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RESEARCH

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Usability evaluation of electronic health records at the trauma and emergency directorates at the Komfo Anokye teaching hospital in the Ashanti region of Ghana

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Abstract

Background Electronic health records (EHRs) are currently gaining popularity in emerging economies because they provide options for exchanging patient data, increasing operational efficiency, and improving patient outcomes. This study examines how service providers at Ghana's Komfo Anokye Teaching Hospital adopt and use an electronic health records (EHRs) system. The emphasis is on identifying factors impacting adoption and the problems that healthcare personnel encounter in efficiently using the EHRs system.

Method A quantitative cross-sectional technique was utilised to collect data from 234 trauma and emergency department staff members via standardised questionnaires. The participants were selected using the purposive sampling method. The Pearson Chi-square Test was used to examine the relationship between respondents' acceptability and use of EHRs.

Results The study discovered that a sizable number of respondents (86.8%) embraced and actively used the EHRs system. However, other issues were noted, including insufficient system training and malfunctions (35.9%), power outages (18.8%), privacy concerns (9.4%), and insufficient maintenance (4.7%). The respondents' comfortability in using the electronic health record system (X^2=11.30, p=0.001), system dependability (X^2=30.74, p=0.0001), and EHR's ability to reduce patient waiting time (X^2=14.39, p=0.0001) were all strongly associated with their degree of satisfaction with the system. Furthermore, respondents who said elects increase patient care (X^2= 75.59, p = 0.0001) and income creation (X^2= 8.48, p = 0.004), which is related to the acceptability of the electronic health records system.

Conclusion The study revealed that comfort, reliability, and improved care quality all had an impact on the EHRs system's acceptability and utilization. Challenges, including equipment malfunctions and power outages, were found. Continuous professional training was emphasized as a means of increasing employee confidence, as did the construction of a power backup system to combat disruptions. Patient data privacy was highlighted. In conclusion, this study highlights the relevance of EHRs system adoption and usability in healthcare. While the benefits are obvious, addressing obstacles through training, technical support, and infrastructure improvements is critical for increasing system effectiveness.

Keywords EHRs, Usability evaluation, Trauma unit, Kumasi, Ashanti region, Ghana

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Introduction

The importance of information and communication technology (ICT) in all aspects of society has long been acknowledged [1]. In the health sector, information and communication technology machines are being promoted, developed, and used to improve job quality in patient records, administration, health services, and research [1]. Healthcare is becoming more complex, and the majority of clinical research is focused on novel approaches to diagnosing and treating illnesses [2]. In contrast, very little effort has been made to improve healthcare operational systems. This is mostly due to well-documented medical safety risks.

Electronic health records (EHRs) are currently drawing significant attention in developing nations as they are seen as a means to facilitate the exchange of patient information, enhance process efficiency, and optimize patient outcomes [3]. Numerous private and publicly funded healthcare organizations are committing substantial resources to EHRs development due to its recognised effectiveness [3]. However, despite the potential of EHRs to enhance the quality, safety, and efficiency of patient care, a substantial portion of them (more than 50%) either fail or fall short in adequately supporting patient care [4]. This issue is exacerbated in underdeveloped and developing nations, where healthcare professionals, especially those in lower tiers and rural areas, are more susceptible to computer anxiety [5].

The primary objective of EHRs is to create a comprehensive treatment record that can be utilised to support both current and future care, either by the same or different healthcare providers. This documentation serves as a means of communication among clinicians involved in the patient's care, with the main beneficiaries being the patient and the healthcare providers [6]. Ghana is one of the West African countries with a fast-changing healthcare landscape and has made progress in implementing e-health solutions to address some of these difficulties. The Komfo Anokye Teaching Hospital (KATH), located in the Ashanti Region, is a renowned tertiary healthcare institution in Ghana. As a major referral facility, KATH's trauma and emergency directorates play an important role in addressing acute and difficult cases from across the region. The proper functioning of these directorates is critical for providing timely and life-saving care to patients [7, 8].

Given the high stakes associated with trauma and emergency treatment, the usability of e-health systems within these departments is critical. Usability, defined as the ease with which healthcare personnel may use e-health systems to complete their responsibilities effectively, efficiently, and satisfactorily, has a direct impact on the quality of treatment delivered. A system with poor usability can lead to a greater cognitive load on healthcare professionals, potential errors in patient care, and eventually a reduction in the overall efficiency of healthcare delivery [7].

The implementation of an EHRs system could potentially address the existing gaps in access and the quality of healthcare services in rural Ghana. Ghana faces numerous healthcare challenges, notably including limited access to quality healthcare, and an insufficient number of healthcare professionals to meet the population's needs [7]. Despite the introduction of health information and communication technology (ICT) at the Komfo Anokye Teaching Hospital (KATH) in Ghana, no documented research has been conducted to assess the advantages and challenges of EHRs for service providers at KATH and in Ghana since the implementation of the Light Wave Health Information Management System (LHIMS). Since the introduction of the EHRs system at the health directorate no study had been conducted to evaluate service providers acceptability and usability. This had led to paucity of data regarding the use of the electronic system at the directorate.

The purpose of this study is to assess the usability of EHRs systems in the trauma and emergency departments of the Komfo Anokye Teaching Hospital. This study aims to identify strengths and opportunities for improvement in current EHRs implementations by evaluating system functioning, ease of use, user satisfaction, and influence on clinical processes. The outcomes of this study will provide useful insights for future improvements in EHRs systems, not just at KATH but also in similar healthcare settings throughout Ghana and other Low and Middle-Income Countries (LMICs). Through this, we aspire to contribute to the broader goal of leveraging digital health innovations to improve healthcare outcomes and ensure equitable access to quality care for all.

Methods

Study setting

This research took place in Kumasi, situated within the Ashanti Region of Ghana. The specific location of the study was the Komfo Anokye Teaching Hospital (KATH). Kumasi Metropolis, located between latitudes 6.35°N and 6.40°S and longitudes 1.30°W and 1.35°E, is positioned at an elevation of 250 to 300 meters above sea level. The population is projected to be 3,768,000 in 2023, with an annual growth rate of 3.8% from 2022 [9]. The healthcare system in the metropolis operates within the framework of the three-tier system of the Ghana Health Service. The administration of healthcare in the metropolis is structured into five sub-metro divisions. Within the municipality, there are a total of 136 healthcare facilities catering to the needs of the residents. Among these facilities, the

majority are privately owned. This assortment of facilities includes a Teaching Hospital (where the study was conducted), a regional hospital, district hospitals, semi-hospitals, mission hospitals, and health centres.

The Komfo Anokye Teaching Hospital (KATH) is a tertiary healthcare facility in Kumasi with a capacity of 1,200 beds. KATH plays a crucial role in providing healthcare services to approximately one-third of Ghana's population, establishing it as the second-largest hospital in the country. It serves as the primary referral hospital for the Ashanti Region, Bono Region, Ahafo Region, and at times, the Northern Regions, including Upper East, Upper West, and Northern Regions. KATH is closely affiliated with the Kwame Nkrumah University of Science and Technology (KNUST), which is also located in Kumasi.

Study design and population

The study employed a cross-sectional study design with quantitative approach. This involves gathering data from a population at a single, specific time point. The research population includes employees and management of the Trauma and Emergency Medicine Directorates operating with EHRs. The study comprised of all staff in Trauma and Emergency Medicine Directorates using EHR for service delivery at KATH.

Sampling technique and sample size

A purposive sampling method was employed to select the participants, focusing on individuals who had experience with the EHRs project and its effects. This method was chosen based on specific demographic criteria relevant to the study objectives, ensuring that participants had the necessary background to provide valuable insights. Additionally, the selection was influenced by the availability of a conducive environment that allowed the researcher to investigate important characteristics, aligning the research questions with prevailing norms. Participants were approached and introduced to the study within their respective departments. Those who expressed willingness to participate were requested to provide their consent by signing a consent form before data collection commenced. For participants who consented but were occupied with work, arrangements were made to collect data at a mutually convenient time. Yamane's formula [10] was used to calculate the sample size, considering the known total population of staff at the Trauma and Emergency Directorate. A total sample size of 234 was determined, accounting for a 5% non-responsive rate.

Data collection tools and technique

Data for this research were collected using a structured questionnaire, which was personally administered to healthcare personnel face-to-face using an electronic data capture application (KoboCollect). The questions were written in English as the respondents were able to read, speak and write in English. The questions were based on standard questionnaires from related published research studies also written in English [11–13]. Before questionnaire administration, both written and verbal consent were obtained from the participants. The questionnaire encompassed inquiries regarding the respondents' sociodemographic details, including age, gender, marital status, ethnicity, religion, and other relevant information. Additionally, a closed-ended questionnaire was employed to assess the respondents' utilization of the Electronic Health Record system, guided by the structured research questionnaire.

Data processing and analysis

The data underwent a coding process to facilitate the categorization of respondents into a concise set of groups. Descriptive statistical analysis was carried out utilizing Statistical Package for the Social Sciences (SPSS) version 21. Furthermore, the investigation encompassed the application of the Pearson Chi-square test and binary logistic regression to ascertain the connection between the dependent variable and the independent variables within the multivariate model. A statistically significant relationship was identified when the p-value was less than 0.05, with a confidence level of 95%. The findings from the data were compiled and visually represented through tables and figures.

Results

Socio-demographic characteristics of respondents

The study enlisted 234 respondents and there was a 100% response rate. The acceptable statistical significance was set at probability (p-value) <=0.05 with a confidence level of 95%. The mean age of respondents was 34 years. A slight majority 64 (27.4%) of the respondents were between the ages of 31year to 35 years. Most 51 (21.8%) of the respondents were health records officers and majority 104(44.4%) of the respondents having worked at the facility for a year to 3years as depicted in Table 1.

Factors influencing acceptability and usability of EHR platform

The study found that 44.9% of respondents have been using the EHR platform for 1-2 years. A strong 86.8% of users are satisfied with the system, noting important benefits such as reduced data loss (16.3%), increased speed and convenience (10.3%), and error reduction (16.3%). 59.1% of participants rated the training, which was mostly offered by IT officers (54.7%), as entirely adequate. IT help is critical, as 45.3% of users receive complete

Table 1 Distribution of sociodemographic characteristics of respondents

Variable	Frequency (*n*=234)	Percentage (%)
Age (years) SD=34.0±6.0 years		
20-25 years	55	23.5
26-30 years	63	26.9
31-35 years	64	27.4
36-40 years	32	13.7
>40 years	20	8.5
Gender		
Female	131	56.0
Male	103	44.0
Professional Category		
Nurse	47	20.1
Health Records Officer	51	21.8
Clinician	22	9.4
Pharmacist	42	17.9
Lab. Technician	11	4.7
Doctor	21	9.0
Radiologist	11	4.7
Revenue Officer	11	4.7
Healthcare Assistant	10	4.3
Accountant	8	3.4
Period of working with the facility		
1-3 years	104	44.4
4-7 years	33	14.1
Less than one year	65	27.8
Greater than 7 years	32	13.7

assistance. 44.9% of respondents were dissatisfied with network downtimes. Overall, the system is well-regarded, with 76.5% ranking it as good and 91.0% describing it as extremely trustworthy. The EHR platform has significantly enhanced healthcare delivery (100%) and patient care (95.3%), but the impact on income generation is less clear, with only 40.6% indicating an improvement. (Table 2).

Challenges faced in using EHR platform

Concerning the challenges to the use of electronic records, 11(4.7%) of respondents cited power fluctuations, lack of training, lack of equipment and frequent breakdown of machines whilst 44(18.8%) established power outages and fluctuations, lack of equipment and concerns with privacy was a major challenge. 22(9.4%) indicated concerns with privacy, 11(4.7%) frequent breakdown, 84(35.9%) lack of training and breakdown, 10(4.3%) cost of care and 20(8.5%) lack of equipment (Fig. 1)

Influence of socio-demographic characteristics on level of acceptance and use of EHR

The association between sociodemographic factors and acceptance of EHRs was determined by employing the Pearson-Chi-Square Test. At a 95% confidence interval, an alpha value of less than 0.05 was considered significant statistically. It was found that, in the bivariate model, the ages of respondents *(X^2 =10.82, p=0.029),* Gender *(X^2 =28.1, p=0.003),* Professional level *(X^2 =21.39, p=0.011)* and duration of working at the facility *(X^2 =29.6, p=0.0001)* significantly associated with the acceptability and usability of the EHRs (Table 3).

The association between respondents' acceptability and usability of EHRs was determined by employing the Pearson Chi-square Test. A 95% confidence interval and a p-value less than 0.05 which was considered a significant statistical relationship established that, the respondent's comfortability in using the electronic health record system (X^2=11.30, p=0.001), and reliability of the system (X^2=30.74, p=0.0001), EHR reducing patient waiting time (X^2=14.39, p=0.0001) significantly associated with satisfactory level of the use of the electronic health record system. Additionally, respondents who indicated EHRs improve patient care (X^2=75.59, p=0.0001) and EHRs improve revenue generation (X^2=8.48, p=0.004), associated with the acceptability of the EHRs system (Table 4).

Discussion

Level of acceptance and usability of EHRs of respondents

In this survey, it was observed that respondents' acceptability of using electronic health records was 86.8%. This means that the majority of the hospital's trauma and emergency departments had accepted and successfully employed the system to provide everyday services. Healthcare delivery through a manual approach is becoming cumbersome in developing countries such as Ghana; as a result, scholars in the field of health informatics and information technology are making the necessary efforts to initiate innovative and reliable techniques to improve the methods of mitigating the challenges in the operationalisation of health system records [3]. Although current research has acknowledged this, there are challenges with the adoption of the electronic health record system [4].

This demonstrates that service providers who use the record system have a good signal of staff commitment to implementing the system despite anticipated problems. The record system's high popularity among service providers suggested an improvement in clinical documentation quality, report accuracy, and workflow in the health care system. A study conducted by [14] revealed that service providers had embraced the usage of the electronic

Table 2 Factors contributing to acceptance and usability of EHR

Variable	Characteristics	Frequency (*n*=234)	Percentage (%)
Duration of EHR Usage			
	6-12 months	42	17.9
	1-2 years	105	44.9
	2-4 years	43	18.4
	<6months	44	18.8
Comfortable using EHR			
	Yes	203	86.8
	No	31	13.2
Factors Contributing to Comfort			
	Minimise loss of patient records	33	16.3
	Fast and convenient	21	10.3
	Easy to use	11	5.4
	Prevent medication error	22	10.8
	Easy to use, fast and convenient and prevent medication error	22	10.8
	Prevent medication error	33	16.3
	Fast and convenient, prevent medication error	41	20.2
	Very fast and convenient	20	9.9
Training Source for EHR Usage			
	IT Officer	128	54.7
	EMR Manager	87	37.2
	Colleagues	11	4.7
	Was never trained	8	3.4
Adequacy of EHR Training			
	Mostly prepared	74	31.6
	Fully prepared	139	59.4
	Somewhat prepared	21	9.0
IT Officer Support Post-Training			
	Some support	97	41.5
	No support	31	13.2
	Full support	106	45.3
Wait Time During Network Downtime			
	10-20 minutes	64	27.4
	21-30 minutes	64	27.4
	<10 minutes	95	40.6
	>30 minutes	11	4.7
Discouragement Due to Network Downtime			
	Sometimes	105	44.9
	Always	66	28.2
	Rarely	63	26.9
Impression of the EHR System			
	Very good	44	18.8
	Good	179	76.5
	Poor	11	4.7
Reliability of the EHR System			
	Yes	213	91.0
	No	21	9.0
Impact of EHR on Healthcare Delivery			
	Yes	234	100.00

Table 2 (continued)

Variable	Characteristics	Frequency (*n*=234)	Percentage (%)
Effect of EHR on Reducing Long Waiting Times at KATH			
	Yes	202	86.3
	No	32	13.7
Impact of EHR on Patient Care			
	Yes	223	95.3
	No	11	4.7
Accessibility of Patients via EHR Platform			
	Yes	234	100.00
Impact of EHR on Revenue Generation			
	Yes	95	40.6
	No	139	59.4

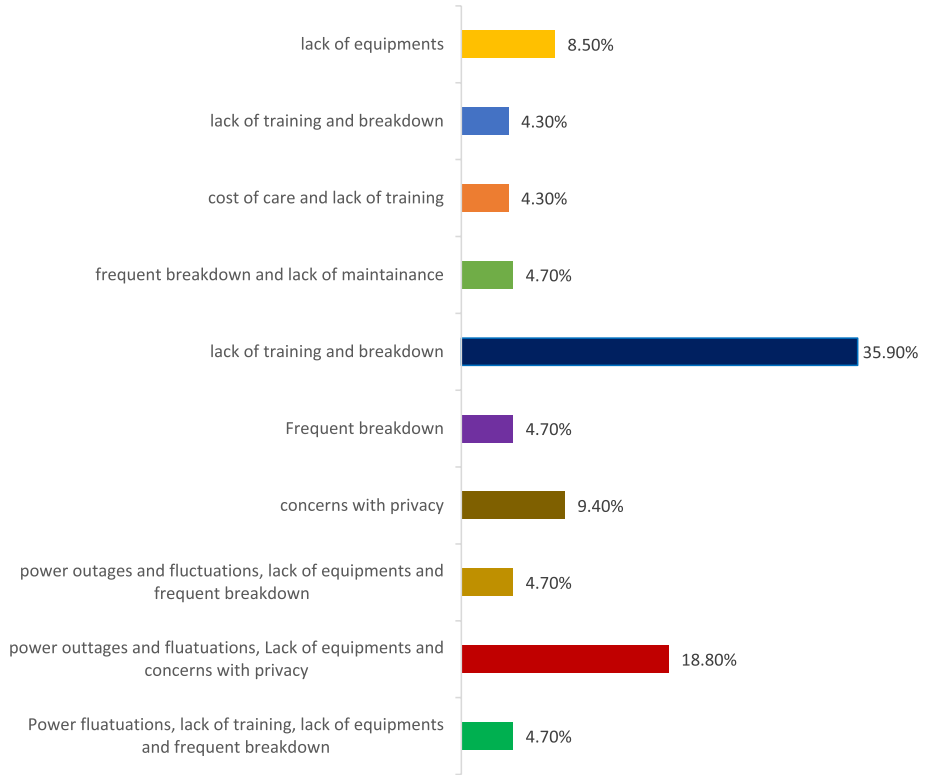

Fig. 1 Challenges faced with the use of the EHR platform at KATH

health record system, and the findings were consistent with the current study report [14].

In the United States of America, patients are consistently satisfied with the health system records utilised to assist healthcare delivery. For example, clinicians felt the system was efficient, making their jobs easier [15]. According to [16], health service professionals used the EHRs system satisfactorily when providing services to patients in palliative care, which corroborated the current study's findings[16]. A comparable study, which validates the outcomes of this study, found that EHRs were highly usable and applicable across Africa [17].

A lower report on the satisfaction and use of EHRs had been discovered among nurses. The qualitative study established that the low satisfaction of service providers about the usability was ascribed to poor system usability,

Table 3 Association between sociodemographic characteristics and level of acceptance and use of EHRs

Variable	Level of EHRs Acceptance		X^2 (*p*-value)
	Satisfactory n (%)	Unsatisfactory, n (%)	
Age (years)			10.8(0.029)*
20-25	44(21.7)	11(35.5)	
26-30	53(26.1)	10(32.3)	
31-35	54(26.6)	10(32.3)	
36-40	32(15.8)	0(0.0)	
>40 years	20(9.9)	0(0.0)	
Gender			28.1(0.003)*
Female	100(49.3)	31(100.0)	
Male	103(50.7)	0(0.00)	
Professional staff			21.4(0.011)*
Nurse	38(18.7)	9(29.0)	
Record officer	41(20.2)	10(32.3)	
Clinician	22(10.8)	0(0.0)	
Pharmacist	32(15.8)	10(32.3)	
Lab. Technician	11(5.4)	0(0.0)	
Doctor	21(10.3)	0(0.0)	
Radiologist	11(5.4)	0(0.0)	
Revenue officer	11(5.4)	0(0.0)	
Healthcare Assistant	10(4.9)	0(0.0)	
Accountant	6(3.0)	2(6.5)	
Duration of working at a facility			29.6(0.001)*
1-3 years	84(41.4)	20(64.5)	
4-7 years	22(10.8)	11(35.5)	
<1year	65(32.6)	0(0.00)	
>7 years	32(15.8)	0(0.0)	

* (*p*-value <0.05): statistically significant, X^2: Chi-square

and poor interoperability which when compared with present findings did not correlate well [18]. In Ghana, the outcome of a mixed method study conducted at the Presbyterian Hospital, Dormaa Ahenkro had cited that, health service providers' acceptability and usability of the EHRs system was very high which influenced service providers at the facility to adopt the technology in providing quality care to patients [13]. This means that health service providers who accept and use the electronic platform ensure both provider and patient satisfaction, decreasing client waiting time and increasing facility revenue generation as well as monitoring in-patient healthcare.

Health service providers' acceptability and use of the system at the trauma and emergency directorate could enable frontline clinicians to make an informed decision and acquire the needed surveillance data for injury control and health policy management. For example, in South Africa, available records indicated that the use of EHRs was found to be friendly, without significantly hindering hospital work flowing various healthcare settings. This means that service providers at the trauma and emergency hospital had accepted the use of the electronic health record system and are more comfortable with its usability, therefore findings associating well with the current study outcome [11].

When health service providers adopt and use the electronic health record system, it increases the storage of patients' data and protecting it from been exposed thereby decreasing the loss in patient related information and medical data [12]. Additionally, providers acceptability of the system enhances effective communication between departments and professionals. As such fostering a good intra/interprofessional relationship [15]. Moreover, when healthcare providers accept and use the electronic health record system, it increases documentation quality, boosting delivery of medical care and promoting work efficiency and effectiveness, hence reduction in medical errors [3]. Further, health service provider acceptance and use of the electronic health record system reduces consultation time with patients

Table 4 Association between contributing factors and Level of Acceptance and use of EHR

Variable	Level of acceptance of EHR		X^2 (*p*-value)
	Satisfactory, n(%)	Unsatisfactory, n(%)	
Comfortable using EHR			11.3(0.001)*
Yes	182(89.7)	21(10.3)	
No	21(67.7)	10(32.3)	
Training Source for EHR Usage			76.8(0.13)
IT Officer	118(58.1)	10(32.3)	
EHR manager	77(37.9)	10(32.3)	
Colleagues at work	0(0.00)	11(35.5)	
Was never trained	8(3.9)	0(0.00)	
Adequacy of EHR Training			24.3(0.18)
Most adequately	64(31.5)	10(32.3)	
Fully adequately	139(68.5)	0(0.00)	
Somewhat adequately	0(0.00)	21(67.7)	
IT Officer Support Post-Training			31.9(0.001)*
Some support	76(37.4)	21(67.7)	
No support	21(10.3)	10(32.3)	
Full support	106(92.0)	0(0.00)	
Wait Time During Network Downtime			37.8(0.40)
10-20 minutes	54(26.6)	10(32.3)	
21-30 minutes	43(21.2)	21(67.7)	
<10 minutes	95(46.8)	0(0.0)	
>30 minutes	11(5.4)	0(0.0)	
Discouragement Due to Network Downtime			13.4(0.001)*
Sometimes	85(41.9)	20(64.5)	
Always	55(27.1)	11(35.5)	
Rarely	63(31.0)	0(0.0)	
Impression of the EHR System			7.9(0.07)
Very good	44(21.7)	0(0.0)	
Good	159(78.3)	20(64.5)	
Poor	0(0.0)	11(35.5)	
Reliability of EHR			30.7(0.001)*
Yes	193(95.1)	20(64.5)	
No	10(4.9)	11(35.5)	
EHR helps reduce patient waiting time			14.4(0.007)*
Yes	182(89.7)	20(64.5)	
No	21(10.3)	11(35.5)	
Impact of EHR on Patient Care			7.5(0.0012)*
Yes	203(100.0)	20(64.5)	
No	0(0.00)	11(35.5)	
Impact of EHR on Revenue Generation			8.5(0.004) *
Yes	75(36.9)	20(64.5)	
No	128(63.1)	11(35.5)	

* (*p*-value <0.05): statistically significant, X^2: Chi-square

and improve patient care [19]. It improves in clinical research or studies as it always has available and reliable data for investigation [20]. Higher acceptability provides patient security by riding off enormous medical errors and provide easy access to information's [21].

The current survey disclosed that health service providers' acceptability and use of the electronic health

record system was attributed to factors such as system comfortable as well as the system's reliability. Again, it was established that the ability of the system to improve patient care and increase revenue generation significantly influenced the acceptability and use of the electronic health system at the facility. In this regard, service providers were keen to use the platform irrespective of system-related challenges they anticipate encountering.

It is reported in a cross-sectional survey conducted by [22] that health services providers' comfortability in accepting and using the EHRs system to deliver services led to an increase in quality service delivery, especially in low and middle-income countries, which when compared to current survey results associated well. [22]. This means that in developing nations such as Ghana, it is ideal for healthcare authorities to initiate and ensure how well health-delivering facilities would embrace an electronic means of rendering care to prospective patients to reduce the burden of disease complications. Health service providers' comfortability of using the electronic health record system, coupled with its reliability helps in establishing effective collaboration among providers which results to ensure better patent care, reducing paperwork and improving quality time with patients.

The comfortability and reliability of the electronic health record system by health service providers can collaborate with national health information networks whilst providing access to every patient [23]. A mixed-method study conducted in Ghana discovered that the use of electronic health record systems at health facilities among service providers was reliable, accurate and efficient. This implies that health staff was more comfortable in addition to the system reliability motivated them to apply the system to render quality services to patients which significantly influences providers usability of the system. Compared to the present study report indicated they correlated well [13]. When the use of the electronic health record system becomes more comfortable and reliable for health service providers, it increases the quality-of-care providers render to patients. For example, patients waiting time would be reduced, as such the lengthy hours a patient spends accessing care would otherwise be used for other profitable work. When patients become aware of spending less time accessing care, it boosts patients' attendance. In this case, the increase in patient attendance for a particular facility increases facility revenue. Increasing revenue generation translates to health service providers effectively working to be motivated. In addition, the acceptance and use of the electronic health record system coupled with its reliability to have a positive impact on healthcare means increasing revenue generation. The wealth of any healthcare facility depends on patient attendance, and once patients are provided with the best care with consistent quality, patients recover from their ailments, thus increasing attendance. An increase in patient care would mean an increase in the financial strength of a healthcare facility. Because the electronic health record system is convenient to use by providers and can be used reliably to make a positive impact on patient care, the facility's revenue generation increases

Despite the numerous benefits of the use of information technology in various works, in the healthcare environment, there has been an increased demand and use of an electronic health system to facilitate quick service delivery without compromising on quality. In the study health services providers, the trauma and emergency directorate at the Komfo Anokye Teaching Hospital highlighted that the acceptability and usability of the electronic health system had been of great contribution to boosting patient care, increasing revenue and reducing client waiting time. Despite all these advantages, it was found that the use of the system comes with its challenges some of which are technological, and managerial among others.

A systematic review and meta-analysis found that the use of the electronic health record system poses significant challenges to health service providers whilst providing services to humans. The study established that technological-related factors such as frequent breakdown of equipment pose a major challenge to providers in the cause of delivering services. The review further established that the lack of technical support coupled with the inadequate human resources to technically handle the software compound providers' challenges, thus increasing their stress, thereby making them tired easily in providing services. Additionally, it has been elaborated that, technological challenges such as poor maintenance, and power fluctuations contribute to a huge challenge to the usability of the electronic health system which was consistent with a recent study report [24].

In a cross-sectional study conducted in an Adventist hospital in Ghana, it is revealed that health service providers are faced with challenges in their routine use of electronic health systems. The study further indicated that the challenges such as interoperability, data integrity and patient confidentiality protection can cause patient medication error, therefore affecting chronic workload, hence burdening the service providers in limiting information sharing which can contribute to patient harm [25]. These challenges providers face in using electronic records prevent them from drawing insights into clinical decisions, therefore, increasing clinician frustrations and leading to medical threats which affect patient safety [26].

In the United States of America, health service providers' use of EHRs usually faces challenges. It was

evidenced that, challenges result in the efficiency and ineffectiveness of the system creating clinician frustration and patient dissatisfaction [25]. Adding to the above challenges with the use of EHRs, though [27] appreciated that, the system is friendly and flexible, however, the frequent power outages had posed a significant challenge which resulted in system failure to efficiently deliver service, hence decreasing providers interest of using the system [27]. Additionally, the study established that the lack of technical support to assist service providers in the daily operationalisation of the system discourages most users to use the platform. Compared to the present study outcome it can be deduced that the findings correlated well. Similarly, in a systematic review protocol, it has been reported that, among the challenges that health care providers face whilst applying the electronic system, the faulty computer system in addition to poor internet services, lack of maintenance and power supply failure in addition to inadequate training poses significant obstacles to users of the system particularly in low and middle-income nations. In this current study, the findings unearth the frequent power outages, poor equipment maintenance and frequent breakdown of equipment challenges user which consistently agreed to the current stud outcome.

This study examines the attitudes of trauma and emergency staff regarding the usability of EHRs (EHR). The research aims to understand the spectrum of attitudes among healthcare professionals and their readiness to adopt EHR systems. A survey-based approach categorizes attitudes into four groups: lackadaisical, somehow lackadaisical or committed, fully committed, and absent. The results provide insights into the attitudes of trauma and emergency staff, contributing to discussions on EHR integration. A cross-sectional survey was employed to assess the attitudes of trauma and emergency staff towards EHR usability. The survey included statements related to EHR usage, allowing respondents to categorize themselves into four attitude groups: lackadaisical, somehow lackadaisical or committed, fully committed, and absent. Descriptive statistics were used to analyse the distribution of attitudes among respondents. This lack of enthusiasm or engagement could potentially be attributed to several factors. First, a lack of familiarity with EHR systems might contribute to a sense of hesitancy among staff to embrace new technological tools in their workflow, a finding consistent with prior research [28]. Second, perceived complexity and difficulty in navigating the EHR interface could lead to frustration and reduced motivation to use the system [29]. Third, concerns about increased documentation time or the need to learn new processes might deter staff from fully embracing EHR [28]. The group that displayed a mixed attitude, encompassing both lackadaisical and committed respondents, highlights the ambivalence that some trauma and emergency staff might feel towards EHR adoption, a phenomenon also observed in other studies [28]. This ambivalence might stem from a combination of perceived benefits and concerns. It is important to explore the specific factors that contribute to this mixed attitude, as addressing their concerns could help in fostering a more positive stance towards EHR. On a positive note, a significant proportion of respondents demonstrated a fully committed attitude towards EHR usage [30]. This group recognizes the potential advantages that EHR can offer, such as improved patient care coordination, quicker access to medical records, and enhanced communication among healthcare providers, aligning with findings in prior research [30]. Their commitment suggests that efforts to emphasize the benefits of EHR and provide adequate training could yield positive outcomes in terms of EHR adoption. A smaller but noteworthy percentage of respondents exhibited an absent attitude towards EHR usage. This group's lack of interest or engagement with the technology could be due to various factors. These might include resistance to change, scepticism about the benefits of EHR, or perceptions that the system does not align with their specific roles within the trauma and emergency context, which mirrors findings in Koppel and Kreda's study [29]. Understanding the reasons behind this absence of commitment is crucial for addressing any potential barriers and ensuring comprehensive EHR integration. The findings of this study align with previous research indicating that healthcare professionals' attitudes towards technology adoption can greatly influence its success in practice. To address the varied attitudes observed in this study, tailored interventions should be considered. These might include comprehensive training programs to address familiarity and complexity concerns, communication efforts to highlight the benefits of EHR, and involving staff in the design and customization of EHR interfaces to align them with specific workflow needs [30]. Moreover, this study contributes to the understanding of trauma and emergency staff's attitudes towards EHR usability. By identifying lackadaisical, mixed, committed, and absent attitudes, it highlights the need for targeted strategies to address differing concerns and promote successful EHR adoption and integration within this specific context.

Conclusion

The findings of the study discovered that health service providers at the directorate accepted the introduction of the record system into their daily activities, however, it was found that the level of acceptance of the electronic health record system was much higher. In determining

the contributions of health service providers' acceptability and use of the system, it was found that the comfortability, and reliability of the system influence service providers' acceptability and usability. Additionally, the system's ability to improve patient care and enhance revenue generation increases staff acceptability and use of the electronic health record system. Moreover, the use of the platform had significant challenges. the respondents indicated that, major challenges such as power outages and fluctuations, concerns with privacy, frequent breakdowns and inadequate training.

In conclusion, this current study highlighted that most of the health service providers had accepted and for that matter uses the electronic health record system. In addition, the study concluded that, contributing factors such as the system's comfortability and reliability coupled with the quality of the system providing care and therefore enhancing revenue generation motivated providers to use the system in delivering services. However, despite the high acceptability and use of the system, it was concluded that, major challenges such as frequent breakdown of equipment power fluctuations and outages. Future studies should delve into the long-term impacts of provider acceptance and utilisation of the electronic health record system. Exploring how these factors influence patient outcomes, healthcare service quality, and financial sustainability can provide valuable insights.

Limitations and Suggestions for further studies

The study's findings revealed that respondents' satisfaction with the EHRs system was closely related to its ease of use, reliability, and ability to cut patient wait times. Furthermore, views of improved patient care and possible cash production were linked to higher acceptability of the EHRs system. Despite these discoveries, the study had limitations. These included sample bias because of purposive sampling, a cross-sectional design that limited temporal insights, and dependence on self-reported data, which may induce response bias. Furthermore, the study's narrow emphasis on one hospital may not completely capture broader regional or national variances in EHRs adoption and problems. To improve EHRs adoption, the study suggests continued professional training, increased technical assistance, and improved infrastructure resilience to disturbances. There is the need to address these issues to maximise the efficiency of EHRs systems in enhancing healthcare delivery and patient outcomes in Ghana's healthcare landscape. Based on the limitations of this study, numerous options for future research can be explored to improve understanding and fill information gaps. A mixed-methods approach, which includes both quantitative and qualitative interviews or focus groups, could provide deeper information on healthcare personnel's experiences and perceptions of EHRs systems. This method would enable researchers to capture not only statistical trends, but also qualitative elements that influence EHRs acceptance and use. Expanding future research to include several healthcare facilities in various regions of Ghana would allow for the study of diverse points of view and variations in EHRs adoption as influenced by local contexts, infrastructure, and resource availability.

Author contributions

EA and JOM conceived and designed the study, and JOM performed the data analysis. JOM, and JK interpreted the analysis for intellectual content. EA wrote the draft manuscript. JOM, and JK edited the manuscript. All authors revised the manuscript, read and approved the final manuscript. All authors reviewed the manuscript

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Availability of data and materials

Data can be obtained from the corresponding author on reasonable request.

Data Availability

No datasets were generated or analysed during the current study.

Declarations

Ethics approval and consent to participate

Ethical clearance was sought from the Ethics Committee of the Research and Development department of KATH with study approval number (KATH-IRB/API/174/22). Oral and written informed consent were sought from the participants. Each consent form provided comprehensive information regarding the study's objectives, the advantages stemming from the research, the application of study findings, and the dissemination of results. Involvement in this research was entirely voluntary, and participants were explicitly informed that they had the liberty to withdraw from the study at any point without any coercion or intimidation, and they could opt not to respond to question(s). To guarantee the enduring confidentiality of the participants, all research records were securely disposed of through incineration following the compilation of the final study report.

Consent for publication

Not applicable.

Competing interest

The authors declare no competing interests.

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