

The Impact of ICT Infrastructure: A Veritable Tool for Healthcare Professionals

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Abstract: - This study focused mainly on the impact of information and communication technology infrastructure as a veritable tool for health care professionals in healthcare institutions in Port Harcourt metropolis. Descriptive research design method was employed. One hundred (100) Respondents (Healthcare Workers) participated in the research. Open and closed-ended questionnaire was used to collect data and simple percentage was used to analyze the data. The result of the study revealed that (60%) of the respondents have not been trained in the use of ICT and only few of them use ICT in the course of carrying out their job (40%). On the average, hospitals were provided the required infrastructure (50%). The result also identified that ICT infrastructures have the potential to improve the quality and safety of health care professionals (80%). A strong and properly structured ICT help doctors/patients be more informed and better prepared to engage in decision making and to carry out their treatment plan as well as have great potential to reduce some administrative costs and burden (95%). Their establishments does not have properly structured ICT infrastructure (60%). Recommendations are that the health workers should be well trained; provided with the required ICT infrastructures/equipment. The study has been able to show that ICT infrastructure is a veritable tool for healthcare professionals for effective healthcare delivery.

Key Words: Information Communication Technology, Infrastructure, Healthcare Professional

I. INTRODUCTION

An Improved healthcare in this 21st century is our greatest desires for our Nation, Communities, families, Neighbors, Patients, and everyone all over the Globe. It involves the personal quality of life, happiness and stability inside the communities, profitability for industry, security for countries, and expert satisfaction for healthcare specialists. Enhancing and maintaining health isn't a unique notion. We definitely aware of where and how we miss the mark in guaranteeing health. We likewise know the possibility to enhance health develops daily as result of the consistent flow of advances in research.

Effective blend of care requires (as a base) that healthcare specialists share data with and about – patients at proper

focuses in the treatment process. This, regardless, might be possible if the vital infrastructural blueprints such as regional joint exertion, a clear and transparent incentive structure and shared patient records are set up. Accordingly, the blend of healthcare calls for interests in investments in supporting infrastructures, and it is progressively difficult to envision integrative activities without a strong information and communication technology component (Winthereik and Bansler, 2007).

However, enhancing wellbeing in our country requires fortifying four noteworthy domains of the health care framework. They includes: personal health management, public health, healthcare delivery, and health-related research. Numerous avoidable weaknesses in the health sector that produces poor quality are because of out of reach data, information, and knowledge. A national health information infrastructure (NHII) offers the data and knowledge management organization essential to rectify these shortcomings. Better health system and a Better health are within our reach (Biomed Central, 2003).

ICT stands for Information and Communications Technology (and is conventionally used as a European industrial classification). The ICT infrastructure is a general name used to depict all computer software and interchanges hardware used to oversee administrative, and organization tasks in affiliations.

When describing Information technology infrastructure, according to (Simon, 1996; Laan, 2001)., it is characterized extensively as an arrangement of information development components that are the establishment of an IT service; regularly physical components such as computer , networking hardware and facilities, but also includes the various software and network components

To have a sound and undoubted knowledge of ICT infrastructure, you should have the capacity to demonstrate how much you comprehend: the basics (ie the nuts and bolts) of what computers are utilized for, how computers work and also apply in business, how PC security works and how to

force it properly, what sorts of hardware are utilized and for what reason, the type of networks that are utilized and for what reason, how to convey software across networks and for what reason(s) you would need to, what backup is and for what reason you'd use one, how inter and intranets work and are administered, you need to consider being able to purchase, being able to build, being able to install, being able to run and manage computer systems in associations, and in actuality, you need to comprehend how computers incorporate into an association's matter of fact, and how they are overseen.

Against this foundation, the study goes for investigating the impact information and communication technology has on clinical administration delivery among patients and healthcare-givers in Port Harcourt Metropolis (Willie, 2003).

Objectives of the Study

This research is aimed at investigating the impact ICT infrastructure has for healthcare professionals in effective healthcare delivery system. To find out the potential embedded in information technology to enhance the quality as well as the safety in health care. To ascertain if a strong ICT infrastructure can enable both patients and Doctors to be more educated and better equipped to take part in decision making and to do their treatment plan. To investigate if properly structured ICT also has ability to minimize some administrative expenses and weights.

II. MATERIALS AND METHODS

Research Design

Descriptive survey was used in the design of this investigation. A descriptive survey is stressed over ascertaining existing conditions, facts or snippets of data in the meantime of the investigation and presenting such facts as they are (Ogomaka, 1992). Similarly, Nwogu (1991) posits that, descriptive audits are those investigations which aim at gathering data and portraying in a precise manner, the features, characteristics and findings about a given population.

Area of Study

The study area is Port Harcourt Metropolis. Port Harcourt also referred to as (Ikwerre: Ígúócha; (Njoku, 2008; McCall, 2000; Okafor, 1973) Pidgin: *Po-ta-kot* (Hudgens, and Trillo, 2003). It is located in the Niger Delta and lies along the Bonny River. It is the capital and largest city of Rivers State, Nigeria. The Port Harcourt urban area as of 2016 has an estimated population of 1,865,000 occupants, up from 1,382,592 starting at 2006 (Demographia, 2016; Arizona-Ogwu, 2011).

Population of the Study

The target populations for this study are about 100 healthcare workers between the ages of 18 and above, and are working in healthcare institutions in Port Harcourt Metropolis.

Sampling Procedure

Purposive sampling technique which is a type of non-probability or biased sampling was used in this study. It has to do with the use of specific cases which has specific characteristics to be studied. The researcher also used stratified sampling technique, which entails dividing the target population into homogeneous sub-populations into Age, Marital status, Awareness level, Literate level (Educational Background), Income, est.

Sample Size

The sample size for this study is about 100 healthcare workers of 18 years and above.

Instrumentation

The instrument for data collection employed in this research is a questionnaire on the impact of ICT infrastructure as a veritable tool in healthcare delivery. The questionnaire were given to the respondents and retrieved immediately.

Validity of the Instrument

The instrument for data collection (Questionnaire) was validated by Egba N. Ifeanyichukwu, the Head of ICT Department, Rivers State College of Health Science and Technology, Port Harcourt. Nigeria

Reliability of the Instrument

A pilot study was carried out using 10 healthcare workers in the area of study. The study was successful and proved the instrument reliable.

Method of Data Analysis

This study adopted the simple percentage method in the analysis of data. The respondents were divided into sub-groups as earlier stated and the percentage of those who said YES or NO was analyzed. Bar charts and pictographs were also used to analyze the data so collected.

III. RESULTS

Results Presentation and Analysis

Result of the Age Distribution of the Respondents

Table 1: Showing the Age Distribution of the Respondents

| S/N | Age Distribution | No of Respondents | Percentage (%) |
|-----|--------------------|-------------------|----------------|
| 1. | 20-30 years | 25 | 25% |
| 2. | 30-49 years | 45 | 45% |
| 3. | 50 years and above | 30 | 30% |
| | Total | 100 | 100% |

Table 1 showed that 25 respondents representing (25%) of the population were within the age 20-29 years, 45 (45%) were

within the age of 30-49 years where as 30 respondents, representing (30%) of the population were within the ages of 50 and above.

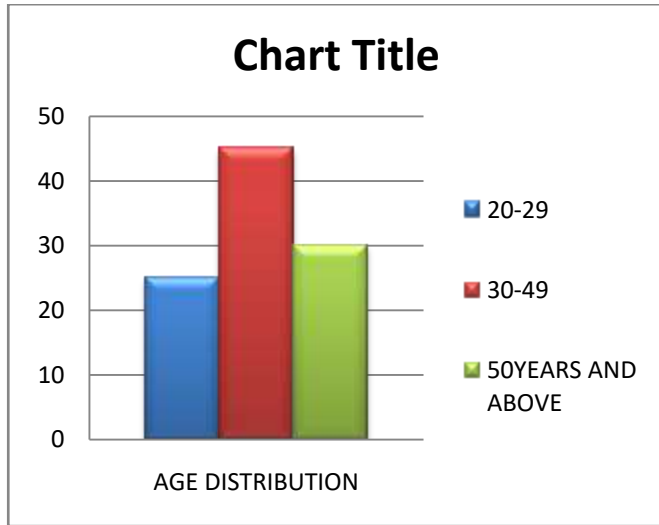


Figure 1: Age Distribution of the Respondents

Result of the Marital Status of the Respondents

Table 2: Showing the Marital Status of the Respondents

| S/N | Marital Status | No of Respondents | Percentage (%) |
|-----|----------------|-------------------|----------------|
| 1 | Single | 20 | 20% |
| 2 | Married | 50 | 50% |
| 3 | Divorced | 10 | 10% |
| 4 | Widow | 10 | 10% |
| | Total | 100 | 100% |

The result in table 4.2 showed that half of the population of the respondents were married 50 (50%), followed by 20 (20%) who were single; 10 respondents, representing (10%) were divorced and widows respectively.

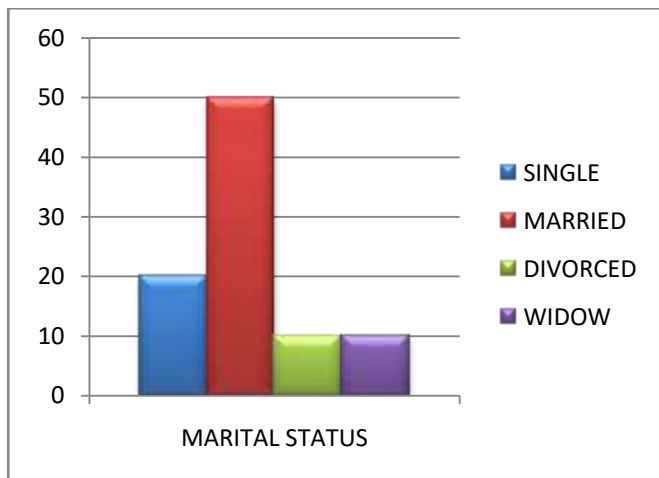


Figure 2: Graph of Marital Status of the Respondents

Result of the Educational Status of the Respondents

Table 3: Showing the Educational Status of the Respondents

| S/N | Educational Status | No of Respondents | Percentage (%) |
|-----|--------------------|-------------------|----------------|
| 1. | Primary | 0 | 0% |
| 2. | Secondary | 15 | 15% |
| 3. | Tertiary | 85 | 85% |
| | Total | 100 | 100% |

Table 3 showed that greater percentage of the respondents 85 (85%) had tertiary education, followed by those who had 20 (20%) secondary school education while none of the respondents had primary education.

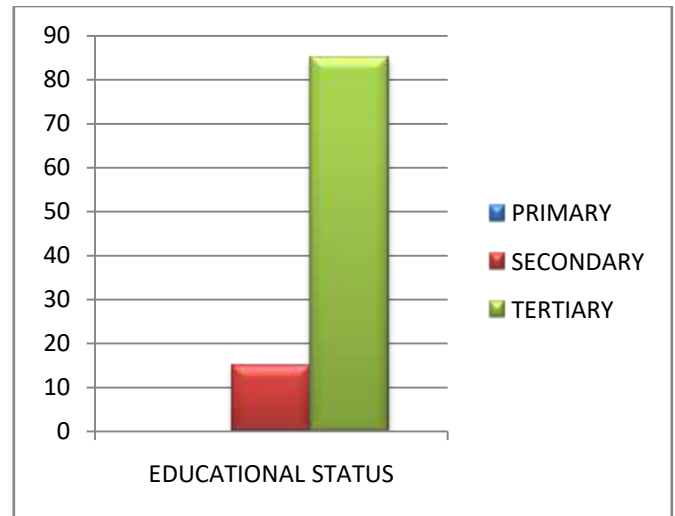


Figure 4: The Educational Status of the Respondents

Result of the Impact of ICT Infrastructure on Health Care Professionals

Table 4: Showing the Impact of ICT on Health Care Professionals

| S/N | Impact of ICT Infrastructure | Yes (%) | No (%) | Total (%) |
|-----|--|----------|----------|------------|
| 1. | Have you been trained in the use of ICT? | 40 (40%) | 60 (60%) | 100 (100%) |
| 2. | Do your hospital/clinic/ institution have the required infrastructure? | 50 (50%) | 50 (50%) | 100 (100%) |
| 3. | Do ICT infrastructures have the required potential to enhance the safety and quality of health care? | 80(80%) | 20 (20%) | 100 (100%) |
| 4. | Can a strong ICT infrastructure help doctors/patients be more educated and better arranged to take part in decision making and to do their treatment plan? | 95 (95%) | 5 (5%) | 100 (100%) |
| 5. | Does your establishment have properly structured ICT infrastructure? | 30 (30%) | 60 (60%) | 100 (100%) |
| 6. | Do appropriately structured ICT, and possibly also lessen some administrative expenses and burden? | 90 (90%) | 10 (10%) | 100 (100%) |

This table showed that (40) respondents representing 40% of the population have been trained in the use of ICT, 60 (60%) was not trained. 50 (50%) said yes to having the required infrastructure; 50 (50%) said no. 80 (80%) ICT infrastructures have the potential to improve the quality and safety of health care while 20 (20%) said no. 95 (95%) agreed to the fact that a strong and reliable ICT infrastructure can encourage patients and specialists to be more educated and better masterminded

to take part in decision making and to complete their treatment plan, whereas 5(5%) said no. 30 (30%) said that their establishment have properly structured ICT infrastructure, whereas 60 (60%) said no. 90 (90%) said really organized ICT additionally also can possibly decrease some administrative expenses and burden, whereas 10 (10%) of the respondents said no.

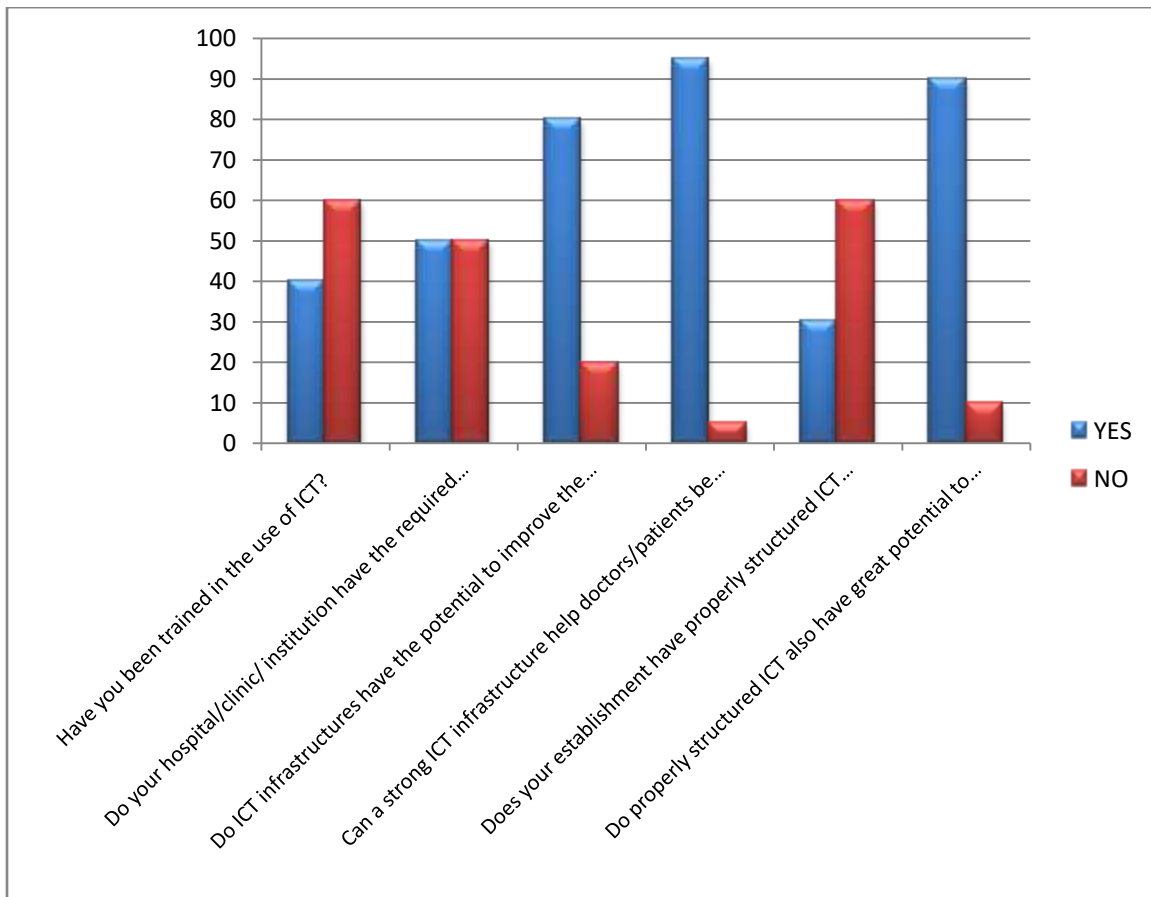


Figure 5: Graph of Impact of ICT Infrastructure on Healthcare Professionals

IV. DISCUSSION

The result as seen in table 4 of the study indicated that more than half of the population of health workers have not been trained in the use of ICT. This means that greater percentages of those working in health care institutions are not computer literate. It also showed that some of the healthcare institutions lack qualified and trained staff.

The workers were not provided with computers and other software for use in healthcare delivery. They do not have the required infrastructure as half the population as revealed in the study. This study does not tally with the findings by Taylor and Lee's (2005) study titled occupational therapists' use of

ICT in Western Australia which revealed that amongst the used ICT-enabled services, that personal computer and e-mail were the most frequently used.

The properly structured ICT infrastructure has the potential to improve quality of life and safety of the patients and personnel as well as reduce expenses of running hospitals. This is in agreement with the findings by Remlex in (2007) who found out that in health sector the cost of running hospitals is reduced with the use of ICT. This is to say that ICT infrastructure should be prioritized in healthcare delivery system.

The study also revealed that a strong and reliable ICT infrastructure can encourage patients and specialists to be more educated and better masterminded to take part in decision making and to complete their treatment plan, as well as have great potential to minimize some administrative expenses and weights. This study is in line with findings by Remlex in 2007 that, ICT enables the patients to easily find the healthcare facility and personnel, and gives both patients and specialists 24 hour access to health information and can help to keep patients' data confidential through password protection and encryption.

However, the healthcare institutions do not have properly structured ICT infrastructure as so many of them lack the basic equipment to operate to deliver quality health care to the populace.

V. RECOMMENDATIONS

The following recommendations shall be beneficial to the Government, healthcare professionals and other users of healthcare infrastructures:

1. The government should as a matter of urgency provide the required healthcare infrastructure by providing the needed medical equipments for effective healthcare delivery.
2. Other non-governmental organizations should as well partner with the health institutions in order to provide the required basic infrastructure,
3. Every staff in healthcare institutions should be trained in the use of ICT as well as provide them with personal computers and software.
4. To enable patients view their medical profiles online , make appointments with their Care givers, enroll into the National Health Insurance Scheme, renew their prescriptions, and so on, an ICT-centric national health plan is required in Nigeria.

VI. CONCLUSION

The study has shown that ICT infrastructure is a veritable tool in healthcare delivery system and a strong and properly structured ICT infrastructure is needed to enable patients to be kept abreast of their treatment regimens and for healthcare professionals to carry out their duties effectively.

E-health ICT applications include electronic health records, telemedicine, m-health (the use of mobile devices such as mobile phones for health purposes), decision-support systems, e-learning and e-journals, complex and networked medical equipment.

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