Nurses' Perception of Electronic Documentation in Lagos Island Public Hospitals

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Abstract:

An Electronic Health Record (EHR) is an electronic version of a patient's medical history that is maintained by the provider over time. The objective of this study was to determine the perception of nurses with electronic documentation. A descriptive survey was adopted for the study. The population size was 426 nurses at the Lagos Island public hospitals, Lagos state, Nigeria. The sample size of 222 was determined by Cochran formular. Data was collected using an adapted, validated questionnaire. Cronbach's Alpha reliability coefficient for the constructs ranged from 0.75 to 0.84. The research achieved a response rate of 99.1%. Data collected were analysed using descriptive and inferential statistics. The results showed that more than half (67.3 %) of the respondents had a positive perception towards the usefulness of electronic documentation while less than half (45.5%) had a positive perception towards the ease of use of electronic documentation. There was also a strong and positive significant relationship between nurses' perception of usefulness and the perceived ease of use of electronic health record system (r=.937, p<.005). The study recommends that basic and adequate computer training is necessary for all confirmed and newly employed nurses to enhance their computer proficiency skill and promoting implementation of EHRs.

Keywords: Electronic Health Record, Perception, Nurse, Technology Acceptance Model,

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Introduction

Electronic health record (EHR) is a lifeline to improving the safety and quality of nursing care, enhancing the accuracy of health data, and reducing the huge cost of healthcare services. The evolution of handwritten paper record to electronic documentation is considered a significant change in contemporary healthcare, where the impact is not limited to the quality of care and patient safety but also to the stakeholders' priorities such as legal concerns, revenues, improving access and equity to healthcare, improving patients' inclusivity and sense of belonging, and standardizing the quality of care. This advancement also cut across patient registration to data monitoring and laboratory tests to self-care tools. It has become clear that advancements in health technology have made many tasks easier, while also making registration processes more efficient and more correct in a timely manner. However, progress in the implementation is slow, specifically in developing counties like Nigeria and this project could be considered to still be in its beginning stage across the country. Other concerns include the acceptance of this technology by nurses; a determinant factor to successful implementation in healthcare and challenges with EHRs implementation.

An Electronic Health Record (EHR) is an electronic version of a patient's medical history, that is maintained by the provider over time, and may include all the key administrative, clinical data relevant to that person's care, including demographics, progress notes, problems, medications, vital signs, past medical history, immunizations, laboratory data and radiology reports (Centre for Medicare & Madicaid Services, 2021). Translation of ancient Egyptian hieroglyphic inscriptions and papyri from 1600-3000 BC indicate the use of medical records. However, paper medical records were not steadily used until 1900-1920. Traditionally, health records were written on paper, maintained in folders divided into sections based on the type of note, and only one copy was usually available (Evans, 2016). The EHR automates access to information and has the potential to streamline the clinician's workflow. The EHR also can support other care-related activities directly or indirectly through various interfaces, including evidence-based decision support, quality management, and outcomes reporting. Electronic health records (EHRs) play an increasingly important role in documentation and exchange of information in multi-and interdisciplinary patient care.

Several countries around the globe have started to implement and apply nationwide EHRs, to benefit from the capabilities of these systems to store, use, and exchange information (Ahmad, 2018). Prior to the 1960s, all medical records were kept on paper and in manual filing systems. In the late 1960s, Lockheed developed a computerized physician ordering system known as a clinical information system. In the 1970s, the federal government of USA began using EHR with the implementation of Department of Veteran Affairs VistA (an integrated EHR that includes pharmacy, radiology, laboratory, medical, & nursing records). By 2004, the need to convert medical records to EHRs was recognized nationally in US with the creation of the Office of the National Coordinator (ONC) of Health Information Technology (IT). This was ultimately expanded upon, leading to 70% of all patient care providers adopting electronic records by 2014. While in Canada, it was estimated that more than half of Canadian health professionals used EHRs in their practice (Canada Health Infoway, 2016).

The history of health informatics in Nigeria started in the late 1980s when a collaborative research project between the Computing Centre of the University of Kuopio, Finland, Obafemi

Awolowo University (OAU), and Obafemi Awolowo University teaching Hospital (OAUTHC), was initiated which produced a very rudimentary hospital information system based on the Veterans Administration's Admission, Discharge, and Transfer, running on a stand-alone PC in use at OAUTHC. In the late 1990s, the Finnish / Nigerian research team decided to expand their rudimentary hospital information system with the aim of developing a comprehensive system suitable for use in all Nigerian teaching hospitals and medical centers. Development of the commercial software 'Made in Nigeria Primary Healthcare and Hospital Information System' (MINPHIS) ran alongside the doctoral program of one of the staff of the Department of Computer Science & Engineering, Obafemi Awolowo University, and was completed in 2004 but only five teaching hospitals and medical centers used the system as of 2007.

An effective nursing care often relies on thorough data collection, data analysis, accurate diagnosis, and appropriate intervention. Using EHRs reduces medical errors thus promoting quality, efficiency, and safety of healthcare delivery by providing the correct information to treat patients in a timely manner (Klein et al, 2020). There is a global initiative to improve the health and well-being of all, through use of a health information network. Several countries around the globe have started to implement and apply nationwide EHRs to benefit from the capabilities these systems offer. The Nigerian Government, also in her effort developed a 5-year strategic plan through her National Health ICT Strategic Framework intended to scale-up ICT infrastructure in all health facilities across the country. In furtherance of her efforts to achieve the plan, the Government recognized the need to have a harmonized Health Information Technology (Chris, 2014).

Despite the huge effort in implementing EHR worldwide, concerns have been raised regarding the perception of this technology by nurses, which are reported to be an important factor for its success in healthcare. Understanding and explaining users' perception of advancement in medical technology is a long-standing concern in research, and its findings will assist both the designers and those who implement such systems. Nurses are one of the main groups of healthcare professionals who are in direct contact with these systems, where their perception of EHRs should be evaluated (Ahmad, 2018). While many nurses perceive that the EHR reduces the workload, improves the quality of documentation, and improves safety and patient care, other nurses report that the system and environment of healthcare might impede EHR documentation at the bedside (Klein, et al, 2020).

Perception is the ability to understand or notice something easily, that is, the way nurses understand EHR using their senses to express its functionality, usefulness, ease of use, challenges, and frustrations with the use of EHR system (Yontz, et al 2015). Nurses' perception towards the utilization of EHR assume an imperative part in giving successful and proficient patient care. Perceived usefulness and ease of use of EHR by nurses have been related to disposition towards positive implementation. Due to the fact that 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. This obligatory use should not prevent stakeholders from assessing its acceptance by nurses. If nurses have negative perception (consequently resulting in non-acceptance of EHRs), that EHRs were neither useful nor easy to use, then this would shape a negative attitude toward the technology, which would in turn mean it would be challenging to engage the nurses in using or learning new functionalities of

the system. Hence, in this mandatory use environment, the assessment of the nurses' acceptance of EHRs is paramount (Ahmed, 2019).

A study by Chand and Sarin, (2015) concluded that overall nurse administrators have a positive perception of electronic documentation which would be beneficial in promoting a positive organization climate towards the acceptance of EHRs. Studies have shown that nurses are of the perception that EHR could improve healthcare processes, smooth workflow, and decrease financial costs. It is perceived to make work easier and more efficient, improving patient care, productivity, and job satisfaction. It is faster and ready access to patient information, improves the quality, accuracy, and comprehensiveness of healthcare records, including the ability to improve the overall safety and efficiency in healthcare landscapes. EHR has been positively perceived that it could guide clinical practice, provide clarity about health-related matters while computing devices increase access to information, thereby increasing knowledge, assisting in accurate diagnosis, reducing unnecessary referrals, and providing motivation for sustained use of information technology (Santas, 2020).

This differs from Joanne et al (2015) who reported that majority of nurses have a positive perception only to some key areas of EHR. On the contrary, Ahmad, (2018) demonstrated that nurses positively perceive the usefulness and ease-of-use of EHRs which directly affect nurses' intention to use EHRs. He argued that a positive relationship existed between perceive usefulness and perceived ease-of-use of EHR. In other words, the more the nurses perceived the system as useful, the more they perceived it as easy to use. He also opined that nurses' experience influences perceived usefulness and perceived ease-of-use of EHR and subsequent adoption of EHRs. As nurses' quality of experience increased, their perceptions about the ease of using EHRs improved. To the best of researcher's knowledge, no previous study on this subject has focused solely on Nurses perception of EHR in Lagos Island public hospitals, Lagos State, Nigeria. The specific objectives were to:

   i.   determine nurses' perceptions of usefulness of Electronic Documentation; and
   ii. assess nurses' perceptions of ease of use of Electronic Documentation

Research Hypotheses

Ho1: There is no significant relationship between nurses' perception of usefulness and perceived ease of use of electronic documentation.

Ho2: There is no significant association between socio-demographic characteristics and perception of usefulness of electronic documentation

Ho3: There is no significant association between socio-demographic characteristics and perception of ease of use of electronic documentation

Methodology

A quantitative descriptive design was adopted for this study. This design was adopted to obtain data on nurses' perception of electronic documentation in Lagos Island public hospitals. Study population were registered Nurses from Lagos Island Public Hospitals that is, Lagos Island general hospital, Massey Children's' Hospital and Lagos Island maternity hospital, Lagos Island, Lagos State, Nigeria. The total population of registered Nurses at Lagos Island general hospital was given at 210, Massey Hospital at 90 nurses while the total population of registered Nurses at Island maternity hospital was given at 126 respectively.

The sample size of 222 was calculated using Cochran formula. Proportionate and simple random sampling techniques were used to select the sample size.

A structured questionnaire was used to elicit information from the respondents. The questionnaire was sectioned into 3 parts.

Section A: Seven questions gathered demographic information; gender, age, education level, years of experience in nursing practice, years of experience at studied hospital, duration of computer usage and formal computer training.

Section B: Perceptions of perceived usefulness. Technology acceptance model (TAM) scale of 5-point Likert scale was employed to assess nurses' perception of perceived usefulness of EMR. The (TAM) scale is a self-administered scale comprising 14-items seeking perceived usefulness among nurses experiencing transition from paper to EHRs.

Section C: Perceptions of perceived ease of use of EHR. In this section, a 14 questioned TAM scale of 5-point Likert scale was used to determine nurses' perception of perceived ease of use of EMR.

Validity of the structured questionnaire was established through face and content validity techniques. A pre-test of the questionnaire was done by administering the questionnaire to 30 randomly selected respondents at another hospital with similar population where EHRs is being implemented. Their responses were computed using Cronbach's Alpha to ascertain the internal consistency of data generated by the questionnaire, which were 0.844 for section B and 0.782 for section C.

Informed written and/or verbal Consent was obtained from respondents High level of anonymity was guaranteed by informing respondents not to write their names on the questionnaire. Data collection was conducted for a period of four (4) weeks by paying scheduled visits to units during and after duty hours of the randomly selected nurses. The Statistical Package for Social Sciences (SPSS, version 23) was used for data coding and entry into the computer for statistical analysis purpose. Descriptive and inferential statistics were used to analyse the data. The statistical significance was set to $P < .05$.

Results

Objective 1: Nurses' Perceptions of usefulness Electronic Documentation

Table 1: Respondents' perceptions of perceived usefulness of HER (N = 220)

Perception	Strongly Agree (%)	Agree (%)	Undecided/ Neutral (%)	Disagree (%)	Strongly Disagree (%)	X
My job would be difficult to perform without EHRs	19(8.6)	61(27.7)	59(26..8)	70(31.8)	27(8.6)	3.0
Using EHRs gives me greater control over my work	31(14.1)	137(62.3)	25(11.4)	24(10.9)	3(1.3)	3.8
Using EHRs improves my job performance	45(20.5)	124(56.3)	39(17.7)	11(5.0)	1(0.5)	3.9
The EHRs system addresses my job-related needs	24(10.9)	108(49.1)	55(25.0)	31(14.1)	2(0.9)	3.5
Using EHRs saves me time	65(29.5)	94(42.7)	35(15.9)	24(11.0)	2(0.9)	3.9

EHRs enable me to accomplish tasks more quickly	49(22.3)	112(50.9)	40(18.2)	17(7.7)	2(0.9)	3.9
EHRs support critical aspects of my job	25(11.4)	110(50.0)	45(20.4)	40(18.2)	0(0.0)	3.5
Using HERs allow me to accomplish more work than would otherwise be possible	35(16.0)	88(36.3)	48(21.8)	55(25.0)	2(0.9)	3.4
Using EHRs reduces the time I spend on unproductive activities	34(15.5)	118(53.6)	30(13.6)	35(15.9)	3(1.4)	3.7
Using EHRs enhances my effectiveness on the job	37(16.8)	128(58.2)	40(18.2)	15(16.8)	0(0.0)	3.9
Using EHRs improves the quality of work I do	44(20.0)	100(45.4)	49(22.3)	27(12.3)	0(0.0)	3.7
Using EHRs increases my productivity	47(21.3)	116(52.7)	35(16.0)	22(10.0)	0(0.0)	3.7
Using EHRs makes it easier to do my job	62(28.2)	97(44.1)	35(15.9)	24(10.9)	2(0.9)	3.7
Overall, I find the EHRs system useful in my job	76(34.5)	115(52.3)	21(9.5)	8(3.6)	0(0.0)	4.2
	42(19.1)	107(48.6)	39(17.7)	30(13.6)	2(0.9)	3.7

Source: Field work, 2021
Mean Scoring: 1.0 – 2.3 = Negative; 2.4 – 3.7 = Fair; and 3.8 – 5.0 = Positive
The table above shows that majority of the participants perceived EHR to be useful with a mean score of M=4.2, enhances effectiveness on the job, saves time, enables the accomplishment of tasks quickly, and enhanced job performance with a mean score of (M=3.9). EHR also gives control over job as attested to by most of the respondents (M=3.8) while most of them agreed that it reduced the time they spend on unproductive tasks, improved quality of work, increases productivity and made work easier (M=3.7). Overall, the mean score of their perception of ER was M=3.7; thus, indicating that the respondents had a fair perception regarding the usefulness of electronic documentation in their facility.

Table 2: Summary of the overall respondents' perception of perceived usefulness of EHR (N = 220)

Perception	Perception Scores	Frequency	Percentage (%)
Negative	≤ 80 (0-49%)	72	32.7
Positive	≥ 80 (50-100%)	148	67.3

Overall, most (67.3 %) of the respondents had a positive perception towards the usefulness of electronic documentation.

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Objective 2: Nurses' Perceptions of Perceived Ease of Use of EHR
Table 3: Respondents' perceptions of perceived ease of use of EHR (N = 220)

Perception	Strongly Agree (%)	Agree (%)	Undecided/ Neutral (%)	Disagree (%)	Strongly Disagree (%)	x
I often become confused when I use the EHRs system	20(9.1)	23(10.5)	6(2.7)	129(58.6)	42(19.1)	3.8
I make errors frequently when I use the EHRs system	0(0.0)	14(6.4)	18(8.2)	134(60.9)	54(24.5)	4.0
Interacting with the EHRs system is often frustrating	4(1.8)	4(18.6)	24(11.0)	119(54.1)	32(14.5)	3.6
I need to consult the user manual often when using EHRs	1(0.5)	15(6.8)	24(10.9)	126(57.3)	54(24.5)	4.0
Interacting with the EHRs system requires a lot of my mental effort	5(2.3)	58(26.4)	36(16.3)	86(37.1)	35(15.9)	3.4
I find it easy to recover from errors encountered while using electronic medical records	25(11.4)	110(50.0)	30(13.6)	44(20.0)	11(5.0)	2.5
The EHRs system is rigid and inflexible to interact with	2(1.0)	54(24.5)	32(14.5)	115(52.3)	17(7.7)	3.4
I find it easy to get the EHRs system to do what I want it to do	20(9.1)	128(58.2)	38(17.3)	26(11.8)	8(3.6)	3.6
The EHRs system often behaves in unexpected ways	21(9.5)	76(34.5)	40(18.2)	69(31.4)	14(6.4)	2.9
I find it cumbersome to use the HER system	10(4.5)	51(23.1)	36(16.3)	106(48.1)	17(8.0)	3.3
My interaction with the EHRs system is easy for me to understand	30(13.6)	140(63.6)	29(13.2)	19(8.6)	2(1.0)	3.8
It is easy for me to remember how to perform tasks using EHRs	49(22.3)	135(61.4)	26(11.8)	10(4.5)	0(0.0)	4.0
The EHRs system provides helpful guidance in performing tasks	51(23.2)	128(58.2)	26(11.8)	15(6.8)	0(0.0)	4.0
Overall, I find the EHRs system easy to use	55(25.0)	136(61.8)	22(10.0)	7(3.2)	0(0.0)	4.1
	21(9.5)	**79(36.0)**	**28(12.7)**	**72(32.7)**	**20(9.1)**	3.6

Source: Field work, 2021
The table above shows that the respondents' perceived ease of EHR usage indicated majority found it easy to use with a mean score of M=4.1, felt they made errors when using it, had to consult manual, found it easier to remember, required helpful guidance in performing tasks (M=4.0). Most of the respondents attested that they often got confused when using it (M=3.8),

not easy to understand, cumulatively, the mean score of (M=3.6) which means their perception of its ease of usage was fair.

Table 4: Summary of the overall respondents' perception of perceived ease of use of EHR (N = 220)

Perception	Perception Scores	Frequency	Percentage (%)
Negative	≤ 80 (0-49%)	120	54.5
Positive	≥ 80 (50-100%)	100	45.5

Overall, less than half (45.5%) of the respondents had a positive perception towards the ease of use of electronic documentation.

Test of Hypotheses

Ho1: There is no significant relationship between nurses' perception of usefulness and perceived ease of use of electronic documentation.

Table 5: Showing Pearson Product Moment Correlation between nurses' perception of the usefulness and the perceived ease of use of EHRs (N = 220)

Variable	1
2. Perceived ease of use	.937**

**P< 0.01 level (2-tailed). N=222

Table 5 shows there was a strong and positive relationship between nurses' perception of usefulness and the perceived ease of use of electronic health record system which is significant at r=.937**, p<.005. This means that the higher the perception of the usefulness of EHRs, the more increase of perceived ease of use of EHRs. Therefore, the set hypothesis was rejected

Ho2: There is no significant association between socio-demographic characteristics and perception of usefulness of electronic documentation

Table 6: Association between socio-demographic characteristics and perception of usefulness of electronic documentation (N = 220)

	Overall perception of usefulness of HER			
Variable	**Negative (%)**	**Positive (%)**	**Df**	**x^2(p-value)**
Gender:				
Male	11(32.4)	23(67.6)		
Female	61(32.8)	125(67.2)	1	0.003(0.960)
Age(years):				
20-29	28(31.8)	60(68.2)		
30-39	32(34.8)	60(65.2)	3	1.67(0.644)
40-49	12(32.4)	25(67.6)		
50-59	0(0.0)	3(100.0)		
Educational Level:				
Diploma	18(32.7)	37(67.3)		
Bachelor	51(33.3)	102(66.7)	2	0.35(0.839)
Master/PhD.	3(25.0)	9(75.0)		
Years of Nursing				

Practice Experience:				
Less than 5	19(23.2)	63(76.8)		
6-10	27(37.5)	45(62.5)		
11-15	11(37.9)	18(62.1)	5	5.61(0.345)
16-20	6(40.0)	9(60.0)		
21-25	5(38.5)	8(61.5)		
More than 25	4(44.4)	5(55.6)		

There was significant relationship between the nurse's social demographic characteristics and perception of usefulness of Electronic Documentation (p>0.05).

Ho3: There is no significant association between socio-demographic characteristics and perception of ease of use of electronic documentation

Table 7: Association between socio-demographic characteristics and perception of ease of use of electronic documentation (N = 220)

	Overall perception of usefulness of HER			
Variable	**Negative (%)**	**Positive (%)**	**Df**	**x^2(p-value)**
Gender:				
Male	20(58.8)	14(41.2)		
Female	100(53.8)	86(46.2)	1	0.29(0.586)
Age(years):				
20-29	44(50.0)	44(50.0)		
30-39	53(57.6)	38(42.4)	3	5.54(0.136)
40-49	23(62.2)	14(37.8)		
50-59	0(0.0)	3(100.0)		
Educational Level:				
Diploma	26(47.3)	29(52.7)		
Bachelor	88(57.5)	65(42.5)	2	1.81(0.403)
Master/PhD.	6(50.0)	6(50.0)		
Years of Nursing Practice Experience:				
Less than 5	41(50.0)	41(50.0)		
6-10	38(52.8)	34(47.2)		
11-15	20(69.0)	9(31.0)	5	6.08(0.298)
16-20	11(73.3)	4(26.7)		
21-25	6(46.2)	7(53.8)		
More than 25	4(44.4)	5(55.6)		

There was no significant association between the nurse's social demographic characteristics and perception of ease of use of Electronic Documentation (p>0.05).

Discussion of Findings

Findings of this study revealed that majority of the participants perceived EHR to be useful with an overall mean score of 3.7; thus, indicating that the respondents had a fair perception regarding the usefulness of electronic documentation in their facilities. Overall, most of the

respondents (67.3 %) had a positive perception towards the usefulness of electronic documentation. This result aligns with a study by Ahmad (2018) with 1539 nurses from 15 randomly selected hospitals, representative of different regions and healthcare sectors in Jordan to determine the perceived usefulness and perceived ease of use of EHR. Results showed that Jordanian nurses demonstrated a positive perception of usefulness of EHR with high mean score for PU being 3.9(SD = 0.93. Around two-thirds of the participants perceived EHRs to be useful in their jobs (65.3%, n = 992), felt that EHRs could address job-related needs (62.3%), and improve the quality of work (60.6%), and more than half felt that EHRs would enhance the effectiveness of their jobs (50.9%).

Likewise, Leslie, et al (2021) study in selected hospital, South-West, Nigeria with a total of 120 respondents to assess nurses and patients perceived usefulness and perceived ease of use (acceptability) of robotics in nursing care. In general, the outcomes showed that Nurses' perceived usefulness of robotics in nursing care was high with a mean score of 13.2 (82%). Similarly, findings by Ahmed (2019) shows that professionals in these countries perceived EHR to be beneficial in healthcare service provision by improving patient safety and quality of care, access to patient health information, workflow and communication between healthcare providers and patients as well as reducing healthcare costs in the long run. Meanwhile, Ope-babadele, et al (2021) showed that almost all the study participants (97.0%) have the perception that data imputed in the EMR were important for providing optimal care.

In significant contrast to this current study's finding, Ojo and Adegbile (2021) claimed that approximately 57.0% of the respondents held poor perceptions of electronic health record integration. Overall, participant perceptions about the integration of electronic health record were poor. Meanwhile, Mu'awiyyah, et al (2021) concluded that majority (78.9%) of the respondents perceived that EMR would lead to better patient care and safety and 82.8% perceived it should be used in the routine care of patients in their hospitals. Similarly, Ope-babadele, et al (2021) found that majority of the respondents 75 (91.5%) displayed positive perception towards electronic health record while only 11 (13.4%) displayed negative perception of electronic health record.

The mean score for the overall respondents' perceived ease of using EHR was positive (M=4.1) even though less than half (45.5%) of the respondents had a positive perception towards the ease of use of electronic documentation, a cumulative mean score of (M=3.6) which means in total, respondents' perception of ease of usage was fair. Respondents feel they make errors when using it, had to consult manual, easy to remember how to perform tasks, provides helpful guidance in performing tasks (M=4.0) respectively. Most of the respondents attested that they often get confused when using it (M=3.8), and it is easy to understand interaction with the EHRs system. This differs from Tubaisat (2018), whose findings rather showed that Jordanian nurses demonstrated a positive perception of ease-of-use of EHRs, and subsequently accepted the technology. Significant positive correlations were found between nurses' perceptions of usefulness and perception of ease of use of EHRs.

The variables that predicted perceived ease-of-use were nursing and EHR experience, and computers skills. This is expected because only nurses who have good computer experience and who have been using the device for a while would find it easy to navigate the device unlike a nurse who is a novice. Similarly, Leslie et al (2021) general outcomes showed that

Nurses' perceived ease of use of robotics in nursing care was high with a mean score of 12.2 (76%) when measured on a 16-point reference scale.

Conclusion

The current work has shown that nurses express moderate perceptions of usefulness and ease of use of EHRs in public hospitals in Lagos Island, Nigeria, and are convinced of their advantages, perceiving positively their usefulness and ease-of-use. A positive correlation between perception of usefulness and perception of ease of use was noted.

Recommendations

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

1. Hospital management should increase the training and educational schemes for Nurses particularly in health information technology applications and systems.
2. Government should create world-class health information technology system that would integrate both public and health sector.
3. Health care managers, administrators, stakeholders, and investors should investigate regularly on activities and practices with EERs implementation to enable improvement and best practice

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