
Challenges with Electronic Documentation Among Nurses in Public Hospitals in Lagos Island

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ABSTRACT: *This study determined the challenges with electronic documentation among nurses in public hospitals in Lagos Island. The study specifically assessed the nurses' reported experience with Electronic Documentation and determined challenges accompanying the implementation of Electronic Documentation. A descriptive survey was adopted for this study. Study population was total of 381 nurses from across the three hospitals that are actively involved in the implementation of EHR in their clinical practice during the period of data collection. Cochran formula was adopted to get the final sample size of 222. A self-designed questionnaire was used for data collection. Reliability of the instrument was done using test re-test method. Pearson Product Moment Correlation was used to compute the reliability coefficient which yielded values of 0.801 and 0.749 for section B and C respectively. Descriptive statistics such as frequency and percentages were used to analysed the collected data. This result reveals that more than half (57.3%) of the study population rated the quality of experience had with electronic documentation as mainly positive while 36.3% expressed positive quality of experience. In addition, half (50%) of the respondents claimed to have faced minimal challenges with electronic documentation, closely followed by 36.8% of them who had experienced moderate challenges. This study identified various barriers to electronic documentation such as type of users' experience, need for training of nurses, need of user-friendly interface, funding, communication, and feedback among others. It was recommended among others that hospital management should create viable feedbacks channels for better understanding of challenges with the implementation of EHR to facilitate prompt interventions.*

KEYWORDS: challenges, electronic documentation, nurses

INTRODUCTION

The electronic health record (HER) is a secure and effective tool for maintaining a patient's healthcare data, for communicating with patients and other providers, and for supporting the patient-nurse relationship. Health information technology (HIT) is considered an essential means of enhancing the safety and quality of patient care; and electronic health records (EHRs) are among the most promising tools (Ahmad 2018). Today, digital health already is a cornerstone of developed health systems all over the world. Without question, digital health uses latest information and communication technologies to develop a faster, more efficient, and cost-reducing healthcare practice.

According to Ozer and Santas (2021), information technology has been used as an important tool for improving patient safety and quality of care, especially in promoting the practice of evidence-based treatment. Billions of bytes of healthcare data are generated annually. The human resources it would take to catalog patient information on paper are profound, storage alone would present a challenge. Nowadays, many private practices and hospitals rely on EHR for managing patient data.

Notwithstanding, for many reasons, the move to a paperless healthcare record is a daunting and expensive project for healthcare facilities, and not everyone is enthusiastic about the use of EHRs. Because of the problems encountered in the implementation of EHRs, the progress of the project is slow and can be said to still be in its infancy stage in Nigeria. It is thought to have some drawbacks and not only advantages (Santas, 2020). A survey carried to determine the barriers to EHR adoption found that costs, technical problems, and capital requirements were the major barriers. Also, staff resistance, training and experience needed, and lack of interoperability are the main challenges to implementation (Joanne, et al 2015). Recent study identified twelve factors considered as challenges to adoption and successful implementation of EHRs; lack of computer experience, lack of perceived ease of by healthcare professionals, lack of user support, lack of perceived usefulness by healthcare professionals, technical limitations of the software system, lack of quality in patients' information, confidentiality concerns, resistance to change, hospital size, lack of electronic health record standards, uncertainty about electronic health record vendors, and hospital's level of care (Mu'awiyah, et al, 2021).

Globally, many healthcare facilities tried to implement EHR system, mainly to improve health information recording process (Agbonjinmi, et al., 2022). In the context of developing countries, several technological, organizational, and social issues such as electrical power interruption, health professionals' technology resistance, infrastructure and administrative problems have slowed the pace of implementation and adoption of EHRs. Problems related to lack of planning, increased provider time, computer down time, lack of standards to interchange information, user resistance and threats to confidentiality negatively contribute for the successful implementation of EMR. Even though there is a high expectation and interest in EHRs as great prospect for improving quality, continuity, safety, and efficiency in healthcare, the overall adoption rate is relatively low. Fifty percent of health information system failed to utilize EMRs properly (Ahmed, 2019).

Studies have shown that data loss, double entries, database inflexibility, incorrect entries, time constraints, staff shortage, patient urgency, poor user's experience, poor electricity supply, poor administrative management, security challenge, system breakdown, poor internet services, need for training, and interoperability are some of the challenges experienced by nurses with the implementation of HER.

Adedeji, et al (2018) in addition summarized; resistance to using EHRs, lack of required preparedness for effective implementation in nursing practice, of lack time and skills to access and review electronic evidence-based information, poor implementation process, negative perception, lack of awareness of the immediate benefits, inadequate informatics training, technical support, system maintenance requirements, poor access to computer system, lack of political goodwill and commitment towards achieving meaningful use of EHR, epileptic power supply, poor internet service, and poor assessment and pre-implementation analysis are challenges accompanying the implantation of EHRs.

In the future, computers will keep on affecting nursing services, health conditions, people, and the calling of nursing. Nurses need to have the right perception and motivating experience with electronic health documentation. The introduction of electronic documentation in clinical settings will inevitably create changes that may cause nurses to experience a variety of feelings including fear, anxiety, anger, resentment, confusion, exhaustion, and irritability. In addition, it is imperative to remember nurses make up most technology users in health care organizations, thus efforts should be made to find possible solution to challenges with EHR which shapes perception, integral to successful implementation.

Despite the broad consensus on the potential benefits of EHRs, the adoption and implementation of electronic health records (EHR) by healthcare facilities in Nigeria has been limited. Since nurses in some institutions, such as those in this study; are obliged to use EHRs in their daily work, the acceptance of this technology is essential. Obligatory use should not prevent stakeholders from assessing its acceptance by nurses. Nurses operate in active, complicated, and demanding situations, making the presence of an easy to operate tool necessary to facilitate their work, rather than to add to it. Moreover, nurses handle large amounts of data and information during the discharge of their daily duties. The traditional paper documentation makes location, abstraction, and comparison of information very slow and difficult, thereby slowing down the process of comprehensive assessment, nursing diagnosis and appropriate intervention. In addition, timely access to patient information necessitates a structured and secured documentation mechanism for provision of quality patient care, and this can be achieved with Electronic Health Records (Adedeji, et al, 2018).

However, several factors had been documented in research literatures to have influenced the perception of EHR among nurses (Joanne et al, 2015). Some of these factors include resistance to using Information Technology (IT) which is attributed to lack of informatics training, technical support, lack of required preparedness for effective application, lack of time and skills to access and review electronic evidence-based information. Other reasons for resistance to implementation of EHRs were poor implementation process, negative perception, lack of awareness of the immediate benefits, system maintenance requirements and poor access to computer (Adedeji, et al, 2018).

A study by Pagulayan, et al (2018) on Nurses' documentation and the electronic health record at St. Joseph's University Medical Center in Paterson, New Jersey Identified Limited resources to spearhead change on a large scale, Inability to reach all users and cover all specialties, and barriers to measuring the impact of change on patient outcomes and financial returns as challenges associated with electronic documentation. A study of problems faced by nurses in use of electronic health records during clinical practice by Verma and Gupta (2016), finds most of the respondent faced problems due to system breakdown (93.9%) and technical problems (69.7%).

Findings from a study by Adedeji, et al (2017) on factors influencing the use of electronic health records among nurses in a teaching hospital in Nigeria, finds no computer desks, high patient workload, faulty computer system, poor internet service, lack of maintenance, epileptic power supply, and lack of training are some of the challenges. Also, Factors Affecting the Adoption of Electronic Health Records by Nurses as discovered by Klein et al (2013) include cost, need for training, lack of time, experience of user, interoperability, fear of usage, lack of leadership, communication, need more Incentives, security, and privacy, and need of user-friendly interface.

World Health Organization, (2009) equally recognized challenges facing the Nigerian Health system as inadequate Health information system for monitoring and analysis of Health indicators. More studies also identified twelve factors considered barriers to adoption and successful implementation of EHRs. The factors include: lack of computer experience, lack of perceived ease of use by healthcare professionals, lack of user support, lack of perceived usefulness by healthcare professionals, technical limitations of the software system, lack of quality in patients' information, confidentiality concerns, resistance to change, hospital size, lack of electronic health record standards, uncertainty about electronic health record vendors, and hospital's level of care (Leslie, et al., 2021).

Samuels, et al (2015), study on challenges and opportunities using the electronic health record in nursing research identified the following challenges. EHR implementation challenge; in that some of the major corporate systems in use for clinical nursing documentation use multiple dissimilar and discrete electronic record systems for various purposes or departments. They also identified data presentation in structured, entry nursing data fields are programmed to accept singular, predetermined values. These forced choices may limit documentation options and may confused the accuracy of the clinical picture. On the other hand, collection of data from unstructured fields is highly labor intensive and constrains the amount of data that can be obtained as a result. In addition, they discovered that downloaded EHR data pose unique security challenges for the nurse researcher in the areas of data confidentiality, storage, and redaction of reports. Similarly, a descriptive study by Ope-babadele, et al (2021), carried out to explore Challenges of Electronic Health Recording Implementation by Nurses in Babcock University Teaching Hospital, Ogun State identified hospital training of the nurses about the technicalities of the EHR usage, regular update of the EHR system based on nurses satisfaction, attitude of the nurse towards usage of the EHR, poor user experience when using the EHR application, poor management of the system by the hospital administration like insufficient light, and inadequate remuneration or encouragement by the management to use the system as some of the challenges facing adequate electronic health recording implementation.

Furthermore, Medscape, (2022) identified that although some of the problems with the EHR system were known, the end user input from nursing staff help to better define the extent of the problems and challenges nurses encounter when an EHR is used and why an EHR is difficult at times to use. Also, studies are useful in determining nurse users' specific needs and their preferences for modifications in the EHR system. EHRs are crucial to increasing accessibility and management of medical information thus, the understanding of the factors that facilitates successful implementation is therefore critical to improving healthcare at large (Tubaisat, 2018). Therefore, this study aims to determine the challenges with electronic documentation among nurses in public hospitals in Lagos Island. The specific objectives were to:

- i. assess the nurses' reported experience with Electronic Documentation
- ii. determine challenges accompanying the implementation of Electronic Documentation

Research Questions

1. What is the level of nurses' reported experiences with Electronic Documentation in public hospitals in Lagos Island?
2. What are the challenges accompanying the implementation of Electronic Documentation in public hospitals in Lagos Island?

METHODOLOGY

A descriptive survey was adopted for this study. The design involved coding, collation and analysis of the data which were collected for interpretation of finding on nurses' challenges with electronic documentation in public hospitals in Lagos Island, Nigeria. Study population was total of 381 nurses from across the three hospitals that are actively involved in the implementation of EHR in their clinical practice during the period of data collection. This study was conducted at the Lagos Island general hospital, Island maternity hospital, and Massey children hospital, Lagos Island, Lagos State, Nigeria. These settings were adopted as they have commenced the use of EHR, transiting from paper to electronic documentation. However, since this population in this study is relatively small, a modification of the Cochran formula was adopted to get the final sample size. Hence the sample size that can be adopted for this study is 222 respondents. Proportionate sampling technique was used to determine the number of questionnaires to be shared on each visit to the respective hospitals. The formula below was used to determine the sample size to be drawn from each facility. Thus, the questionnaires per each hospital as seen below in the table.

$$\frac{\text{Sample size}}{\text{Population}} \times \frac{N}{1}$$

Where N = Total number of clients to be used

Table 1: Proportionate Sample Size Calculation

S/N	Public Hospitals in Lagos Island	Population of Nurses	Proportionate Sample Size Percentage Calculation	Proportionate Sample Size from Each Hospital
1	Lagos Island General Hospital	210	$\frac{210}{426} \times \frac{100}{1} = 49\%$	$\frac{222}{426} \times \frac{210}{1} = 109$
2	Island Maternity Hospital	126	$\frac{126}{426} \times \frac{100}{1} = 30\%$	$\frac{222}{426} \times \frac{126}{1} = 66$
3	Massey Children Hospital	90	$\frac{90}{426} \times \frac{100}{1} = 21\%$	$\frac{222}{426} \times \frac{90}{1} = 47$
	Total	426	100	222

A self-designed questionnaire was used for data collection. The questionnaire was divided into 3 parts.

Section A: It sought for the socio-demographic characteristics of the respondents.

Section B: Reported experience with the use of EHR. Scale of 5-point semantic differential question scale was employed to explore nurses' emotional attitude toward the use of EHR Measurement of nurse's experience in these facilities.

Section C: Potential challenges in using the EHR. 11 Multiple-Selection question on 5-point Likert scale to assess the possible barriers to the implementation of EHR. Also, one open question on challenges was asked

The structured questionnaire was critically reviewed for appropriate structuring and suitability of the test items to answer the research questions. In addition, a comprehensive review of related literature was done to gather salient variables of interest relating to experience of nurses during transition from paper to electronic documentation. In addition, the instrument was critically scrutinized and validated by expert in the field and necessary corrections made accordingly. Reliability of the instrument was done using test re-test method. Pearson Product Moment Correlation was used to compute the reliability coefficient which yielded values of 0.801 and 0.749 for section B and C respectively.

The nursing personnel roster of each unit was used in selecting representative samples of nurses across cadres. Thereafter, the research administered questionnaire directly to each randomly picked nurse for the study after gaining their verbal consent. The ethical guidelines of the institution were followed strictly throughout the study. Confidentiality of data and liberty of respondents to decline their participation in the study at any time was emphasized. Descriptive statistics such as frequency and percentages were used to analysed the collected data.

RESULTS**Table 2: Socio-demographic characteristics of respondents N=222**

Variables	Frequency	Percentage (%)
Age (in years)		
20-29	88	40.0
30-39	92	41.8
40-49	37	16.8
50-59	3	1.4
Total	220	100.0
Gender		
Male	34	15.5
Female	186	84.5
Total	220	100.0
Education Level		
Diploma	55	25.0
Bachelor	153	69.5
Master/PhD	12	5.5
Total	220	100.0
Years of experience in nursing practice		
Less than 5 years	82	37.3
6-10 years	71	32.3
11-15 years	29	13.2
16-20 years	15	6.8
21-25 years	13	5.9
More than 25 years	5	2.2
Total	220	100.0
Duration of computer usage (years)		
Less than 1	35	16.0
1-2	112	50.9
3-4	31	14.1
5-9	42	19.0
Total	220	100.0
Computer skill level rating		
Beginner/new computer use	10	4.5
Average user	104	47.3
Above average user	76	34.5
Advanced user	25	11.4
Computer expert/IT professional	5	2.3
Total	220	100.0

Source: Field work, 2021

Table 2 revealed a young population with mostly (41.8%) those who belong to the age range of 30-59 years closely followed (40.0%) by those aged 20-29. Majority (84.5%) were female while only but a few were male (15.5%), most (69.5%) of the participants held a Bachelor degree and only 37.3% and 32.5% had less than 5 years and 6-10 years' experience in nursing

respectively while half (50.0%) of them had less than 5 years' experience at the hospital where the study took place., about half (50.9%) had 1-2 years' of experience using the computer and close to half (47.3%) rated their computer skills as average users.

Research Question 1: What is the level of nurses' reported experiences with Electronic Documentation in public hospitals in Lagos Island?

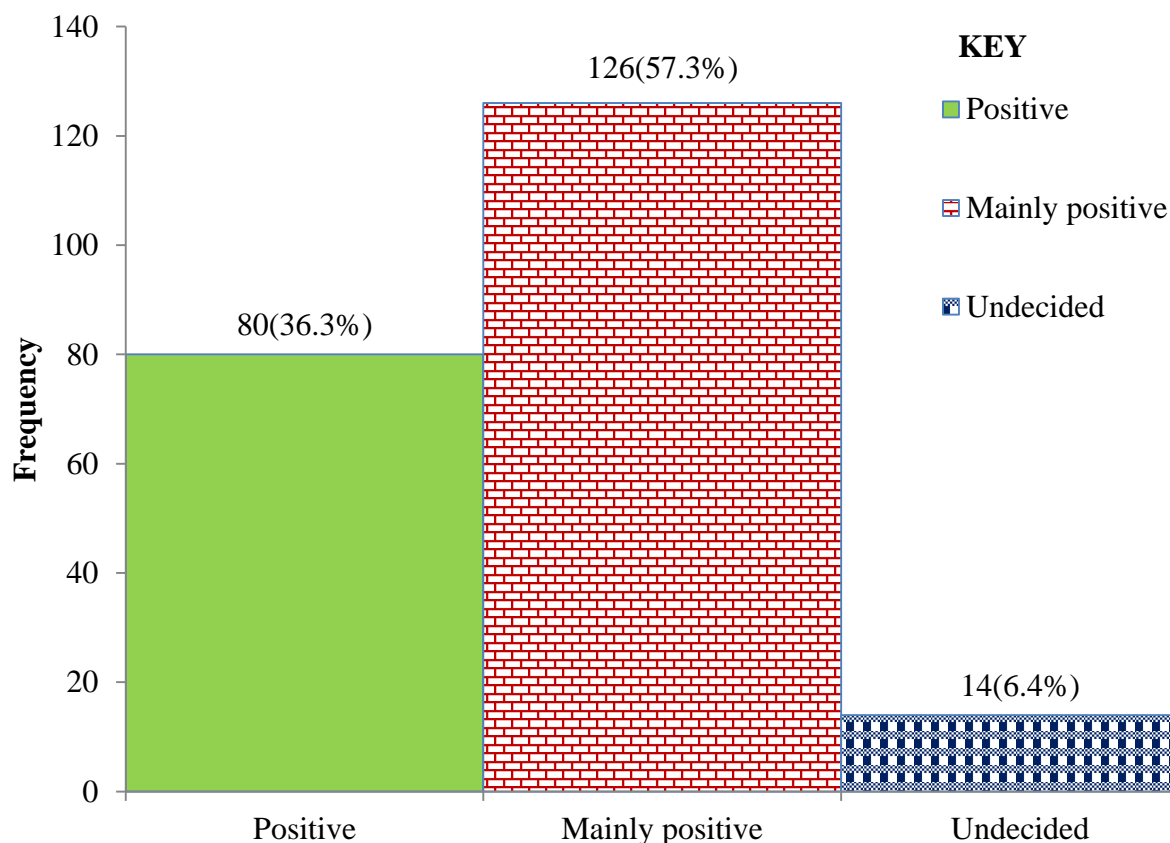


Figure 1: Showing the respondents' reported experience with electronic documentation (N = 220)

The figure shows that more than half (57.3%) of the study population rated the reported experience with electronic documentation as mainly positive. Only a few (36.3%) of them had positive quality of experience.

Research Question 2: What are the challenges accompanying the implementation of Electronic Documentation in public hospitals in Lagos Island?

Table 3: Respondents' perceived challenges with electronic documentation

Challenges	Strongly Agree (%)	Agree (%)	Undecided/Neutral (%)	Strongly Disagree (%)	Disagree (%)
Cost is a barrier/challenge to the implementation of electronic documentation	63 (28.6)	86 (39.0)	28 (12.7)	15 (7.0)	28 (12.7)
Need for Training of nurses is a barrier/challenge to the implementation of electronic documentation	42 (19.1)	99 (45.0)	24 (10.9)	20 (9.1)	35 (15.9)
Lack of Time is a barrier/challenge to the implementation of electronic documentation	27 (12.3)	71 (32.3)	39 (17.7)	24 (10.9)	59 (26.8)
Type of User's experience is a barrier/challenge to the implementation of electronic documentation	30 (13.6)	112 (51.0)	37 (16.8)	15 (6.8)	26 (11.8)
Interoperability, that is the ability of a computer system to work with or use the parts or equipment of another system is a barrier/challenge to the implementation of electronic documentation	36 (16.3)	82 (37.3)	60 (27.3)	18 (8.2)	24 (10.9)
Fear of Usage is a barrier/challenge to the implementation of electronic documentation	20 (9.0)	75 (34.0)	29 (13.1)	35 (15.9)	61 (28.0)
Lack of Leadership is a barrier/challenge to the implementation of electronic documentation	15 (6.8)	69 (31.4)	31 (14.1)	44 (20.0)	61 (27.7)
Communication and feedback system is a barrier/challenge to the implementation of electronic documentation	19 (8.6)	80 (36.4)	42 (19.1)	25 (11.4)	54 (24.5)
Lack of incentives is a barrier/challenge to the implementation of electronic documentation	14 (6.4)	68 (30.9)	51 (23.2)	41 (18.6)	46 (20.9)
Security and Privacy of medical information is a barrier/challenge to the implementation of electronic documentation	31 (14.0)	60 (27.3)	27 (12.3)	36 (16.4)	66 (30.0)
Need of User-friendly Interface is a barrier/challenge to the implementation of electronic documentation	25 (11.3)	86 (39.1)	39 (17.7)	25 (11.4)	45 (20.5)

Source: Field work, 2021

The table above shows that more than half (51.0%) of the respondents claimed that type of users' experience is a challenge to the implementation of electronic documentation which is why nearly half (45.0%) agreed that there is need for training of nurses because lack of training was also identified as a barrier to electronic documentation. 39.1% of the respondents affirmed the need of user-friendly interface as a barrier to the implementation of electronic documentation, this would incur funding, and this is the reason why 39% of the participants identified cost as a to EHR. 36.4% of the study population claimed that the deterrent to EHR was communication and feedback, indicating fear of usage as a barrier to HER as a fearful user would find it difficult to relay feedback or communicate to the appropriate IT authority when they encounter difficulty. 32.3% of the respondents attested that lack of time hindered EHR, thus 31.3% confirmed that interoperability is a barrier to the implementation of electronic documentation because interoperability requires time. 31.4% agreed that lack of leadership hindered electronic documentation, this is the reason 30.9% of the respondents affirmed that lack of incentives is a barrier to EHR, it can be said that incentives can only be offered by leadership and when the latter is absent, there tend to be problems.

Table 4: Summary of the overall respondents' challenges with electronic documentation (N = 220)

Overall challenges	Challenge Scores	Frequency	Percentage (%)
Low	0-18.9 (0-34%)	110	50.0
Moderate	19-37.9 (35-68%)	81	36.8
High	38-55(69-100%)	29	13.2

Overall, half (50%) of the respondents claimed to have faced minimal challenges with electronic documentation, closely followed by 36.8% of them who had experienced moderate challenges.

DISCUSSION

This study reveals that more than half (57.3%) of the study population rated the quality of experience had with electronic documentation as mainly positive while 36.3% expressed positive quality of experience. The predicting factors to the high positive quality of experience are the respondents' years of experience with the use of EHRs, 1-2 years (50.9%) and computer skill level (47.3%) of the participants with computer skill of being average users. In the same vein, this positivity in experience with electronic documentation explains why Tubaisat (2018), and Leslie et al (2021), identified high perception of ease of use of electronic documentation in their studies.

Deductions from this study identified various barriers to electronic documentation such as type of users' experience, need for training of nurses, need of user-friendly interface, funding, communication, and feedback among others. Exclusive findings to this study includes: poor internet connection, poor power supply, unavailability of technician during system downtime, fear for possible eye problems from overly bright device screen, heavy workload, input error from user, difficulty in locating files, low capacity, slow, outdated, and malfunctioning devices: sudden shutdown, unresponsive system, software downtime, wrong display of interface/work area, software viruses, insufficient number of devices, patent forgetting EMR card number, damaged hardware: keyboard, monitor, screen, mouse, timeouts, inadequate admission notes, rigid and inadequate resourced interface, too frequent retraining of users, and poor sitting facilities for users.

Result from this current study aligns with Usmanova et al. (2020), who determined challenges such as internet connectivity problems, frozen apps, and data loss digital platform. Several respondents reported repeated data loss, offline data entry suffered from occasional bugs, resulting in double entries or data loss when synced online, database inflexibility affected some respondents (providers reported being unable to change incorrect entries using the tablet and having to call program staff to make changes), inflexible data entry processes such as difficulty of correcting data entry errors, staff shortages, patient urgency limiting real-time data entry; and time constraints were equally identified. Similarly, Chris (2014), also opined that cost, need for training, lack of time, experience of user, interoperability, fear of usage, lack of leadership, communication among others were factors that hindered electronic documentation Evans (2016), on the other hand identified other differing factors such as resistance to change, perceived usefulness, perceived ease of use, perceived value, self-efficacy for change,

colleagues' opinions, and organizational support for change etc. In contrast to this study, Adedeji, et al (2018), identified factors such as practical on-the-job training necessary and enabling environment, lack of computer desks, high patient workload, faulty computer system, poor internet service, lack of maintenance, epileptic power supply, and lack of training. Lack of computer literacy skills, perceived ease of use and the perceived usefulness were factors identified by Ahmad (2018). Leslie, et al (2021), mentioned the following barriers: internet connectivity problems, frozen apps, data loss, digital platform, repeated data loss, offline data entry from occasional bugs resulting in double entries or data loss when synced online. Database inflexibility, providers inability to change incorrect entries using the tablet and having to call program staff to make changes, inflexible data entry processes e.g., difficulty of correcting data entry errors, staff shortages, patient urgency limiting real time data entry, and time constraints.

Another study by Ope-Babadele (2017) in a Nigerian study identified barriers to EHR to be hospital training of the nurses about the technicalities of the EHR usage, regular update of the EHR system based on nurses satisfaction, attitude of the nurses towards usage of the EHR, poor user experience when using the HER application, poor management of the system by the hospital administration like insufficient light, and inadequate remuneration or encouragement by the management to use the system. Mu'awiyah, et al (2021) mentioned factors for example major corporate systems in use for clinical nursing documentation use multiple dissimilar and discrete electronic record systems for various purpose or departments, data presentation in the structure, and entry nursing data fields are programmed to accept singular, predetermined values. There is need to solve these challenges so as improve the quality of patient care in hospitals which will impact positively the overall quality of health of individuals. Simultaneously, efficiency of nurses in the use of EHR would ensure job satisfaction and optimum productivity.

CONCLUSION

An effective nursing care often relies on thorough data collection, data analysis, accurate diagnosis, and appropriate intervention. Using EHRs reduces medical errors thus promote quality, efficiency, and safety of healthcare. Since nurses in some institutions, such as in those in this study; are obliged to use EHRs in their daily work, the acceptance of this technology is essential. If nurses would not accept the EHRs, perceiving they were neither useful nor easy to use, then this may result in a negative perception toward the technology, which would in turn mean that it would be challenging to engage the nurses in using or learning new functionalities of the system. This study identified various barriers to electronic documentation such as type of users' experience, need for training of nurses, need of user-friendly interface, funding, communication, and feedback among others.

Recommendations

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

1. Hospital management should upgrade the current infrastructure in the facility to increase the system performance.
2. Hospital management should create viable feedbacks channels for better understanding of challenges with the implementation of EHR to facilitate prompt interventions

Implication for Nursing Practice

Basic and adequate computer training for computer proficiency skill for all confirmed and newly appointed nurses should be institutionalized as this skill has been established in this study and literature to enhance nurses' ease-of-use of EHRs. Student nurses should be exposed to IT and other informatics competencies courses to prepare them for evolving new-normal world of health information technology.

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