

Challenges of Electronic Health Recording Implementation by Nurses in Babcock University Teaching Hospital, Ogun State

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Abstract

Traditionally, client data are handwritten in an unstructured paper format, in multiple versions. This process makes location, abstraction, and comparison of information terribly slow and difficult, thereby limiting the process of knowledge creation, sharing and development. Electronic health records (EHRs) are defined as an electronic version of a patient's medical history including key administrative clinical data relevant to that person's care and have emerged as promising tool to improve health care quality. This improves health care providers' ability to appropriately diagnose and treat their patients. The study investigated the challenges of electronic health recording implementation by nurses in Babcock University Teaching Hospital, Ogun State. This study was a cross sectional descriptive study. Data were manually collected and analyzed electronically with the use of SPSS computer software version 23. The results of this study showed that more than one-third 123 (84.2%) displayed good knowledge of electronic health record. Majority 75 (91.5%) displayed positive perception towards electronic health record. More than one-third of the respondents (86.3%) identified that training of the nurses about the technicalities of EHR usage is a major factor affecting adequate implementation of EHR. The study concluded that many nurses display good knowledge and perception towards electronic health record. They identified the need for training of nurses for improvement in adoption of electronic health record system in the hospital. It was recommended among others that Hospitals should improve implementation of electronic health record system over the conventional systems, especially the

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electronic documentation of patient record by nurses.

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Introduction

In the past few decades, the healthcare field has had an increasingly global technological advancement. One prime example of this is the Electronic Health Record (EHR). It is an essential platform that evolved rapidly over a short period of time to serve as a way to use and communicate health information (Garcia, 2020). It is used all around the world as a way to communicate health information across various health care professionals, track a patient's progress, and trend laboratory results to ultimately enhance patient outcomes through safety and quality of care (Garcia, 2020). Serving as a more secure and faster alternative to the traditional handwritten paper charts, the electronic health record is one of the most important advancements in technology with several positive, and some negative, outcomes (Garcia, 2020).

Electronic health records (EHRs) are defined as an electronic version of a patient's medical history including key administrative clinical data relevant to that person's care and have emerged as a promising tool to improve health care quality (Bjarnadottir, et al., 2017). Research indicates that EHRs can improve documentation, thereby increasing the accuracy and completeness of patient data. This improves health care providers' ability to appropriately diagnose and treat their patients. Furthermore, EHRs can facilitate timely and accurate patient risk assessments and quality measurements, allowing for more prompt intervention as needed. Finally, many EHRs include tools that support clinical judgment and decision making, as well as care coordination and health information exchange (Bowles, Dykes, & Demiris, 2016).

Traditionally, client data are handwritten in an unstructured paper format, in multiple versions. This process makes location, abstraction, and comparison of information very slow and difficult, thereby limiting the process of knowledge creation, sharing and development (Adedeji, et al., 2017). Moreover, prompt access to quality information by all stakeholders in the health care delivery system requires a structured and secured documentation mechanism for provision of quality patient care, which can be achieved with electronic health records (Adedeji, et al., 2017).

Globally, the adoption of EHRs has reached historical levels among developed countries. For example, based on the United States (US) definition and certification of EHRs, the utilization of 'basic' EHRs among non-federal acute-care U.S. hospitals has reached 83.8% in 2015 (US National Coordinator for Health Technology, 2016). Japan's rate of EHR utilization among hospitals has reached 34.2% in 2014 (Japan Ministry of Health, 2016), and South Korea has achieved 58.1% utilization in 2015 (Kim et al, 2017). In addition, developed countries experience challenges such as the cost of developing an EHR, the functionality of each system may differ from one another and this can contribute to time consumption, slow processing, and not being user friendly which hinders nurse-patient relationship (Haux, 2016).

However, in Africa, across regions, there are no data on the implementation of EHR, though, it is estimated to be less than 30%. There is a limited adoption of EHR in sub-Saharan African countries, despite the huge benefits arising from its usage. The study conducted by Akanbi, et al., (2017) on the use of EHR in sub-Saharan Africa showed that the use of EHRs is largely driven by HIV treatment international programs. Even with this programs, implementation of EHR is still very low (Pantuvo, Naguib, & Wickramasinghe, 2017).

As EHR is improving in acceptance through different nations with different model of adoption among health institutions, several challenges like resistance to the usage of EHR, poor knowledge on the use of EHR and other examples are being identified to be halting the adequate implementation of EHR especially among nurses (Bowles, Dykes, & Demiris, 2016).



According to WHO, (2016), there has been steady growth in the adoption of national EHR systems over the past 15 years and a 46% global increase in the past five years. In addition, more than 50% of upper-middle and high-income countries have adopted national EHR systems (Pantuvo, et al., 2017). However, this adoption rates are much lower in the lower-middle (35%) and low-income countries (15%) like Nigeria. The majority of member states with national EHR systems report integration of EHR systems in their laboratory (77%) and pharmacy (72%), followed by nursing systems (38%) which was poorly integrated. It has also been observed that the most frequently cited challenges to the implementation of EHRs were lack of funding (62%), infrastructure (48%), capacity and legal frameworks in wealthy countries (23%) (Pantuvo, et al., 2017). However, there are variable undocumented factors causing the delay in adoption and integration in Africa (Adedeji, et al., 2017).

Several factors had been documented in research literatures to have influenced the use of EHR among nurses. Some nurses were reported to have been resistant to using Information Technology (IT), while others lacked the required preparedness for effective application of health IT in nursing practice and documentation (Reese, 2017). Likewise, Kivuti-Bitok, (2019) concluded that nurses lack time and skills to access and review electronic evidence-based information. Meanwhile, poor implementation process, negative perception and lack of awareness of the immediate benefits were other reasons for sub-optimal or non- use of EHR (Adedeji, et al., 2017). Moreover, lack of informatics training, computer training, and technical support increases resistance to use (Hayrinen, et al., 2018). Hence, the study is assessing the challenges of electronic health recording implementation by nurses in Babcock University Teaching Hospital, Ogun State. The study specifically:

1. assessed the knowledge of electronic health record among nurses in Babcock University Teaching Hospital, Ogun State;
2. identified the perception of the nurses regarding the implementation of electronic health recording in Babcock University Teaching Hospital; and
3. examined the factors affecting the adequate implementation of electronic health recording among nurses in Babcock University Teaching Hospital.

Research Questions

The following research questions were raised for this study:

1. What is the knowledge of electronic health record among nurses in Babcock University Teaching Hospital, Ogun State?
2. What is the perception of the nurses regarding the implementation of electronic health recording in Babcock University Teaching Hospital?
3. What are the factors affecting the adequate implementation of electronic health recording among nurses in Babcock University Teaching Hospital?

Methodology

Descriptive research design was used to assess the challenges of electronic health recording implementation by nurses in hospitals in Babcock University Teaching Hospital, Ogun State. Babcock University Teaching Hospital is located at Ilishan, Ogun State, owned privately by the Seventh - day Adventist church in 1959. It is located in Ilishan Remo which is a town located within Irepodun district in Ikenne Local Government Area of Ogun State, South Western Nigeria. The target population were nurses currently practicing at the Babcock University Teaching Hospital. The estimated number of nurses in the hospital are 209 nurses. The sample size of 146 was selected using multistage sampling procedure.

Data collection was done using a self-structured questionnaire derived from literature reviewed in the study which will contain 4 sections. The instrument was validated by the

experts in Nursing Science for content validity. The instrument was also assessed for ambiguity to ensure that it measures exactly what it was supposed to measure. The internal consistency of the instrument was ensured by conducting a pilot study. The reliability coefficient value of 0.84 was gotten. Copies of the questionnaires were administered with the help of two trained research assistants within a period of one week. Descriptive and inferential statistics was used for analysis of data.

Results

Research Question 1: What is the knowledge of electronic health record among nurses in Babcock University Teaching Hospital, Ogun State?

Table 1: Knowledge of Electronic Health Record (N=146)

Variables	Yes (%)	No (%)
Monitor patient safety (e.g adverse drug effects)	118 (80.8)	28 (19.2)
Support a continuous quality improvement process	136 (93.2)	10 (6.8)
Create a dashboard of organizational performance	122 (83.6)	24 (16.4)
Create individual provider performance profiles	128 (87.7)	18 (12.3)
Generate reports to inform strategic planning	121 (82.9)	25 (17.1)
Create dashboard of unit-level performance	123 (84.2)	23 (15.8)
Identify high-risk patients for follow-up care using algorithm or other tools	124 (84.9)	22 (15.1)
Assess adherence to clinical practice guidelines	125 (85.6)	21 (14.4)
Identify gaps in care for specific patient populations	121 (82.9)	25 (17.1)
Create an approach h for clinicians to query the data	113 (77.4)	33 (22.6)
Improves the process of identifying disease association	112 (76.7)	34 (23.3)
All of the above	93 (63.7)	53 (36.3)

Table 1 above shows that regarding what electronic health record can be used for, majority 136 (93.2%) identified that it supports a continuous quality improvement process, however, a little above average of the respondents 63.7% knew that all the hospital can use electronic health record for all the identified processes.

Table 2: Knowledge scale summary

Value	Score	Frequency	Percent (%)
Mean score = 8.28±0.12	≥ 8	123	84.2
	< 8	23	15.8
Total		146	100.0

The knowledge scale summary above indicates the level of knowledge with a means score of 8.28±0.12. Respondents with score above the average (≥ 8) displayed good

knowledge. However, respondents with score below the average (< 8) displayed poor knowledge.

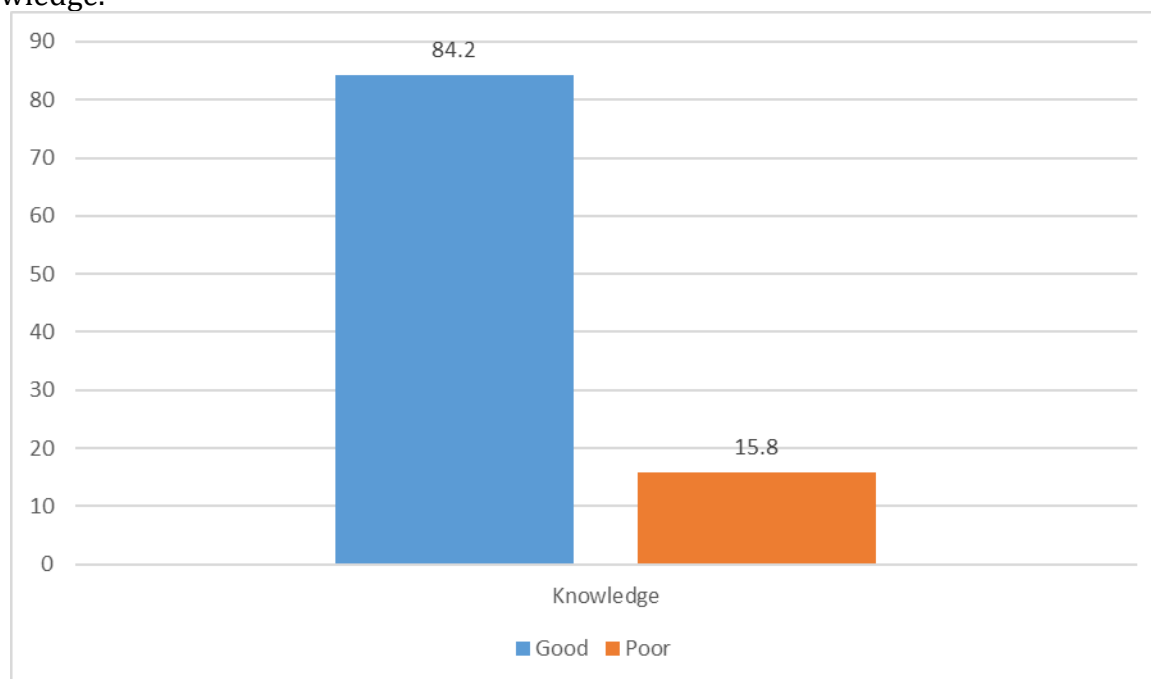


Figure i: Overall knowledge of electronic health record

Figure i shows that majority of the respondents 123 (84.2%) displayed good knowledge of electronic health record while 23 (15.8%) displayed poor knowledge of electronic health record.

Research Question 2: What is the perception of the nurses regarding the implementation of electronic health recording in Babcock University Teaching Hospital?

Table 3: Perception of Electronic Health Record (N=146)

Variables	Yes (%)	No (%)
It is easy to learn how to use an EHR	97 (66.4)	49 (33.6)
The EHR is easy to use	120 (82.2)	26 (17.8)
The EHR make it easy to request a test or record	133 (91.1)	13 (8.9)
The attitude of the nurse towards the use of the EHR will impact how the hospital will use it	129 (88.4)	17 (11.6)
The EHR will make patients be able to access their record at any time	125 (85.6)	21 (14.4)

Table 3 shows that regarding the perception of electronic health record, 97 (66.4%) believe it is easy to learn how to use EHR, 120 (82.2%) believe it is easy to use, 133 (91.1%) identified that EHR makes it easy to request a test or record, 129 (88.4%) identified that the attitude of the nurse towards the use of EHR will impact how the hospital will use it and 125(85.6%) identified that EHR will make patients be able to access their record at any time.

Table 4: Perception scale summary

Value	Score	Frequency	Percent (%)
Mean score = 2.98 ± 0.55	< 3	25	17.1
	≥ 3	121	82.9
Total		146	100.0

The self-reported practice scale summary above indicates the level of perception with a means score of 2.98 ± 0.55 . Respondents with score above the average (≥ 3) displayed positive perception. However, respondents with score below the average (< 3) displayed negative perception.

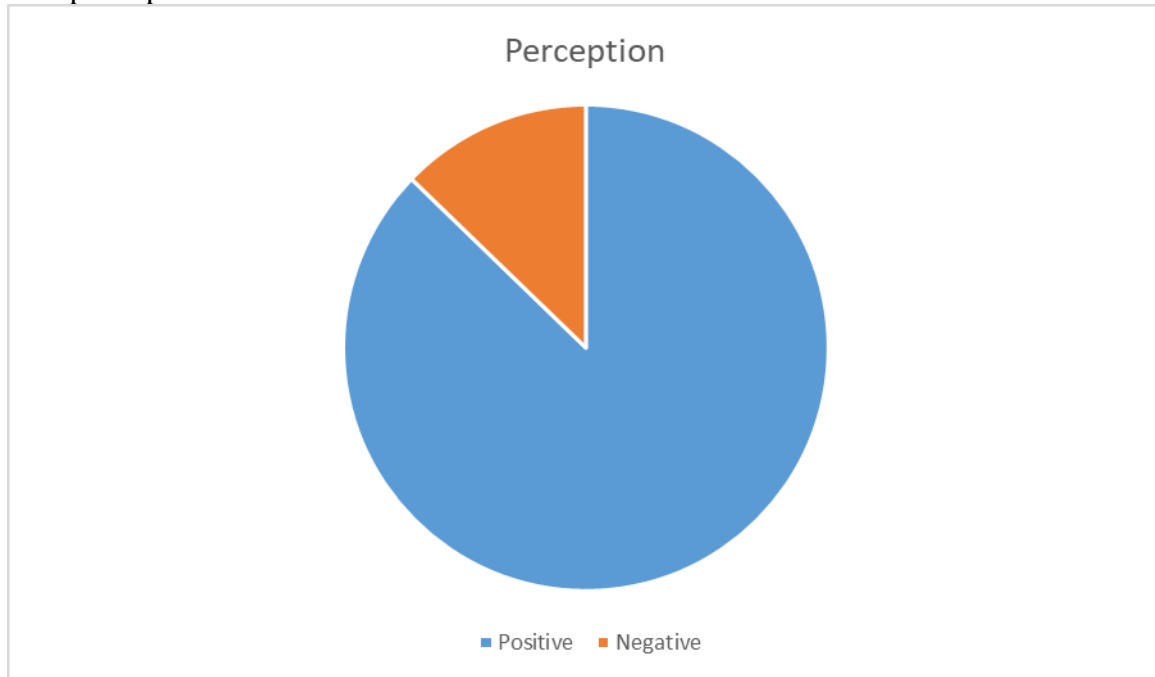
**Figure ii: Overall perception of electronic health record**

Figure ii shows that majority of the respondents 121 (82.9%) displayed positive perception towards electronic health record while 25 (17.1%) displayed negative perception of electronic health record.

Research Question 3: What are the factors affecting the adequate implementation of electronic health recording among nurses in Babcock University Teaching Hospital?

Table 5: Factors affecting adequate implementation of EHR (N=146)

Variables	Yes (%)	No (%)	Not sure (%)
Hospital training of the nurses about the technicalities of the EHR usage	126 (86.3)	10 (6.8)	10 (6.8)
Regular update of the EHR system based on nurses satisfaction	98 (67.1)	32 (21.9)	16 (11.0)
The attitude of the nurse towards usage of the EHR	116 (79.5)	22 (15.1)	8 (5.5)
Poor user experience when using the EHR application	123 (84.2)	14 (9.6)	9 (6.2)

Poor management of the system by the hospital administration like insufficient light	117 (80.1)	16 (11.0)	13 (8.9)
Inadequate remuneration or encouragement by the management to use the system	106 (72.6)	23 (15.8)	17 (11.6)

Table 5 above shows that majority of the respondents, 126(86.3%) identified that training of the nurses about the technicalities of EHR usage is a major factor affecting adequate implementation of EHR, minority 98(67.1%) identified that regular update of the EHR system based on nurses satisfaction is a factor.

Discussion

The result of this study shows that the respondents displayed good knowledge of electronic health record. This is similar with a study by Adedeji, et al., (2017), where most of the respondents displayed good knowledge of EHR. Similarly, Habibi-Koolae, et al., (2016), found out that the mean of computer skills, knowledge and attitude of nurses towards EHR was in tandem with that of the study under review, respectively, this result was found to associate with their knowledge and readiness for EHR use. In addition, Salameh, et al., (2019), identified that majority of the nurses understood the need for and accepted the computer-based documentation as demonstrated by their scores on the knowledge questionnaire, however, it was mentioned that the nurses were not being carried along through the implementation process. Awokola, et al., (2017), emphasized that the overall proficiency of the respondents was below average and just about one-third were sufficiently familiar with computer tools to perform advanced tasks for an EHR. It can be deduced that among the population with good knowledge of electronic health record, they are largely nurses with young population, just like the study under review, however, population with higher age range like the study of Awokola, et al., (2017) showed that the higher the age of the nurses, the lesser their knowledge of electronic health record. This is likely because the younger population have more knowledge of technology, its use and expectations as compared with the adult population of nurses thereby making them have the right knowledge, in addition, many hospitals have poorly utilized electronic health record in their nursing system, and most have focused only on the use in their financial, radiology or laboratories. This therefore makes the search for improvement in the aspect poorly sought for among more aged nurses who may perceive they do not have a need for learning.

The result of these study further shows that majority of the respondents displayed positive perception towards electronic health record while minority displayed negative perception of electronic health record. In contrast to a study by Garcia, (2020) where just a little below average of the nurses have a positive perception regarding electronic health record which was because they believe that although the EHR is a great tool that has all the accessible patient information that nurses need, nurses feel that they cannot rely on the pre-designated templates for care plans that the EHR provides. This implies that the EHR is not supporting the nursing process because it does not provide nurses a template for them to care for their individualized patient conditions and needs. Some other drawbacks of the EHR found in this study included how nurses felt that they spend more time on the EHR than they have with the original paper-based charting, indicating how the EHR is hindering them from being as efficient and productive with their time. A study by Habibi-Koolae, et al (2016), also found out that the perception of EHR among the respondents was more than average. However, almost all respondents in a study by Hoover, (2016), were observed to display poor perception of EHR and believe that this is a result of the poor knowledge base of their IT department. In contrast to this identified by Hoover (2016), the reason for the poor



perception is because of poor training from the hospital management about the technicalities and use of electronic health record, this shows the need for hospitals to take a bigger responsibility in the utilization of the electronic health record among the nurses, though the financial challenge may be the debarring factor affecting most hospital utilization, the hospitals can innovate into other mechanisms that will ensure they manage resources within budget to adopt electronic health record since it will be of better advantage to both the health workers, the hospital and the patients.

The study further showed that majority of the respondents identified that training of the nurses about the technicalities of EHR usage as a major factor affecting adequate implementation of EHR, while minority identified that regular update of the EHR system based on nurses' satisfaction is a factor. Similarly, while the study under review identified training as a major factor and infrastructure as the third major factor, other studies have identified infrastructure as the major factor, like a study by Cusack, (2018), who identified that the major factor influencing EHR implementation in sub-Saharan Africa is because manpower and skills to develop the required infrastructure and the cost of commercial software packages is exorbitant, in the same vein, another study by Yogeswaran, (2018), documented the challenges to the use of EHRs in Africa including poor electricity supply, incomplete adoption into the hospital system and poor technical knowledge to input, record and retrieve patient data. As identified under the perception of electronic health record, more hospitals need to innovate around getting a cost effective infrastructure to make the hospital be able to adopt and utilize EHR in their facilities.

Conclusion

It can be concluded that many nurses display good knowledge and perception towards electronic health record. In addition, they identified the need for training of nurses for improvement in adoption of an electronic health record system in the hospital.

Recommendations

Based on the findings of the study, the following recommendations were made:

1. Hospitals should improve implementation of electronic health record system over the conventional systems, especially the electronic documentation of patient record by nurses
2. Retraining of nurses should be implemented to improve knowledge of electronic health record
3. There is an urgent need to fix all fulcrums and technical requirements in hospitals to ensure the EHR system works smoothly, like provision of light and network data services for healthcare workers

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