16)	4(30)	3(11)	2(14)	1(6)	3.47	1.22	
Positively phrased	5(25)	4(28)	3(1)	2(6)	1(17)	3.49	1.54	**3.0**
Negatively phrased	1(15)	2(7)	3(12)	4(23)	5(20)	3.34	1.45	
Negatively phrased	1(18)	2(9)	3(3)	4(31)	5(16)	3.23	1.49	
GRAND MEAN						**3.38**		

Source: Field Work (2019)