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Organizational bottlenecks, health data management and electronic medical records adoption in Nigeria

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ABSTRACT

Background/Objectives: Electronic medical records (EMR) are essential in healthcare delivery in the 21st century. The adoption of EMR in healthcare delivery in advance nation have seen the light of the day thus having improved healthcare service delivery. In Nigeria, efforts are made by the professional body of Health Information Management professionals (AHRIMPN) and the regulatory agency of the Federal Government (HRORBN) to establish a uniform EMR. This move is still struggling to thrive with most healthcare facility having EMR put in place. ***Methods/Design:*** A scoping review of relevant literature on impacts of organization bottlenecks on EMR and health data management. ***Results:*** Although, efforts are put in place by most tertiary hospitals owned by government and private individuals to migrate from paper-based records to EMR, but there are setbacks not permitting the full implementation. Electronic medical records are expected to facilitate the service delivery of clinicians and HIM professionals in Nigeria, but it is quite discouraging that most healthcare providers find it difficult to adopt fully, this new advancement in the profession. The resistance to adoption of EMR could be due to lack of technical know-how, lack of orientation and training, lack of installed network connectivity, lack of adequate training and poor financial support by the funding organizations. It is expected that quality healthcare data that is well managed in digital form will enhance patients' treatment and advance EMR adoption in Nigeria. Also, organizational bottlenecks, which are the obstacles encountered in the organizations, when addressed especially in the aspect of management supports in funding, infrastructure and training of manpower can help advance EMR adoption in the three tiers of healthcare facilities in Nigeria. ***Conclusion:*** The full adoption of EMR in Nigeria will help improve healthcare delivery to patients especially in the continuity of care, saving patients treatment cost by avoiding duplication of test that could have resulted in multiple expenses, establishing relationship between physicians within and outside of the healthcare facility. Hospital management in public and private sectors should therefore provide adequate funding, regular manpower training, ensure measures installed to monitor the functionality of the EHR software adopted. Also, provision of internet connectivity, adequate power supply and employment of software engineers and skilled health information management professionals to promote the adoption and sustainability of EHR in Nigeria.

Keywords: Electronic medical records, Electronic health records, Health data management, Organizational bottlenecks, Health outcome.

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INTRODUCTION

Electronic medical record (EMR) is the adoption of information technology and appropriate software application in the documentation of patients' health records by the healthcare providers. It is the process of migrating from the paper-based patients' health records under the custody of healthcare facility into electronic format for easy retrieval, for continuity of care and effective statistical report by the healthcare facility. Electronic medical records are the electronic version of patients' health history, treatment and care process that is preserved by health information managers in any healthcare settings. There are other details that can be identified in patients' health records to be administrative and clinical data relevant for care under a particular provider, demographics, progress notes, medications, vital signs, past medical history, immunizations, laboratory data and radiology reports[1]. The hazard associated with paper-based records especially when it comes to illegibility of handwriting, medical error, duplication of test, cost of paper and disaster associated with storage space has given rise to the need to adopt electronic medical records especially in Nigeria. Despite the awareness of the

benefits associated with EMR, most hospitals especially government owned in the primary and secondary healthcare have not adopted EMR in the healthcare delivery to patients, while few tertiary hospitals have their patients database only.

The adoption of EMR fully in Nigeria is in its creeping stage with many of the tertiary hospitals attempting it in some departments or units and not fully adopting it in the whole hospital departments. Those, who have migrated do not have data security plan and back-up plan for unforeseen circumstances that have resulted in some healthcare facilities going back and forth in fully adopting the system. Once the system has issues, they return to paper-based health records therefore returning to square one.

Benefits of EMR

There are many benefits associated with the judicious use of EMR. Some of them are saving the physician and patients time, improve patients safety, improve health outcome and increase efficiency[2]. Although, EMR did not increase the overall patients outcome and quality of care, it was associated with a reduction of inpatient mortality, readmission and safety[3]. In addition, electronic health records (EHRs) contributes to the healthcare of a nation because one healthcare facility in another geographical location can be accessed without restriction in another location thus making patients continuity of care a reality. This implies that anywhere in the country you reside as long as the nation as adopted EMR/EHRs, where one can have access to healthcare without going through the rigors of carrying out the same procedure afresh. When the hospitals within a particular nation is well established and adopted EMR/EHRs, healthcare service delivery becomes affordable to all.

The system EMR provides enormous benefits such as reduction in medication error, adverse drug reaction and to improve compliance with practice and guidelines among healthcare professionals[4]. The adoption of EMR prevents the duplication of tests and procedures thus, reducing healthcare cost and improve the quality of healthcare and patient outcome that can inform effective and efficient decision making by the physicians for proper handling of each patients' case for continuity. Patients saves lots of time and are sure to return for medical follow-up, because once they know that when they visit the hospital for care and treatment, they are attended to promptly they will return for follow-up and check-up as expected, which will increase the life expectancy of a nation. It is only with EMR, patients can be attended to promptly, enjoy fulfillment and the physicians will experience job satisfaction as well as the patients.

METHODS

A narrative review of literature relating to organizational bottlenecks slowing down full adoption of EMR in Nigeria.

RESULTS & DISCUSSION

Consideration of EMR in Nigeria

Before embarking on EMR in the different tier of healthcare settings in Nigeria, the hospital management should be considerate and sensitive in communicating the need for change to their workers ahead of time for the new adoption EMR in Nigeria in order to avoid resistance. The art of communicating the plans of the nation to adopt EMR ahead of time will prepare the mind of the workers to accept the change as a new normal and reality. The hospital management should make adequate time available for orientation and training to all staff to avoid resistance of the workers to change. The sensitization is to prepare the workers mind to receive the new work system with commitment and compliance with the best practice in the health sector at heart. Providing adequate financial support by the hospital management to ensure EMR implementation is very germane since the fund received is what will be used to acquire computer systems, scanner and other gadgets. Also, to install internet in the hospital and ensure regular power supply with other required infrastructure that reveals the readiness of the hospital management of their level of commitment to the implementation of EMR and ensure that workers key into the vision early.

Adoption of EMR in Nigeria

There are positive evidences of the adoption of EMR seen in the Northwest region of Nigeria although, poor knowledge was prevalent among the health workers especially among physicians[5]. A study showed that EMR has not been widely adopted in Sub-Saharan Africa in which Nigeria is not exempted[6]. In Nigeria, there are few tertiary hospitals owned by government that have adopted EMR fully. Some few private teaching hospitals have adopted EMR, but not fully. Some private hospitals have fully adopted EMR and is still in use till date, not mixing paper-based health records with EMR. One of the foremost hospitals owned by the government of Kogi State, Nigeria that has adopted EMR fully is

the Kogi State Specialist Hospital[2]. This shows that as much as government can fully adopt EMR in a state in Nigeria every state in the country should be encouraged to fully migrate to EMR.

In recent times, hospitals in all tiers are adopting EMR, but not in all the states in the federation. Yet, there are few, who have established the EMR in the aspect of billing of the patients, while other departments of the hospital is not having the impact, thus not being considered as fully adopted. As HIM professionals in the 21st century, we need to work hand-in-hand with the support of the government of each state, the commissioner for health and minister of health to develop a sustainable EMR software that will advance Nigeria health sector from paper-based healthcare economy to EMR nation. The government in collaboration with healthcare software developer should provide standard software durable that can stand the test of time before adoption. The adoption of EMR require large financial investment to migrate from paper to EHR therefore every stakeholder should be carried along because it is in unity there can be greater accomplishment.

Threats identified in the adoption of EMR

Threats identified by a study were as follows: Threat to patients' privacy, poor internet, information overload, power outage, incomplete and in accurate information is some of the militating factors to adopting EMR generally[2]. Some physicians in attempt to adopt EMR found it difficult to record certain types of information such as emerging diagnoses or vague symptoms especially for potentially sensitive and stigmatizing diagnoses[7].

Poor technical know-how, which could be as a result of some medical staff might not being technological literate and abreast of new technology in their profession poses a greater threat to the adoption of EMR. Expensive maintenance of software and infrastructure required in the adoption of EMR is one of the mitigating forces in the adoption of EMR. Resistance to change by healthcare providers is another factor affecting the adoption. Fear of data security and infringement into patients' health records by hackers could be one of the major threats of health professionals' unwillingness to migrate fully to the use of EMR. Health workers' apprehensions of losing their job, when all records will be digitized as such rendering those technologically abreast at advantage over techno-phobia workers thus, making adopting EMR difficult in some situations.

Threat of inconsistency by the hospital management in the sense that they want to adopt EMR, but there are some sort of inconsistency result in the use of paper and EMR without having to use it fully. In this situation, returning to paper health records are possible at any slight crash in the system, which is not encouraging. When there is no backup of patients' health records in the hospital, this pose greater threat to adopting EMR as such before embarking on EMR, there is need to conduct several pretest and ensure the readiness of the technology acceptance by workers in the healthcare profession. As HIM professionals in the 21st century, you should be willing to unlearned old ideas not applicable in this age with novel idea that will enhance your healthcare service delivery.

Organizational Bottlenecks

Organizational bottlenecks in the hospitals are the limiting or mitigating factors that could hinder the acceptance and adoption of EMR, which when fully resolved can help lifetime issues in the health sector. Some of the identified bottlenecks identified in the healthcare settings could be inability to key into the adoption of EMR by the management, which could be as a result of the not willing or being intention about the change to electronic medical records. Change is the only thing, which is constant as such there is a sort of resistance to change thus, making some hospital management, who are techno-phobia find it difficult to migrate to digital health. Also, support from the government in the aspect of finance and infrastructure is seen as a major bottleneck affecting the sustainability of EMR in any healthcare setting. Once there is no backing by the government especially in public healthcare institutions, there is little that can be done without adequate support by the parent organization. Organizational bottlenecks can result from lack of support by some workers, who are not IT literate. Such individuals would think that once the EMR is fully adopted and sustained, they can be rendered redundant as such lose their job, whereas EMR or computerization cannot thrive without human operators[8]. These categories will strife to ensure that efforts put in place to accomplish the process is not realized. The external factors like the manufacturers of papers and the suppliers of stationery to the hospital would also strive for the failure of EMR thus, it is important when decision to adopt EMR is made there should be no return

and there should be consistency and resilience regardless of the threat.

Health Data Management

Health data management is the management of the collection, storage and analysis of patient data. It can also be referred to as clinical data or health information management, which is the systematic organization of health data in digital form[9]. It can be regarded as the process of considering handwritten medical notes into a scanned digital repository. There are benefits associated with data management in the hospitals some of which are: To create a comprehensive view of patients, households and patients groups composite profiles that provide status and enable predictions. In addition, improve patient engagement by providing reminders to target patients and care suggestions relevant for their predicting modeling. With the availability of quality data that is well managed, there is improved health outcome, thus, tracking healthcare trends in certain areas among specific populations thereby, suggesting proactive measure to counter the rising health issues.

Health data management also is of benefit to enhance healthcare providers decision making process with the availability of quality data. Data quality probes detected errors, tracked the prevalence of these cases, monitored the EMR quality and give feedback to clinicians[10]. Health data management also allows physicians activity especially in the aspect of time spent in the treatment process to be analysed. Health data management is assessed based on the data quality, data security, data analysis and problem-solving qualities. As hospitals are planning to adopt fully EHR there is need to consider the quality of health data preserved to avoid errors that will result in litigation. The records preserved electronically for patient's care should be kept secured with encryption to avoid access by unauthorized individuals or third parties. It will also prevent exposure of patients health information on social media, when adequately pass-worded. The hospital is able to analyse data promptly without delay to provide monthly medical reports that will be used in decision-making. Overall, the quality data, when properly analyzed will provide evidence for decision making and proffer solution to the problem of data quality in healthcare.

CONCLUSION

The attitudes of the healthcare administrators and workers need to change and be intentional in ensuring that the electronic medical record works and is sustained in Nigeria once it is installed and set for use. Although, the adoption has not been sporadic, it is believed that as years goes by, the government of Nigeria would be able to adopt a standardized software in Nigeria hospitals that will support EMR in every tier of the healthcare facility. The software adopted should be maintained regularly with appropriate IT professionals to update the records and upgrade, when the system seems obsolete. The hospital management board should quality check of the health data, data security, data analysis and problem-solving qualities that will help in the adoption of EMR. Timely support from the hospital management without bottlenecks facilitates the adoption of EMR.

The government and the health management board of public hospitals as well as the private hospitals should be intentional in adopting EMR in their healthcare facility and ensure its sustainability by employing experts and professionals in the field of health information management and health informatics to manage the healthcare data of the hospitals. This implies that there should be joint efforts of all the stakeholders to be apt in the nitty-gritty of EMR in order to expedite the adoption. Getting the right set of manpower to function in a particular position will ensure quality of data, quality system and software application use with data security in case there is crash in the healthcare system.

The government in an attempt to fully adopt EMR should ensure adequate funding for regular update and upgrade, where necessary to facilitate interoperability with other departments within the healthcare units and outside of the healthcare units. Healthcare facility from the primary to the tertiary should be networked to enhance referral from one healthcare to the other.

Once the government fully adopt a unified healthcare system that will be adopted nationwide the cost of healthcare is reduced, because with the availability of a nation-wide EMR software the physicians can readily trace the health history of the patients, vital signs and previous treatment for prompt continuity of care to patient.

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Authors Contribution:

ORO conceived of the study, initiated the design, participated in literature search, data abstraction and collection, analysis and coordination. AIT, AHH and AA participated in the design, literature search, records retrieval, technical process, data abstraction, data analysis and coordination and reviewed the final manuscript.

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