PERCEPTIONS OF KWARA STATE MEDICAL PERSONNEL ON THE INFLUENCE OF HEALTH INFORMATION SYSTEMS FOR HEALTH SECURITY AND MEDICAL RESEARCHES IN NIGERIA

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Abstract

*Health Information System (HIS) is very important to all aspects of human health management. It could assist in entering orders for medical tests, drugs, and other procedures thereby leading to reductions in transcription errors. When HIS is integrated into other clinical applications and researches, their impact on the safety of patients could be greater. This study therefore investigated the influence of HIS on health security and medical researches. Thus, data were gathered through a researchers-designed questionnaire titled "**Perceptions of Kwara State Medical Personnel on the influence of Health Information Systems for Health Security and Medical Researches in Nigeria"** administered on 150 (71 males and 79 females) health education sandwich undergraduates in the University of Ilorin, Ilorin, Nigeria. The instrument was validated by experts in Information and Communication Technology and heath personnel. It was tested for reliability using Pearson's product moment correlation co-efficient having 0.76 which showed that the instrument was reliable. Purposive sampling technique was used to select the subjects out of the target population .Two research questions and two hypotheses were answered and tested respectively. Frequency counts and percentage were used to answer the research questions, independent t-test statistic was used to test hypothesis one while Chi-square statistic was used to test hypotheses two. The findings revealed among others that: the influence of HIS on health security and medical researches was positive (t –cal=15.40 > t value of 1.65 at 0.05 level of significance.); there was a significant difference in the opinion of health workers as to the influence of HIS based on gender(X^2 –cal =48.80>X^2 t value of 28.41 at 0.05 level of significance) in favour of the females**.** Based on the findings, the following recommendations among others were made: There is need for the Internet and the World Wide Web to provide patients with unprecedented access to health information and make possible more continuous, communication between patients and their care providers. All data and information necessary to diagnose and prescribe treatment, as well as to analyze, control, and optimize the performance of drugs ,delivery system and subsystems must be improved upon. In conclusion, Health Information System is of paramount importance for a developing country like Nigeria and that future collaborators can extend the locale so as to make it wider.*

Key words: Health Information Systems, health security, medical personnel, medical researches

Introduction

Health Information Systems in health security and researches can be regarded as the use of information technology to accelerate the process of healthcare delivery. It has the potential to impact almost every aspect of the health sector. It also assists in bringing about more functionality in medical researches. Since all humans are concerned with health and connected with healthy living, HIS will bring about prompt attention if there are issues. In order to improve on health security and medical researches, HIS could be introduced more to health sectors in Nigeria for it to compete favorably with its counterparts in the developing world. In the 21st century, technology, without doubt has become a necessity to good living, citizenship, health, research, agriculture, homemaking and leisure. Thus, for ICT to have the expected impact, it must be well integrated into the health sector through HIS. The following are considered in relation to HIS;

Impact of HIS on health care

The first application of ICT in health care was hospital information systems (HIS) in the United States (Shortliffe and Blois, 2001) while Italy is the cradle of telemedicine. ICT has brought remarkable achievements to medical diagnostics. ICT from where HIS stemmed has an impact on many aspects of

health Security. The most important are: accessibility to health care by citizens, its economy, safety, diagnosis, quality of care , education and a host of others. ICT application in health is described as electronic Health (e-Health), which includes telemedicine (Health Care for All'. Declaration on 'Health care for all'. (Antwerp; 2001, http://www.itg.be/hca/), electronic medical records, and health information systems with decision support, mobile health and eLearning tools (Shiferaw and Zolfo 2012). e-Health has shown potential in facilitating a better health care delivery system, leading to better health and universal health coverage (Sweeny, K. (2002)[4] . e-health is created so that several factors such as internal and external health care market, employment, innovation and research can be identified and treated properly.

HIS (e-Health) is also referred to as consumer informatics .It is based on communications to patients and the public about health topics. There are 25,000 – 30,000 health-oriented websites and they are among the most visited (Detmer, 2001). In these website consumers and/or patients share their experiences with their doctor's diagnosis and advice for other patients with similar symptoms to understand the gravity of their problem and to feel free to visit their physician without any panic.

Medical / Clinical Informatics relates directly to health care structure, processes and outcomes. A main application is computer-based medical records, a sub category of which is computer-based personal records that will facilitate access to low cost therapies (Detmer, 2001). Another sub-category is computer-based patient records that will facilitate clinical decision-making. These records may be linked to knowledge-oriented systems that may contribute to quality control of clinical processes. Such a decision support has been demonstrated to have improved outcomes (Detmer, 2001).

Telemedicine- This is a branch of medical care in which, doctors and patients can interact with each other over video conferences and doctors can gauge the condition of the patient in a much better manner than just consulting on a telephone. This innovative technology allows specialists from different parts of the world to look at patients who live across various countries (Rudowski nd). ICT through HIS also provides a better platform for policy makers, members of the government, medical care providers and public authorities to interact with each other and improve medical care in the country. (Shiferaw and Zolfo 2012).

Figure 1: TelemedETH' telemedicine software developed for use in Ethiopia (Shiferaw and Zolfo 2012).

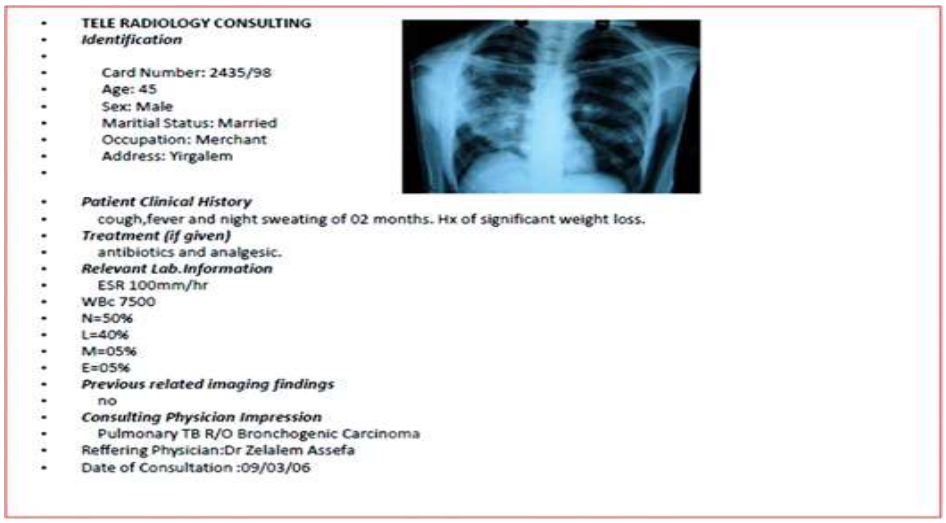

Figure 2: Example of telemedicine clinical data. (Shiferaw and Zolfo 2012).

Through HIS, data can easily be transmitted from one place to another within a limited time. Doctors get better access to patient information even if they live even in different states . They also get a faster access to medical records, case studies and laboratory results. Patients can also largely benefit in becoming more self- reliant and responsible for their health. Patients who are suffering from chronic and serious ailments such as heart conditions can regularly monitor their health parameters and transfer the results to doctors on a regular basis which helps so that the doctor is never out of touch with such patients .This in essence shows that HIS allow patients and doctors get on with their lives without the patients having to visit the doctor often but still keeping track of the latest developments in patients' health.

Impacts of HIS in pharmaceutical industries and drug researches

Pharmaceutical industry is the industry that is enjoying big benefits of ICT. Applications of ICT in pharmaceutical industry include use of HIS in drug discovery and design; new and more targeted marketing and modes of distribution; greater use of e-commerce and healthcare system supply chain management; increasing opportunities to capture and process information collected in pre-clinical and clinical trials and subsequent drug usage, and to make use of that information in future drug design and development (Houghton, 2002).

Impacts of HIS in Marketing and distribution

Online detailing, which allows companies to share medical information and stay in touch with doctors between sales visits is one area of opportunity (Guy and Gartenmann 2001). Online detailing ('cyber-detailing') could let companies not only answer queries from physicians in real time and provide drug information on demand, but also gather data on doctors' behaviours and concerns (Chin, 2001). The pharmaceutical company sales force could use the information to segment physicians and customize messages during their sales visits.

Additionally, online detailing could expand the reach of current marketing by giving companies the ability to contact remote physicians electronically and promote lower margin drugs more economically (Guy and Gartenmann,2001) .This study therefore investigated the influence of HIS on health security and medical researches (patients' diagnoses, current medications, history of drug interactions or allergies and medical researches) that can significantly reduce prescribing errors.

Purpose of the Study

The main purpose of this study was to find out Perceptions of Kwara State Medical Personnel on the influence of Health Information systems for Health Security in Nigeria
Specifically, it investigated;

1. Perceptions of medical personnel on the influence of HIS on health security and medical research.

2. Differences in the perceptions of male and female medical personnel on the influence of HIS on health security and medical research in Ilorin, Kwara State

Research Questions

The following research questions were answered in the study

1. What is the perception of medical personnel on the influence of HIS on health security and medical research in Ilorin Kwara State Nigeria?

2. Is there any difference in the perceptions of male and female medical personnel on the influence of HIS on health security and medical research in Ilorin, Kwara State?

Hypotheses

The following hypotheses were tested in the study

H_{o1}: There is no significant difference in the perceptions of medical personnel on the influence of HIS on health security and medical researches.

H_{o2}: There is no significant difference in the perceptions of medical personnel on the influence of HIS on health security based on gender.

Scope of the Study

The study covered 150 health workers comprising 71 males and 79 females from various hospitals and health offices in Ilorin, Kwara state. The study was restricted to their perception on the influence of HIS on health security.

Methodology

Sample and sampling techniques

The study adopted the survey research method as it is a very useful tool for studying large populations. The total population of the study is 800 health workers in Ilorin, Kwara state that were from different health institutions. Using Israel's model of determining sample size(2003), 163 health workers were purposively selected from the target population(+/-7%) but 150 of them returned the copies of the questionnaire. **T**he instrument for the study was researchers'- designed questionnaire titled Perceptions of Kwara State Medical Personnel on the influence of Health Information systems for Health Security in Nigeria". The questionnaire comprised two (2) sections; Section A and B. Section A focused on demographic information of students. Section B consisted of 20 items using the Likert Scale response modes: Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD). The respondents were to tick (☐) the appropriate column on the questionnaire. The questionnaire was tested for reliability using Pearson's product moment correlation co-efficient .The reliability value was 0.76 which showed that the instrument was reliable. The data collected and collated after administration was analyzed and interpreted using percentage for the research questions, t-test and chi-square for the research hypotheses.

Data Analysis and Results

This section presents the analysis and interpretation of data obtained during the course of this study. Data obtained in respect to research questions were analyzed using percentage. Chi-square and t-test were used for the hypotheses.

Research Questions one and two were answered using the two corresponding hypotheses

Research Question 1

What is the perception of Kwara State medical personnel on influence of Health Information Systems for health security and medical researches in Nigeria?.

Research Question 2

Is there any difference in the perception of medical personnel on the influence of HIS on health security and medical researches based on gender?

Table 1: Demography of the sample for the study

	Frequency	Percentage
Male	71	47.3
Female	79	52.7

From the Table, it is revealed that 71 males (47.3%) ,79 females(79%) were involved in the study .

Hypotheses Testing

The following hypotheses were tested in the study

H_{01}**:** There is no significant difference in the perceptions of medical personnel on the influence of HIS on health security and medical researches.

H_{02}: There is no significant difference in the perceptions of medical personnel on the influence of HIS on health security and medical researches based on gender.

Table 2 : Significant difference in the Perception of Kwara State Medical Personnel on the Influence of HIS on Health Security .

	N	Mean	Std. Deviation	t	df	Sig. t val.
Influence of ICT on Health Security	150	33.7867	26.86496	15.403	149	.000 1.65

From the table, it was revealed that t –cal=15.40 > t value of 1.65 at 0.05 level of significance.); this implies that, t- calculated is greater than the table value at 0.05 level of significance which signifies that the hypothesis is rejected. Hence there is a significant difference in the perceptions of medical personnel on the influence of HIS on health security and medical researches.

Hypothesis 2

Table 3: Chi-square analysis on the influence of ICT on health security and medical research

GENDER	OBSERVED	EXPECTED	**X^2 CAL. VALUE**	**DF**	**X^2 TAB. VALUE**	**DECISION**
Male	71	75	48.800[a]		**28.41**	
Female	79					Ho_1 REJECTED

There was also a significant difference in the opinion of health workers as to the influence of ICT based on gender**(X^2 –cal =48.80>X^2 t value of 28.41 at 0.05 level of significant)** in favor of the females

From the table ,Chi-square calculated value is greater than the table value at 0.05 level of significance i.e. $X_c^2 > X_t^2$ which signifies that the hypothesis is rejected. Hence there was a significant difference in the perceptions of male and female medical personnel.

Summary of Major Findings

The following are the major findings:

1. There is a significant difference in the perceptions of medical personnel on the influence of HIS on health security.

2. There was also a significant difference in the opinion of medical personnel as to the influence of HIS based on gender in favour of the females

This in essence implies that HIS has not been fully considered in Nigeria though the respondents believed that it would be of tremendous values for the country.

HIS, if adequately integrated into the health sector will secure lives better than when it was not integrated and that there would be a lot of security breakthroughs in health related researches.

Strengths and Limitations of the Study

The study is an eye-opener to the security aspect of health of individuals.

It aroused interest in the respondents involved in the study.

It gingered awareness of relevance of HIS to security of lives which could have otherwise been terminated ignorantly.

These strengths notwithstanding, the study was limited in scope and can be extended to include all other health personnel in other states of Nigeria.

The study did not include patients who could have revealed whether HIS has been integrated into diagnoses and treatments

Collaborators could have been more than the number involved

More clinical researchers can be co-opted in subsequent researches

Conclusions

The following conclusions are made:

HIS can be employed in various ways to bring about improvement in health sector.

HIS, if adequately considered in health security, new grounds of health security would be broken because there will be early detection of infectious disease outbreaks around the country. There is also an indication that diseases will be detected on time, there will be improved tracking of chronic disease management.

Information and information exchange are very important to health security at all levels of the health care delivery system—the patients, the care team, the health care organization, and the encompassing political-economic environment. HIS will also bring about prompt diagnosis and effective treatment of individual patients .Both male and female medical personnel must take issues bothering on HIS and health security very important which will eventually assist in relevant healthcare provision

Implications of the Study

The implication of this study is that HIS is very important in ensuring security of lives and in arresting health cases that could have caused severe damage or death in some patients and improving researches in these areas.

It also implies that that there is need to intimate health personnel with the global trend in heath security and reaches in order to avoid sudden death and build up success in researches.

Recommendations

Based on the findings, the following recommendations are made:

There is need for the Internet and the World Wide Web to provide personnel with relevant information that can help to improve research, and provide patients with unprecedented access to health information and make possible more continuous communication between patients and their care providers.

Moreover all of the data and information necessary to diagnose and prescribe treatment, as well as to analyze, control, and optimize the performance of drugs, the delivery system and sub-systems must also be automated.

Male and female medical personnel should be more encouraged to see HIS as having positive influence on health security, medical researches and improving provision of adequate healthcare.

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