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ICT knowledge and utilization as determinants of job performance of Health Information Managers in health institutions in South-East Nigeria

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Information and Communication Technologies (ICT) have transformed healthcare delivery through various forms of e-health initiatives particularly in the areas of disease control, diagnosis, patient management, teaching, communication, storage, and retrieval of medical information. These benefits notwithstanding, health information managers are still deficient in the effective use and application of modern ICT facilities in the performance of duty in health institutions. It is therefore of interest to study the ICT knowledge and utilization level of health information managers and how it affects their job performance. A descriptive study was conducted involving 22 selected government-owned, mission/faith-based, and private health institutions from over 4,093 health institutions that provided patient care information support services and had licensed Health Information Managers in their employment in South-East Nigeria. A structured questionnaire was used to elicit responses from 411 health information managers in the selected health institutions using stratified sampling technique. The results show that majority of the Health Information Managers in this study have adequate ICT knowledge through training received from self-study, but utilization was poor because most of these health institutions visited do not have ICT facilities. Nevertheless, they are competent in discharging their duties. Provision of adequate funding for ICT, computerization of health institutions, and training of health information managers on the use of ICT to enhance job performance are recommended.

Key words: ICT knowledge, ICT utilization, Health Information Managers, job performance, patient care, coding.

INTRODUCTION

Globally, Information and Communication Technologies (ICT) have transformed healthcare delivery through various forms of e-health initiatives particularly in the areas of disease control, diagnosis, patient management and teaching, communication, storage and retrieval of medical information. These developments have positively impacted patient management and the training and retraining of healthcare providers as well as promotion of patient-centered healthcare at a lower cost, improve quality of care and information sharing, education of health professionals and patients, encourage a new form of

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relationship between patients and their health providers, reduce travel time, etc. ICT links healthcare professionals with patients and information is shared using Email, Smartphone, telemedicine, and telemonitoring systems, which are especially useful for rural areas and locations with a lack of facilities and/or specialists. ICT has become the cornerstone upon which efficient and effective healthcare delivery thrives (Rouleau et al., 2015; Baridam and Govender, 2019; AIMS Education, 2019). Health records management systems are not left out of this transformation. ICT is defined as tools that facilitate communication, processing and transmission of information and sharing of knowledge by electronic means. This encompasses the full range of electronic digital and analog ICT, from radio and television to telephones (fixed and mobile), computers, electronic-based media such as digital text and audio-video recording, and the Internet. Today, most medical records operations are information technology-driven as patients' record management has evolved from paper record system to electronic medical record system. Almost all medical records acquire assorted types of ICT facilities such as computers and networks, software, Internet, CD-ROM, printers, scanners, cameras, projectors etc. Introduction of and use of these technologies have significantly improved and enhanced health record duties such as patients' registration, coding and indexing, hospital statistics, appointment scheduling, and clinic lists preparation and general usage of information in medical records. ICTs have improved these Health Information Management services by overcoming speed, time, and accessibility barriers (Haliso, 2011).

Health Information Management professionals are the custodians of patient health information (medical records) and are experts in the field of health information management. Their professional duties include filing, retrieving, coding and indexing of diseases and surgical procedures, classifying, statistical analysis and interpretation of patient data. As custodians of patients' health information, they also work to ensure that confidential patient information is secure and released only according to strict governmental laws. HIM professionals create a significant input to the delivery of quality care by maintaining, collecting, and analyzing health information. While at one time all medical records were kept on paper, the process of creating and maintaining health data is becoming more computer-oriented, sophisticated, and high tech. There is no more challenging atmosphere than today's ever-changing healthcare environment. The more healthcare regulations change and expand, and the more issues such as privacy and computerized records gain center stage, the greater the demand will be for HIM professionals. Within healthcare facilities, HIM professionals are in the middle of the action. Acting as the institution's informational hub, the HIM department staff work closely with doctors, insurance providers and patients (Anyaoku, 2012). This has led to additional ICT skills requirement to perform these functions.

A number of technology skills are projected as being essential for Library and Information Science professionals in the contemporary age. The competency in these skills is necessary for the continued existence of the Library professionals in this technology age (Mazumdar, 2007). These skills were categorized into two broad classifications. They include firstly, skills required to use computer and information technological tools, such as skills for using software application programs such as word processing tools, graphic design tools, presentation software, web page development, scanning techniques, database creation and maintenance, software installation skills and knowledge of hardware basis and troubleshooting. Secondly, skills for using the Internet and computer communication networks to search and retrieve data effectively on the web environment, networking skills, and Web 2.0 skills (Singh and Pinki, 2009; Dauda and Akingbade, 2011). HIM professionals are not left behind in this competency and skills as they are offshoot of Library and Information Science and as well regarded as Information professionals by other Information professionals. It is therefore pertinent that HIM professionals not only acquire the knowledge but have the requisite competencies and skills to utilize these tools for effective job performance.

In order to function and provide timely information at a faster speed, it would appear that administrators of academic libraries realize the important role information and communication technologies (ICTs) play in their job performance and so make ICTs available to their workforce (Haliso, 2011). This also applies to HIM professionals in their various job positions. Some authors have noted the importance of information technology (IT) in organizational and job performance. Human resource performance is intimately linked to technological change and technological innovation (Kayode et al., 2019). The use of IT gave rise to new distinct technologies with significant benefits in work measurement, cost reduction, productivity improvement and better services to customers and clients, which has resulted in a radical change in ways of administration (Attar and Sweiss, 2010). Using new technologies such as Computer-Aided Manufacturing (CAM), Virtual Reality (VR), Expert Systems (ES), and the Internet can give companies an edge over its various competitors. New technologies can result in employees "working smarter" as well as providing high-quality products and more efficient services to customers. Companies that have realized the greatest gains from new technology have human resource management practices that support the use of technology to create what is known as high-performance work systems (Noe et al., 2006). Work, training, programs and reward systems often need to be reconfigured to support employees' use of new technology (Daniel, 2013). Information technology improves employee performance by allowing quick access to the information needed to make important work decisions. Better decision making by managers and employees translates into higher profits and lower costs is another area that IT can improve employee training. The company Intranet, with all the training and employee development pages stored there is a product

of IT. Employees can access training materials at work or often on their laptops. Better-trained employees perform better and are more productive (Ratna and Kaur, 2016). On the contrary, technology both destroys and creates jobs. It has invaded the very core of the ways things are done; workers with different characteristics are affected differently as a result of technological innovation/ improvisation in the workplace (Bello et al., 2004).

The invention of ICT has also brought progressive changes and offered great advantages to providing effective and efficient services in the healthcare setting. An information-proficient workforce that is computer literate, trained in HIM skills and motivated to use the well-designed clinical systems would be necessary in a health institution particularly in a developing country such as Nigeria. It is therefore pertinent to find out how knowledge and utilization of ICT is affecting job performance of a core group of professionals in the Nigeria health sector. As has been noted the HIM professional is a vital link between doctors, patients, insurance providers, and other stakeholders, policy makers and individuals in the healthcare field by maintaining, collecting, and analyzing health information. The HIM professionals make a significant contribution to the delivery of quality care in healthcare delivery system. In addition to working with modern technology, the job of HIM professionals is an ongoing challenge (negligence, non-recognition, lack of manpower etc) in the field of healthcare.

The term performance is often used to describe everything from efficiency and effectiveness to improvement and it is individual output in terms of quality of expected responsibility for each employee in a job situation. It refers to how a person performs his or her job to the employer's satisfaction as set against particular standards. Performance can be regarded as almost any behavior, which is directed toward task or goal accomplishment (Basahuwa et al., 2020; Igbinovia and Popoola, 2016). Job performance has been described as a set of workers' behaviors that can be monitored, measured and assessed, and the behaviors should be in agreement with the organizational goals. This simply means that individual performance in the work place is targeted at the overall performance of the organization and can be rated against some predictable standards. The job performance of HIM here indicates the act of carrying out tasks, assignments or functions relating to health information management at an expected time and manner. Job performance is also a function of the combination of quality attributes which includes abilities, competencies, motivation, and commitment of individuals. It is a display of knowledge and skills of employees, irrespective of their status. The development and attainment of organizational goals of any healthcare facilities can be established by the performance of health information managers, whose job functions focus on task performance which covers a person's contribution to organizational performance, which includes job-specific task and performance. Job performance is an important index in predicting probable success or otherwise of any organization and

that include health information management.

Furthermore, job performance is described as a set of workers' behaviors (should be in agreement with the organizational goals) that can be monitored, measured and assessed. The implication of this is that health information managers' performance in the workplace is aimed at the accomplishment of the overall goals of the organization. This individual's job performance can be rated against some predictable standards that predict the overall success of the organization and this includes successful completion of tasks within designated period and effective delivery of services, ability to render good quality work, high quantity of task performed, interpersonal relationship, as well as the ability to work with minimal supervision (Igbinovia and Popoola, 2016). In order to assess the job performance of health information managers, there is need to look into the knowledge and use and ICT. Knowledge is an important resource for the growth and survival of any organization. It can be described as the heartbeat of any organization and identified as a core resource in the survival of any organization (Odunewu and Haliso, 2019). Knowledge refers to the practical or theoretical understanding of a subject. Competencies are the measurable or observable knowledge, skills, abilities, and behaviors (KSABs) critical to successful job performance.

In the changing work environment occasioned by wide adoption of ICT how do knowledge and utilization of technology tools relate to job performance of HIM professionals in the area of job specific task performance and adaptive performance? It will be pertinent to find out the extent of adoption of these technology tools in health institutions in South-East Nigeria and how far this adoption is affecting the effective performance of their duties. Research from developed countries has shown that electronic health records have been widely adopted and integrated into healthcare systems. Despite this increasing role of ICT in HIM, there is paucity of in-depth research on HIM professionals' use of ICT in their job performance in the literature emanating from Nigeria. The research therefore seeks to fill this gap by determining the extent to which ICT has been incorporated into patients' health information management and how the knowledge and utilization of these tools affect the job performance of these professionals.

Statement of the problem

Technology has brought changes to many organizational work environments. It has also affected human adaptability to work related stress. Many writers have noted the effects of technology on human capital in organizations. While some present it as positive, others regard it as negative. The movement to electronic records system is a major change in patients' health information management. Many routine duties that were manually performed for decades are now being performed with computers and other related technology tools. This notwithstanding, HIM

professionals still experience some obstacles or rather are deficient in the effective and efficient use and application of modern ICT tools in the performance of their duty in health institutions. These hindrances made the impact of ICT not to be greatly felt in HIM departments in health institutions in South-East Nigeria. In the face of the reasonably enormous ICT investment and policy development in health institutions in Nigeria, there is still inadequate information about the accomplishment in area of implementation of ICT for HIM in South-eastern Nigeria. There is also no known research that has tried to explore the effects of these new tools on the job performance of HIM professionals in health institutions in South-East Nigeria. The concern of this study therefore, is to address the question how do knowledge and utilization of ICT relate to job performance in health institutions in South-East Nigeria?

Objectives of the study

Generally, the objective of the study is to investigate the ICT knowledge and utilization level of HIM professionals and how it affects their job performance. However, the specific objectives of the study are to determine:

1. The ICT competence of HIM professionals in health institutions;
2. The areas of application of ICT facilities in the institutions;
3. The job performance rate of HIM professionals in health institutions;
4. The effect of the use of ICT facilities on various work activities in the institutions;
5. The challenges associated with the application of ICT in respect to job performance.

Research questions

This study also aimed to answer the following questions in order to achieve the stated objectives:

1. What is ICT competence of HIM professionals in health institutions?
2. In what areas of the health institutions' activities are the ICT facilities applied?
3. What is the job performance rate of HIM professionals in health institutions?
4. What is the effect of the use of ICT facilities on various activities in the health institution?
5. What are the challenges associated with the application of ICT in respect to job performance?

Ho: There is no significant relationship between ICT knowledge and utilization and job performance.
Hi: There is significant relationship between ICT knowledge and utilization and job performance.
Ho: There is no significant relationship between ICT utilization and knowledge and job performance based on health information officers' socio-demographic and

knowledge variables such as age, work experience, training received and acquisition of a computer.
Hi: There is significant relationship between ICT utilization and knowledge and job performance based on health information officers' socio-demographic and knowledge variables such as age, work experience, training received and acquisition of a computer.

METHODS

Population

This descriptive study was conducted among fully licensed HIM professionals whose practice included providing patient care information support services to patients in 22 selected government-owned, mission/faith-based and private health institutions from over 4,093 health facilities in the Southeastern zone of Nigeria (Abia, Anambra, Ebonyi, Enugu, and Imo States respectively). The selected health institutions were those that had HIM professionals in their employment. 411 HIM professionals working in the selected health institutions as at the time of study and who deemed it fit to comply were enlisted for the study, then out of the 411, 263 responded to the questionnaires. The population of practicing HIM professionals in the State at the time of the study cannot be ascertained due to unavailability of accurate data.

Area of study

Southeastern Nigeria was one of the initial Nigerian twelve States that were created during the Nigerian civil war. In the 1990s, southeast became the name of one of the six geo-political zones consisting of the Abia State, Anambra State, Ebonyi State, Enugu State, and Imo State. In Enugu State, there are 17 Local Government Areas (LGA) and five of the LGAs are largely urban. The State is divided into seven health districts for the purpose of healthcare delivery system; each health district is made up of between one to three LGAs. Within the State, there are six district hospitals, 36 cottage hospitals and 366 primary healthcare centres, including comprehensive health centres, health centres, and health posts. There are also approximately 700 private health facilities comprising of profit and non-profit facilities, and faith-based facilities. The State is made up of 3 senatorial districts - Enugu East, Enugu West and Enugu North constituencies (Enugu West Senatorial District, 2014). Abia State has three Senatorial zones in Abia-Abia South, North and Central Senatorial Zones. There are 17 Local Government Areas (LGA) in the state; each one is chaired by a duly elected Executive Chairman.

Anambra State has 21 Local Government Areas (LGAs) and is made up of three senatorial zones namely; Anambra South, Anambra Central and Anambra North. The State has 235 Health Districts with a total of 34 secondary health facilities consisting of General Hospital, Comprehensive Health Centres and Cottage Hospitals and about 382 Primary Healthcare centres and health posts. Nnamdi Azikiwe University Teaching Hospital, which is owned and managed by the Federal Government through the Federal Ministry of Health, is the only tertiary health institution as at the time of this study. The Teaching Hospital has annexes at Onitsha, Neni, Oba, Awka, Umunya and Ukpo offering Trauma and Primary Healthcare services. These health institutions are concentrated in the urban areas of the state like Onitsha, Nnewi, Awka and Ekwulobia (Ministry of Health Anambra State, 2012).

Imo State is divided into 27 Local Government Areas (LGAs), and three senatorial zones. Imo State has 1,334 health facilities including one tertiary hospital (Federal Medical Center, Owerri) and several government secondary health facilities and private hospitals. Ebonyi State has 13 Local Government Areas (LGAs), its State capital in Abakaliki and is divided into three Senatorial Zones, and 6 Federal Constituencies. The three Senatorial Zones

are: Ebonyi North, Ebonyi Central, and Ebonyi South. In the health sector, Ebonyi has two major hospitals-Ebonyi State Teaching Hospital and the Federal Medical Center-both in Abakaliki. The State also has 3 general hospitals located in Onueke, Onicha and Enohia Itim (near Afikpo). These are complemented by several private hospitals and clinics in various towns and villages (EbonyiOnline, 2009-2014).

Procedures

This study is a correlational research design, which examines the relationship that exists between ICT knowledge and utilization level of HIM professionals in health institutions in Southeast Nigeria and how it affects their job performance. In the study, job performance was used as the dependent variable while knowledge and utilization of ICT is the independent variable. The population of the study is quite big. A sampling frame comprising of ninety-five (95) Local Government Areas from each State was drawn, which was then randomly stratified by rural and urban differences. From the urban and rural areas, the study randomly selected at least all Tertiary/Secondary hospitals, all State hospitals, one general hospital, and one private hospital including Mission and faith-based clinics where these professionals can possibly be found and where they deemed it fit to comply to be enlisted in the study. A total enumeration method was used to enlist all the professionals with academic qualification of NCE/ND and above in Health Information Management in the four States of South-Eastern zone of Nigeria. A total of 411 questionnaires were distributed to the subjects, and 263 were returned and analyzed.

Questionnaire tagged Knowledge, Utilization and Job Performance (KUJP) was the main instrument of data collection for the study. It was designed by reviewing the literature and pretested on 15 each of the private health institution and health centre who do not belong to the study in the State and the Cronbach Alpha coefficient of 0.78 was computed indicating that the instrument is reliable. The questionnaire items are divided into four sections (A, B, C, and D) thus: Section A—Socio-demographic variables, Section B—ICT Knowledge, Section C - ICT Use, Section D—Job performance. Data analysis was carried out using SPSS (Statistical Package for Social Sciences) version 16 and GraphPad Prism 5. Descriptive test statistics were performed for various variables and interpreted by means of simple frequency counts and percentage values.

RESULTS

Socio-demographic details of the population study

Respondents from Ebonyi State were 38.4%, followed by Anambra State 23.6%. Abia State has the lowest respondents with 4.9% due to the difficulty in collection of data as a result of non-compliance of the Staff. Others are Enugu State having 21.3% out of 263, while Imo State was 11.8% (Table 1). Table 2 shows that 83.3% of the respondents in this survey group were from Federal/Secondary health institutions and are considered to be in the highest job position of Health Records Officer with 26.6% having had 6-15 years of work experience with 44.5% of the total respondents. Approximately females who were 70.6% of the sample are statistically higher than the males who were 25.2%. However, 4.2% were unidentified gender. This illustration evidently shows that the 57.03% of the HIM professionals in the health institutions under study were non-other than women and mostly married. Respondents on the age range of 30-34 years

constituted 49.8% of the total sample. 46.8% of them had HND/B.Sc. as the highest academic attainment. This perhaps is a prerequisite for being certified as Licensed Health Record Officer.

ICT knowledge of Health Information Management professionals in health institutions

As stated in Table 3, 63.5% of the respondents which were largely females have used computer, and 36% are familiar with the use of this computer through self-study and experience, however 5.9% did not receive any formal training for computers. From the overall respondents, 43.4% which are females acquired a personal computer for use at home, whereas 4.6% remained silent over having ever used a computer. In Table 4, the respondents' responses are rated from *I can perform the actions associated with the skill without assistance* to *I cannot perform the actions associated with the skill*. The results on knowledge level possessed by HIM professionals in using ICT showed that 86.9% of them possess good knowledge on the use of ICT in patient registration, patient number activation, clinic list preparation, and in the use of electronic medical records respectively. Possibly, patient registration and patient number activation units are the first point of call of any patient on first and subsequent visits to the health institutions. They are the job areas where any HIM professional on employment to the department must become familiar with. This is evident in their response that I can perform the actions associated with the skills without assistance. In spite of this, greater number of them (97.82%) cannot perform the action associated with the skills of Statistics. For exhibiting ICT skill/competence, 86.9% rate themselves as being able to perform the actions associated with Electronic Medical Records Software without assistance. 95.6% cannot perform the action associated with the skills of preparing slides for presentation.

ICT use of HIM professionals

For the purpose of answering this question the respondents were asked to respond to five Likert scale items measuring their level of ICT use to perform HIM functions as in Table 5. 68.9% of them responded that they use it for registering of patients on arrival to the health institution. This reflects why it is used on a daily basis. Majority of them i.e., 68.5% of the respondents use ICT to perform patient number activation on a daily basis, while 0.8% use ICT to perform its associated function once in a year. This shows that patient registration and number activation statistically go together since patients are usually issued a computer number on arrival to the clinic and must be reactivated on visiting the health clinic subsequently for his/her medical billings. In Table 6, approximately all the respondents (72.6%) indicated that the use of ICT is most useful in all the job areas of HIM in health institution, on the other hand, 4.5% had no response.

Table 1. Population of study according to State.

S/N	State	Frequency	Percent
1	Enugu	56	21.3
2	Anambra	62	23.6
3	Ebonyi	101	38.4
4	Abia	13	4.9
5	Imo	31	11.8
	Total	**263**	**100%**

Table 2. Demographic characteristics of the study population (N=263).

Variable	Category	No.	Percent
	20-29	**91**	34.6
	30-34	131	49.8
Age	45-59	37	14
	60+	2	.8
	No age	2	.8
	Male	66	25.2
Gender	Female	186	70.6
	No gender	11	4.2
	Single	98	37.3
	Married	150	57.0
Marital status	Widowed	9	3.4
	Divorced	2	.8
	Separated	3	1.1
	No responses	1	.4
	OND/NCE	104	39.5
	HND/B.Sc	123	46.8
Professional qualification	MHIM	7	2.7
	Others	10	3.8
	No response	19	7.2
	Chief Health Record Officer	12	4.6
	Assistant Chief Health Record Officer	11	4.2
	Principal Health Record Officer	14	5.3
	Senior Health Record Officer	26	9.9
Job position	Higher Health Record Officer	54	20.5
	Health Record Officer	70	26.6
	Assistant Health Record Officer	56	21.3
	Health Record Technician	6	2.3
	No response	14	5.3
	Federal Tertiary/Secondary hospital	219	83.3
	State Teaching hospital	22	8.4
Name of Institution	General hospital	6	2.3
	Health centre	0	0
	Private hospital	3	1.1
	Mission hospital	15	5.7
	1-5	46	17.5
	6-15	117	44.5
Years of working experience (years)	16-25	50	19.0
	≥26	39	14.8
	No response	11	4.2
	Total	**263**	**100**

Table 3. Distribution of respondents by computer use, acquisition of personal computer, and where computer training was received (N=263).

Questions	Gender	Yes		No	
		N	%	N	%
Have you ever used a computer?	Male	63	23.9	3	1.1
	Female	167	63.5	18	6.8
Do you have a personal computer?	Male	50	19.0	18	6.8
	Female	114	43.4	81	30.8
	On-the-job training	8	12.7	40	24
	Self-study/experience	32	50.8	60	36
Where did you receive this training?	Formal training e.g. Diploma in computer studies	19	30.2	50	29.9
	All of the above	0	0	7	4.2
	No training	4	6.4	10	5.9
	Total	**63**	**100**	**167**	**100**

Table 4. Distribution of respondents by ICT skill/competences for the performance of Health Information Management duties (N=230).

Skills in the use of ICT for the following Health Information Management duties		I can perform the actions associated with the skill without assistance	I can perform the actions associated with the skill with assistance	I cannot perform the actions associated with the skill	No Response
		%	%	%	%
1	Coding/Indexing	15.2	28.2	54.4	2.2
2	Patient Registration	86.9	10.9	0	2.2
3	Patient admission/discharge	4.8	43.5	50	1.7
4	Patient number activation	86.9	10.9	0	2.2
5	Statistics	1.3	0.44	97.82	0.44
6	Cancer registry	0.43	6.9	92.6	0
7	Clinic list preparation	86.9	7.8	4.9	0.4
8	Storing of patient master name index card	2.2	13.0	84.8	0
9	Electronic medical records	86.9	10.9	0	2.2
General use of ICT applications		%	%	%	
12	Internet - access web-pages	43.5	34.8	21.7	0
13	Email - sending of messages and attachment of documents	43.5	34.8	21.7	0
14	Spreadsheets - for data analysis and statistical summaries	0	34.8	65.2	0
15	Word processing - producing documents, including letters, memorandum	0.9	33.5	65.6	0
16	Presentation packages - preparing slides for presentation	0	4.4	95.6	0
17	Electronic Medical Records Software	86.9	10.9	0	2.2
18	Cancer Registration V4 - for data collection in Cancer registries	0.4	7	92.6	0
20	ICD-10 Browser - for coding of disease and surgical procedures	15.2	28.3	54.3	2.2

Job performance of health information management professionals

Table 7 shows that 54.1% of the respondents thought they and equally the department can use ICT to perform patient registration very well, which is usually the first and major duty perform in any health institution on arrival of the patient to the clinic. Then 15.7% were not responsive. A five-point Likert-scale was used to rate the job performance of HIM professionals in assessment of their quality of work as stated in Table 8, 53.3% strongly agreed that they rarely misfile patients' case notes. Majority of the respondents (59.8%) strongly disagreed that they are not productive in the areas of completing their tasks everyday due to their devoted efforts. This was supported by the usual civil service slang "*It is impossible to finish a civil service work in a day, otherwise if the work gets finished, people will stay at home jobless*". In the assessment of how they can adapt, 53.3% strongly agreed that they

Table 5. Distribution of respondents by use of ICT to perform functions (N=263).

Function	Daily basis	Once in a week	Once in a month	Once in a year	Never	No response
	%	%	%	%	%	%
Coding/Indexing	60.5	15.6	4.2	4.2	6.5	9.0
Patient Registration	68.9	.7	2.3	2.1	16	10
Patient Admission/Discharge	65.6	14.9	4.0	1.9	4.7	8.9
Patient number activation	68.5	13.4	4.2	.8	4.5	8.6
Statistics	62.1	12.9	7.6	1.1	4.9	11.4
Cancer Registry	49.9	9.1	23.2	1.9	5.3	10.6
Clinic list preparation	49.4	11.1	14.4	1.5	9.9	13.7
Storing of patient master name index card	58.9	16.0	6.1	.8	5.7	12.5
Electronic medical records	59.0	16.4	6.9	1.3	6.3	10.1
Monitoring and evaluation of HIV/AIDS patients	53.3	14.6	8.4	1.1	6.9	15.7
Storage and retrieval of patients' case-notes	47.1	13.4	12.3	3.4	10.0	13.8

Table 6. Areas of job that the use of ICT is most useful (N=263).

Areas of Job	Percent
Coding/indexing	4.1
Patient registration	2.7
Patient admission/discharge	4.2
Patient number activation	1.5
Cancer registry	.4
Clinic list preparation	2.1
Storing of Patient Master Name Index Card	.4
Storage and retrieval of patients' case notes	3.2
Statistics	3.2
All of the above	72.6
None	1.1
No response	4.5

get used to working conditions irrespective of pressure from the work environment and from colleagues. 64.6% of the respondents strongly agreed that they can work well with little or no supervisory intervention or assistance. In reviewing HIM professionals' ability to initiate and to be resourceful in introducing new services and products for patients, 60.2% strongly disagreed with that. The ability to judge and comply with the organization's policies is one thing all employees must fight to abide by. This was strongly confirmed by 50% of the respondents by aligning their performance with those of the institution. Surprisingly, 64.1% of HIM professionals strongly disagreed to having a good relationship with their colleagues in the work place. The reason being that it is impossible to maintain a cordial relationship with everybody, misunderstanding is likely to occur among workers due to proximity. In the face of SERVICOM *(Service Compact—a committee set up by the Federal Government of Nigeria to ensure good service delivery in all government established institutions)* and for fear of not losing one's job, 69.5% strongly agreed that prior notice is given to the management before embarking on

any form of working leave, be it annual, casual or sick leave.

One of the work ethics in HIM is the confidentiality of patient information, security and safeguarding of patients records. Based on this, 70.4% of HIM professionals that were evaluated proved that since they are under oath of office they disagreed to disclosure of confidential information about a patient to outsiders. Generally, there are some responses over which the respondents remained silent, hence were not collated. From the findings, it shows that HIM professionals are very competent in discharging their duties/functions irrespective of the working conditions which they have become accustomed to.

In Table 9, majority of the respondents i.e. 56.9% claim that increased work productivity/creativity is regarded as the major outcome of using ICT in their job performance, while 11.5 did not respond to the question. Major challenge in the use of ICT in job performance of HIM professionals is non-availability of ICT facilities in the health institutions 26.6%. Nonetheless, 6.3% strongly affirmed to having been faced by all the challenges in the use of ICT in the job activities of HIM

Table 7. Distribution of respondents by how well they or department think they can use ICT to perform Job/duties (N=263).

Job/duties	I can use it very well	I can use it well	I can use it satisfactorily	I can use it to a small extent	I cannot use it	No response
	%	%	%	%	%	%
Coding/Indexing	33.7	23.8	10.7	15.7	6.9	9.2
Patient registration	54.1	14.9	9.2	10.3	3.1	8.4
Patient admission/discharge	45.3	17.2	12.6	11.1	3.4	10.4
Patient number activation	45.2	16.1	10.3	12.3	3.8	12.3
Statistics	35.7	19.5	8.8	18.4	6.5	11.1
Cancer registry	21.1	18.0	15.7	16.1	13.4	15.7
Clinic list preparation	37.9	16.1	14.2	12.6	5.8	13.4
Storing of patient master name index card	40.2	19.9	10.0	11.5	4.2	14.2
Electronic medical records	33.3	20.3	11.1	14.2	7.3	13.8
Monitoring and evaluation of HIV/AIDS patients	25.5	20.4	11.9	17.5	10	14.7
Storage and retrieval of patients' case-notes	46.0	16.5	11.1	10.3	6.1	10.0

professionals in health institutions, while 12.8% did not respond to the questions. Most important suggestion brought forward by the respondents is the supply of adequate reliable computers with up-to-date software/ connections in Records department as averred by 29.5% of the respondents, whereas 11.1% never responded.

DISCUSSION

Respondents from Ebonyi State were 38.4%, followed by Anambra State 23.6%. Abia State has the lowest respondents with 4.9%. It was difficult collecting data from Abia State University Teaching Hospital due to non-compliance of the Staff. Others are Enugu State having 21.3% out of 263, while Imo State was 11.8%. However, during the time of the study all the State government-owned health institutions in Imo State were on sympathy strike on behalf of their professional colleagues in Umuguma General Hospital Owerri West LGA over non-payment of 8 months' salary, hence they were excluded from the study except Federal government-owned health institution in the State - Federal Medical Centre, Owerri. The outcome of the study can be summed up under four headings, which are the level of knowledge HIM professionals have in using ICT along with the associated skills/competence, the level of ICT use in the performance of job functions by HIM professionals/department, the job performance rate of HIM professionals and the effects of using ICT in job functions, factors inhibiting its use and solutions to further develop ICT knowledge/skill.

The first was intended to investigate the knowledge level possessed by these professionals in using ICT. The results reveal that HIM professionals in health institutions in South-East Nigeria had adequate knowledge of ICT and very low ICT utilization due to unavailability of ICT facilities in these health institutions. This knowledge/skill was acquired through self study/ experience. It also shows that they have personal computers with the necessary skill in using them, which

is similar to the study conducted in India among healthcare professionals (58%) (Gour and Srivastava, 2010) and similar when compared to the study conducted among health science students at the University of Gondar, North Western Ethiopia (Assefa et al., 2013) and in Medical School of Ahmadu Bello University, Zaria, Nigeria (Ameh et al., 2008). Whereas some still have difficulty using ICT facilities to perform certain functions/applications, such as Cancer registry, ICD-10 browser, Electronic Medical Records, CareWare v4, Presentation and word processing. On the contrary, in a study carried out on Knowledge and Utilization of Information Technology among healthcare professionals and students in Ile-Ife, Nigeria, it was observed that despite the fact that 78.7% of these professionals had received some training, only 4.3% demonstrated good knowledge of computers and IT. 60% had a fair knowledge and 29.7% had poor knowledge. Rank, social obligations, age and gender were not found to significantly influence knowledge, utilization patterns and attitudes. Also, only 27.7% showed good utilization habits, while in 29.8% they were fair and in 46.6% they were poor.

The second finding is aimed at finding out the level of competence of HIM professionals and their job performance rating. The results showed that they are competent in the use of ICT facilities to perform certain HIM functions without assistance such as patient registration, coding and indexing, statistics, and general use of ICT applications such as email and Internet. These are the main job functions and applications commonly performed by HIM professionals, which are used on daily basis. The level of competence of these professionals and job performance ratings is in line with the work of Juran Institute Inc. (1990) that performance measures are always tied to a goal or an objective (the target) and that job performance are activities engaged in by individual skill which is displayed by staff to ensure desired output from the assigned schedules.

HIM professionals as employees working in health institutions work because of the actual or expected need for the services they render. They are used by the

Table 8. Distribution of respondents by job performance (N=263).

Performance scales	S A	Agree	N	D	S D	No res
	%	%	%	%	%	%
Quality of work						
Patients are satisfied with the overall quality of my work productivity	52.3	26.9	6.2	2.7	.4	11.5
I attend to patients at the earliest time desirable and with caution	52.7	25.4	4.6	2.7	.4	14.2
I have minimum errors in registration of patients	38.8	18.8	7.7	9.2	11.9	13.5
I rarely misfile patients' case-notes	53.3	26.6	4.6	1.5	1.9	12.0
Productivity						
I attend to all patients everyday	38.8	19.2	6.9	9.6	9.6	15.8
I complete my tasks everyday due to my devoted effort	10.4	8.1	1.5	9.7	59.8	10.4
I assist my co-workers to accomplish their task when I am done with mine	47.3	26.5	7.3	5.0	2.3	11.5
I put in more than 8 hours daily on-the-job to ensure patients' satisfaction	53.5	24.6	6.5	1.2	0.8	13.1
Adaptability						
I easily adapt or adjust to changes especially when it enhances the growth and development of my job as Health Information Officer	51.2	22.7	11.5	.8	.4	13.5
I initiate and recommend constructive changes in work procedures	34.2	24.6	11.9	8.1	8.1	13.1
I get used to working conditions irrespective of pressure from environment and colleagues	53.3	29.0	4.6	0.8	0.8	13.1
Dependability						
I can work well with little or no supervisory assistance or intervention	64.6	15.4	5.8	.8	.4	13.1
I only work based on my schedule	45.0	23.1	11.5	5.0	1.9	13.5
My Institution sees me as a reliable employee in terms of carrying out its work assignments and instructions	55.0	22.3	8.5	0.8	0	0
Initiative and resourcefulness						
I introduce new services and products for patients	6.9	7.7	3.5	10.8	60.2	10.8
I involve in planned effort to increase effectiveness and viability of the institution	56.5	21.9	7.3	1.9	0.8	11.5
Judgment and policy compliance						
My performance goals are well aligned with those of the Institution	50.0	25.0	11.5	18.1	5.0	13.8
I am able to deduct sound decisions from existing and new policies of the Institution	26.5	26.5	8.1	1.5	1.2	12.7
Interpersonal relations and customer service						
I have good relationship with my colleagues in the work place	12.0	3.1	2.7	7.3	64.1	10.8
I relate with the patients and their relatives cordially	38.5	21.9	13.8	6.9	4.6	14.2
I promote feelings of self-esteem, goodwill and cooperativeness among my co-workers in the Institution	40.8	29.6	10.8	3.8	1.2	13.8
Attendance						
I report to work on a timely basis	66.4	19.3	2.3	2.3	.8	8.9
I don't leave my work position till it's time to go home	51.2	26.5	6.5	3.8	0	11.9
I give prior notice to the management before embarking on any working leave	69.5	15.1	1.9	0.4	0.4	12.7
Safety and security						
I allow patients to handle their case-notes	35.4	20.8	12.3	6.2	9.2	16.2
I disclose confidential information about the patient to outsiders	5.0	3.1	1.5	8.8	70.4	11.2
On retrieval of patients' case-notes I allow the patients to take it down to the clinic themselves	60.5	15.7	3.4	2.3	7.7	10.3

SA, Strongly Agree; S Da, Strongly Disagree; No res, No response; D , Disagree; N, Neutral.

management for the accomplishment of the organizational objectives. Job performance is the abilities to combine skillfully the right behavior towards the achievement of organizational goals. This supports the work of Haliso that the job of HIM professionals is directed at patient's records management, education, research etc in achieving organizational goals which involves the skills and administrative practices.

The analyses of the third findings revealed that more than half of these professionals use ICT facilities to register patients, activate their computer numbers, carry out statistical analysis of the hospital's activities, coding and indexing of diseases and surgical procedures. In the same vein, they advocated that ICT is most useful in all the job areas of HIM. Mack as cited by Haliso collaborates that ICT plays a vital role in information retrieving because it allows simple access to large amounts of independent information sources, also Brewerton in Komolafe-Opadeji (2009) supports this by stating that ICT provides ways of delivery and accessing of information that can improve productivity and the delivery of education, health and other social services. This was also supported by Haliso that ICT is very important in every professional field that no field

Table 9. Responses on the effects, factors inhibiting the use of ICT and suggestion for improvement.

Variable	Category	%
Effects	Increased work productivity/creativity	56.9
	Obtaining electronic information	10.8
	Facilitates communication of information to the patients	12.3
	All of the above	8.5
	None	0
	No response	11.5
Militating factors	Epileptic electricity supply	19.1
	Lack of ICT knowledge and skills	14.7
	Computer Anxiety	3.2
	Poor funding	9.3
	Lackadaisical attitude of Health Information Management professionals	6.4
	Lack of time in the office	1.2
	Non availability of ICT in the hospital	26.6
	All of the above	6.3
	None	0.4
	No response	12.8
Suggestions	Adequate reliable computers with up to date Software/connections in Records Department	29.5
	Easy access to computers	4.6
	Laptop for Health Information Management professionals at subsidized rates	4.6
	Training and workshop on how to use ICTs for job performance	21.5
	More confidence over computer anxiety	3.1
	Adequate funding	16.1
	All of the above	8.4
	None	1.1
	No response	11.1

can function without it. Also, in line with the work of World Health Organization, the use of ICTs in health is not merely about technology (Dzenowagis, 2005) but a means to reach a series of desired outcomes such as health workers making better treatment decision, hospital providing higher quality and safer care, people having better access to the information and knowledge they need for better health etc. The Nigeria Communications Week Editorial (2013) did not have a contrary view on that, in accessing the benefits of incorporating ICT in healthcare information management which include better access to complete and accurate EHRs that aggregate information to improve diagnosis, prevent errors and save precious response time, lead to greater engagement of patients in their own healthcare, improve population-based knowledge in a diverse country like Nigeria (Adeniji et al., 2011). The analysis from the study is in agreement with the view of Adeniji's work in a University Library which show that Internet is being used by professionals in major disciplines of the world because it offers current information to the users and addressed the shortcoming as witness with manual system of information provision to the clienteles (Hodo and Emmanuel, 2012).

The last finding of the research showed that increased work productivity/creativity is regarded by majority of the respondents as the effects ICT has on the job performance of HIM, while non-availability of

ICT facilities in health institutions is considered to be a major problem facing most HIM professionals in the various health institutions, since these ICT facilities are not well funded. Others also bemoaned the power supply condition of the country. This they regretted can bring an organization's activities or a business venture to a permanent halt if some positive steps are not taken. This collaborate the work done in Olabisi Onabanjo University Library of the infrastructural impediments to Internet connectivity and peculiar problems that are unique to the African context - power failure, equipment failure, regulatory restriction of communication technologies, expensive or unreliable technologies and low content were identified (Hodo and Emmanuel, 2012). Few out of the respondents often lack time in the office to use ICT facilities as they are loaded with other everyday jobs. Furthermore, the study had observed that the spatial distribution of health facilities between the urban and rural areas is inequitable (with more technologically equipped health facilities located in the urban areas than the rural areas and more HIM professionals in the urban than rural). This affects the knowledge and utilization level of these professionals in the rural areas. This is in agreement with the work done among medical students in Northwestern Ethiopia that showed utilization dissimilarities among students in urban and rural areas. This is also similar to a study in Ghana where students in urban areas have more positive attitudes towards

ICT use compared to students in rural areas (Ameh et al., 2008).

The difference in utilization may be explained by the availability of ICT facilities (such as Internet connectivity, electricity, telephone etc.) in the urban areas as compared to the rural areas in most developing countries. In addition, people are more likely to respond positively to something or someone after increased exposure for example to ICT tools in this case.

The result of the correlational analysis to test the effects of ICT knowledge and utilization on the job performance of health information managers showed that the null hypothesis could not be rejected because there is no statistical significant relationship between ICT and job performance at 0.05 critical errors (two-tailed) 0.04944 with 95% CI of -0.486 to 0.789. Since the p-value is larger than 0.05 and the 95% CI starts with a negative number (representing a decrease) and up to a positive number (representing an increase), hence no significant evidence to reject the null hypothesis as there as some missing values and non-responses to some of the questions. The analysis to test the relationship between ICT utilization and knowledge and job performance based on health information managers' socio-demographic and knowledge variables such as age, work experience, training received and acquisition of a computer showed that age had positive significant correlation with training received on ICT (r=0.0134, significant at -0.152*) with 95% CI of -0.268 to 0.0320. This depicts that the older the Managers, the lesser the ability in utilizing ICT. This information showed that older Managers might not have the keenness in learning ICT when measured up to the younger Managers. It is also evident in the analysis that aged had high and positive significant correlation with years of work experience (r=0.616, significant at 0.0001***) with 95% CI of 0.535 to 0.686. Furthermore age had no significant relationship with acquisition of a computer system (r=0.0819, not significant at 0.107) with 95% CI of -0226.0 to 0.0137. This means that the Managers can make purchase of a computer regardless of age.

As for the comments made by the respondents, 11.4% commented that the use of ICT and its implementation should be encouraged in health institutions. They further urged that adequate funding of ICT for use in HIM in the country should be made by the Federal government since most of the health institutions in the country are yet to be computerized. Supervisory actions should be mounted on those who are in-charge of disbursement of funds to ensure proper accountability and transparency in health institutions. The respondents also largely commented on the need for health institutions to conduct on-the-job training/ICT application for these professionals in various health institutions and urged them all to embrace these efforts when made by getting ICT-compliant in order to enhance their productivity and job performance. The study had observed that most health facilities do not receive sufficient impress/fund from the government to run the clinics. Although funding of

health facilities tends to favor the clinics located in the urban settlement, the clinics located in the rural areas are strongly affected by fund insufficiency.

Conclusion

HIM professionals in South-East Nigeria had adequate knowledge of ICT and very low ICT utilization. Adequate funding of HIM Health records department to equip them with the ICTs needed in the performance of their duties. Policy makers in Ministry of Health and Health Sectors should be responsive of this unfilled gap, and commence by bringing important changes in the profession and curriculum of education with regards to ICT, given that the job function of HIM centres on the use of ICT and its applications and or facilities. A program or team should be specifically set up for steady exchange of views on ICT skills which would be helpful to HIM professionals. However, these professionals need a policy guiding them towards the acquisition of ICT knowledge as part of their program and also a platform to share and discuss problems relating to the use of ICT in health information management. They have to equip themselves practically in order to be at par with the patients they come in contact with on daily basis. Despite the fact that, there had been other studies on ICT knowledge and utilization in various fields, none in Health Information Management to the best of the knowledge of the researcher, so it has its own limitation. In view of the fact that the data are self-reported which might be liable to bias since some questions were not fully answered and some not sincerely given due to uncooperativeness of the respondents, thus not fully representing the true minds of the respondents. Future studies should be done in terms of HIM professionals' attitude towards the use of ICT. It will enable the policy makers in the management position of the profession to make advancement in their curriculum and also work scheme.

Recommendations

In the light of the above, the study hence recommends the following:

1. Setting up a computer leasing initiative for HIM professionals to encourage the acquisition of computer at a lower cost. Deductions made from salary on smaller percentage interest to enable them pay off and also incorporating information-based discipline.
2. Bolstering health informatics training to equip them with the skills they need to   utilize ICT. This can be achieved when health administrators organize quarterly or annual ICT in-service training for members of the staff of the health facility involved, or sponsorship for further education.
3. Establishment of forceful political structure and democratic governance that will be impartial in policy formulations, especially, as it concerns healthcare provision and funding in the Zones. Also the

maintenance of established health facilities, and mapping out strategies on the committee to monitor the health workers' activities at the health facilities.

4. Hospital Administrators and leaders of Health Record Officers Registration Board of Nigeria to be aware of this existing gap, and start to bring major changes in their health institutions and curriculum of education alike with regards to ICT knowledge and utilization.

5. A wake-up call for HIM professionals to assume their responsibilities through ICT training and retraining by embarking on different forms of online and offline training in schools to further enhance their knowledge and skills.

6. Computerization of all health facilities especially HIM departments in all healthcare delivery systems in Nigeria for optimum job performance, as well as acquisition of computer and other modern ICT facilities by the hospital administration in order to promote the ICT utilization level of these professionals.

7. There is the need to address the problem of power outage as witnessed in almost all the health institutions in Nigeria by the installation of solar system, stand-by lister/generators etc.

The above recommendations if embarked on have the ability to increase the efforts of government in funding health institutions in South-East Nigeria, especially in the area of ICT facilities and as well reduce the rate at which HIM professionals are displaying clumsy attitude in their job performance using ICT.

CONFLICT OF INTERESTS

The author has not declared any conflict of interest.

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