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Perceptions of electronic health record system (EHRs) among nurses at Sir Muhammad Sanusi Specialist Hospital Kano, Nigeria

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ABSTRACT

Background/Objective: Electronic health record system is aimed at improving the delivery of healthcare and ensuring that care given to an individual by various healthcare providers from many different settings in their lifetime is maintained in a single electronic record and readily available. The study determined the perception of nurses toward electronic health record system in a secondary healthcare system in Kano. ***Methods/Design:*** The study deployed cross-sectional design using a structured questionnaire. ***Result:*** The result shows that participants have positive attitude (63.6%) toward EHRs, but 56% still felt EHRs might not be fully accepted by all healthcare providers and that the switch to EHRs at all levels of healthcare setting is not feasible by year 2020 (80%). In addition, a good number (55%) was of the opinion that full transfer of current paper-based documents is impossible. ***Conclusion:*** Kano State healthcare system is enriched with nurses, who are quite abreast of EHRs and health IT and are willing to embrace the technology in their workflow. This may therefore indicate unlikely resistance to the emerging technologies though with some reservations. The study therefore recommends the deployment of electronic health records in the hospital and other health facilities.

Keywords: Perception, Utilization, Electronic Health Record, Nurses, Secondary Healthcare, Nigeria .

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INTRODUCTION

Electronic health record system (EHR) is a type of health information technology involving a systematic collection of electronic health information about individual patients or populations. It is a record in digital format that is theoretically capable of being shared across different healthcare settings[1]. Electronic health record was described by World Health Organization as a record, which includes all information contained in a traditional health record including a patient's health profile, behavioural and environmental information[2]. The content of the electronic health record also includes the dimension of time, which allows for the inclusion of information across multiple episodes and providers, and will ultimately evolve into a lifetime record. The World Health Organization's declaration of Health for all by the Year 2000 highlighted the need for better healthcare services, not only at the hospital (secondary) level, but also for primary healthcare and community health services. This has required a change of focus in healthcare in many areas to ensure, if possible, that the implementation of an electronic health record covers healthcare delivery services across a broad spectrum of healthcare[2]. The technology (EHR) is aimed at improving the delivery of healthcare and ensuring that care given to an individual by various healthcare providers from many different settings in their lifetime is maintained in a single record and readily available. Most European and Asian countries have adopted this concept[2]. Promoting the development of a longitudinal Electronic Document and Record Management System in many African countries is at its first phase of implementation and to some districts, at zero phase[2].

A study established that electronic medical records improve overall efficiency by 6% per year, and the monthly cost of EHRs may (depending on the cost of

the EHRs) be offset by the cost of only a few "unnecessary" tests or admissions[3]. The increased portability and accessibility of electronic medical records may however increase the ease with which they can be accessed and stolen by unauthorized persons[4,5]. Concerns over security contribute to the resistance shown to their widespread adoption. In addition, data from an electronic system can be used anonymously for statistical reporting in matters such as quality improvement, resource management and public health communicable disease surveillance[6]. Electronic Digital and Record Management (EDRM) systems automatically monitor clinical events, by analyzing patient data from an electronic health record to predict, detect and potentially prevent adverse events[7]. This system (EDRM) alerts medical providers, when a patient with HIV/AIDS had not received care in over twelve months. This system greatly reduced the number of missed critical opportunities[7].

The patients' health records are normally stored on a paper, which can either be misplaced or not accessible when visiting another health center[8]. Electronic health record is a record in digital format that is theoretically capable of being shared across different healthcare settings. In some cases, this sharing can occur by way of network-connected, enterprise-wide information systems and other information networks or exchanges.

In general, Nigerian health sector has not fully utilized the benefits of ICT and can be seen as a backward development for a country that is adopting ICT in other sectors rapidly. Over the years, the Nigerian Government developed a 5- year Strategic plan on health and of the six building blocks of achieving the goals, health information system takes a strategic position[9]. One of the setbacks facing Nigeria's healthcare delivery is an inadequate health information system for monitoring and analysis of health indicators[2]. The existing health information system in Nigeria, is characterized by extensive duplication of data collection, inadequate quality control measures; the absence of a strong central coordinating institutional framework and preponderance of disjointed paper-based health records system[8,9].

This traditional method of keeping the health records of patients comes with a lot of challenges. With a huge number of registered patients, there arises the need for a lot of physical space to be able to keep and store the paper-based health records. Since these systems rely on the handwriting of individual professionals within the hospital (e.g. physicians, nurses, health information management professionals, medical laboratory scientists etc.), there arises the problem of illegibility of writing, which can make it difficult to access information as and when needed[7]. In addition, resistance by some healthcare professionals and governmental agencies to a change generally from manual to electronic documentation may be a problem in developing countries. Most nurses are aware of its benefit, but still show some level of resistance because of lack of ICT literacy and the perceived hardship in using these emerging technologies[10]. Nurses and other healthcare professionals in public health facilities are not able or are struggling to render timely and effective health services to citizens due to a lack of effective health records management systems. This challenge usually leads to long patient waiting times before accessing care. This study therefroe sought to determine EHRs-literacy level of nurses at SMSSH Kano, and their readiness to embrace EHRs in their practice.

METHODS

Study setting

The study was carried out at Sir Muhammad Sanusi Specialist Hospital located at Yankaba area of Kano Metropolis and two affiliates in Gezawa and Minjibir districts, all in Kano State. The hospital was established by Kano State Government for the purpose of providing secondary health services to the populace and training facilities for medical interns, nursing and other health students. It has 11 departments, 5 medical and nursing specialties, 7 wards and it is a 150-bed capacity hospital. The study setting is a reference secondary hospital in Kano and one of the three multi-specialty hospitals in Kano State, committed to research and provision of quality healthcare to the public. The hospital has the potentials to serve as a standard and reference point for the adoption and practice of standardized electronic health records in the state. This informed its choice as our study site.

Study design

This is a cross-sectional study that determined the attitude and perceptions of nurses toward electronic health records in Nigeria.

Study population
All the 79 nurses, who work at Sir Muhammad Sanusi Specialist Hospital Kano, Nigeria were eligible to participate in the study.

Sample size
All the seventy nine eligible nurses, who as at the time of this study worked at Sir Muhammad Sanusi Specialist Hospital Kano, Nigeria.

Instrument for data collection
The instrument used was a structured questionnaire as designed by the investigator and reviewed by a senior colleague/researcher.

Method of data analysis
Raw data was first analyzed using Ms Excel 2013 version. Inspection of the coded data was done to ensure coding accuracy. The data was later transferred to SPSS version 19, which was used to perform further descriptive analysis, while Mean and chi square were computed.

Ethics considerations
The investigator sought for and obtained ethical clearance from the Health Research Ethics Committee of Sir Muhammad Sanusi Specialist Hopsital, Kano. The purpose and goals of the study was clearly explained to participants before questionnaire was administered. Information obtained from participants was treated as confidential to avoid identification.

RESULTS

ICT proficiency

Two-third (62.1%) of participants own personal computer, nearly half reported that they were fairly proficient (48.8%) and occasionally surf the Internet (48.5%). A few (15.2%) had undergone special training in EHRs.

Table 1: ICT literacy

	F	%
Possession PC		
Yes	41	62.1
No	25	37.9
Total	66	100
Proficiency		
Excellent	11	26.8
Moderate	10	24.4
Fair	20	48.8
Total	41	100
Internet use		
Always	32	48.5
Occasionally	26	39.4
Not at all	8	12.1
Total	66	100
EHRs training		
Yes	10	15.2
No	56	84.8
Total	66	100

Perceptions on EHRs
As shown on Table 2, 72.0% believed that EHRs will improve healthcare quality, 66.0% opined it will ensure confidentiality of patient's health records and 80.0% argued against the feasibility of perfect migration from paper-based to EHRs in Nigeria by year 2020.

DISCUSSION
Many researchers on health information technology basically focus on IT design, implementations and perception of healthcare professionals in tertiary facilities, but perhaps not on perceptions of nurses in secondary care facilities[9,5,11,12]. In line with this, this current study focuses on perceptions of nurses toward full adoption EHRs. The study shows that nurses believe that EHRs will facilitate easy retrieval of patient health records and information, that EHRs will improve quality of healthcare delivery and that full adoption of EHRs may somewhat be possible in

Nigeria. Some (56%) however opined that EHRs will not be duly accepted by healthcare professionals. These are in concordance with the findings from earlier studies[13,9,4].

The study shows that only 15% have received formal EHRs training essentially during training in their college days. A good number proclaimed using their PCs for educational purposes (87%), while 13% basically dive into the social media.

Table 2: Perceptions on EHRs

	Agreed %	Disagreed%
Paperless health record is possible in Nigeria	74	26
EHRs will improve the quality of healthcare delivery	72	28
EHRs will facilitate easy retrieval of patient information	76	24
EHRs will ease communication amongst healthcare professionals	55	45
EHRs will ensure confidentiality	66	34
EHRs will be accepted by all health care professionals	44	56
Switch from paper to electronic health record can be feasible by year 2020	20	80
Electronic health record is more efficient than paper based record	74	26
EHRs provide long storage time than paper based record	74	26
EHRs can be adopted by the three healthcare levels	35	65
All previous paper based record can be transferred into electronic format	55	45

The level of congruity to the proposed feasibility of EHRs by 2020 is low in spite of the fact that its adoption at every level of care was contended. This study found that there was no significant relationship between perception of nurses and implementation of electronic health record. In other words, the implementation of standardized electronic health records system in secondary healthcare settings was not dependent on the perception of nurses. This implies that in spite of the high percentage of participants, who had positive perception and optimism about EHRs, the government is still reluctant on implementation.

Study limitations

The setting was purposely selected to serve as an index centre for EHRs implementations but, future researchers are advised to use more than one setting for this kind of research.

Conclusion

Nurses at Sir Muhammad Sanusi Specialist Hospital, Kano were quite abreast of the perceived benefits of EHRs and are willing to embrace it, when it finally comes. As it is common to most Nigerian secondary health facilities, nurses in this hospital have poor preparation as against their willingness toward EHRs. The nurses as well as other healthcare providers need to be encouraged by the Government through the provision of ICT facilities and implementations of EHRs. There is also need for nationwide advocacy on the importance of EHRs to effective healthcare delivery and continuing professional as well as ICT education among healthcare providers.

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.**Authors Contribution:**
MAM conceived of the study, initiated its design, participated in literature search, data collection, analysis and coordination and drafted the manuscript.