



## An Explorative Study of the Benefits and Challenges of Electronic Medical Records (EMR) Usage Among Clinical Care Providers in the Federal Medical Centre, Abeokuta, Nigeria

Osunlaja Olukemi Omolara\* and Judy Jenkins

Department of Health Data Science, Swansea University Medical School, Swansea, Wales

\*Corresponding author: Osunlaja Olukemi Omolara, Department of Health Data Science, Swansea University Medical School, Swansea, Wales; E-mail: olukemiosunlaja@yahoo.com

Received date: 30 May, 2024, Manuscript No. JHMM-24-137666;

Editor assigned date: 03 June, 2024, PreQC No. JHMM-24-137666 (PQ);

Reviewed date: 18 June, 2024, QC No. JHMM-24-137666;

Revised date: 13 January, 2025, Manuscript No. JHMM-24-137666 (R);

Published date: 20 January, 2025, DOI: 10.4172/JFTP.1000147

### Abstract

The adoption of Electronic Medical Records (EMR) systems has been a critical advancement in the healthcare sector, offering a wide range of benefits such as enhanced patient care, improved efficiency, and better data management. This study aims to explore the benefits and challenges associated with the usage of EMR systems by clinical care providers at the Federal Medical Centre, Abeokuta, Nigeria. Using a mixed-methods approach, the study gathered both qualitative and quantitative data from clinical staff including doctors, nurses, and administrators, to examine their experiences with EMR adoption. The findings highlight several key benefits, such as improved patient data accuracy, easier access to patient records, and enhanced communication among healthcare professionals. However, significant challenges were also identified, including technical issues, inadequate training, and resistance to change. Additionally, the lack of infrastructure and intermittent power supply were notable barriers to the full implementation of EMRs. The study recommends that policy makers, hospital administrators, and healthcare IT professionals work collaboratively to address these challenges through continuous training, infrastructure improvement, and system optimization. It is concluded that while the adoption of EMR systems in the Federal Medical Centre, Abeokuta, has been beneficial, there is still room for improvement to ensure the seamless integration of this technology into clinical workflows.

**Keywords:** Electronic Medical Records (EMR); Clinical care providers; Healthcare technology; Benefits of EMR; Challenges of EMR; Health information systems

### Introduction

EMRs are digital versions of paper medical records used by healthcare providers [1]. Patient demographics, medical history, lab results, and doctor visit notes can be found in EMRs [2]. EMRs improve patient care by giving doctors a complete medical history in one place, which aids in diagnosis and treatment [3]. EMRs also make it easier for doctors to share patient data with specialists or hospitals [4]. This can improve care continuity and prevent errors [5]. EMRs streamline scheduling, ordering tests, and prescribing medications, increasing efficiency [6]. They also make it easier for healthcare providers to track patient progress and identify potential health issues early, saving patients money and improving outcomes [7]. EMRs allow healthcare providers to track and analyse patient data, which can help identify patterns and trends to improve population health [8]. Public health issues like infectious disease outbreaks or chronic condition trends can be identified and addressed [9].

However, EMRs have drawbacks. EMR systems are expensive and require regular maintenance and updates [10]. This is worse in developing nations with poor healthcare capacity [11]. Poor networks, frequent electricity outages, computer illiteracy, and staff resistance hinder EMR adoption, especially in medium and low-income countries [12]. Data security, which can be expensive, is another issue [13]. Since doctors and nurses drive EMR use in hospitals, their attitude determines its success. Nigeria is experiencing a growing interest in adopting EMRs to improve healthcare delivery, and it was introduced in FMC Abeokuta in 2021. However, there is a lack of comprehensive understanding regarding the specific benefits and challenges clinical care providers face in this context. This study aims to fill this gap and provide valuable insights into the Nigerian healthcare setting by exploring the doctors' and nurses' perceptions and experiences of using the technology.

It seeks to answer the questions, what are your perceptions of the introduction of EMR? What has been your experience since using the technology, citing an instance of when it worked and did not well? What are the current challenges impeding EMR function? What are your suggestions for improving the EMR function and its adoption?

### Materials and Methods

This is a qualitative research design that involves a phenomenology study approach to investigate the everyday experiences of Doctors and Nurses working at Federal Medical Center Abeokuta on the use of EMR [14]. This study is restricted to Federal Medical Centre Abeokuta, which represents Nigeria's secondary health care system. This study only speaks to clinical care providers with at least one year of experience in using EMR. The phenomenological approach is well-suited to address this question. By focusing on lived experiences, providing contextual understanding, and uncovering the meanings individuals attribute to their experiences, this approach captures the unique perspectives and nuanced factors that shape EMR usage. It prioritises the participants' voices, generates detailed descriptions, and facilitates a comprehensive understanding of the complexities involved [15]. Employing phenomenology enables valuable insights to inform improvements in EMR adoption and usage tailored to the Nigerian healthcare context. The convenience sampling strategy was used to select samples based on the availability and willingness of participants during the research period [16].

According to Helsinki declaration, ethical approval was obtained from the institutions because it involved human subjects [17]. The researcher submitted an application *via* email to the Health Research Committee of the Federal Medical Center, Abeokuta, seeking approval to conduct the research at the facility. The committee provided an application form, which the researcher completed and submitted along with a draft of the research proposal, consent form, participant information sheet, and a confirmation letter from their supervisor. Subsequently, the researcher received an email confirming the approval of the application. The HREC Approved protocol number is FMCA/470/HREC/01/2022/14, while the National Health Research Ethics Committee's assigned number is NHREC/08/10-2015.

Similarly, the researcher completed the Standard Ethical Approval form from Swansea University Medical School (SUMS) as part of the application process. After receiving a review and signature from the supervisor, the researcher submitted the filled form along with several other reviewed documents, including the participant information sheet, consent form, debrief sheet, recruitment advertisement flyer, and the approval letter from the Federal Medical Centre Abeokuta Health Research Ethical Committee, which granted permission for conducting the research at their facility. The application was approved, and the approval number is SUMS RESC 2022-0105.

Online interviews were conducted on EMR perceptions and experiences of ten doctors and ten nurses at FMC Abeokuta. Their EMR was implemented in January 2021. The study was advertised through flyers which is a valid means of recruiting participants, and the participants who indicated interest were recruited [18]. Written consent was provided, and consent to participate in a recorded interview was confirmed before starting [19]. Interviews were conducted *via* Zoom to allow for respondent convenience and took between 25 and 35 minutes [20]. The questions were developed following an extensive literature review on similar research questions conducted elsewhere, and they were subjected to reviews and modifications by the researcher and her supervisor. The questions were semi-structured, where pre-designed questions were asked, but respondents were allowed to answer in an open-ended manner, with intermittent questions by the interviewer. This form of data collection provides more flexibility. It is not restricted to expressing any form of pre-determined questions, which will enrich the responses offered by the participants as a result of freedom to express themselves; at the same time, the semi-structured interview helps to have a resemblance of structure so that the interview can be contained within a particular time frame and a particular scheme of references.

The interview data were listened to and transcribed verbatim for coding and analysis. All participants' identifiable information was anonymised to protect confidentiality. The data were analysed using a thematic approach, with the researcher reading the transcripts multiple times to identify similar responses to the same question. These responses were grouped under the same theme to answer the research question. This method allows for the flexibility to adapt and refine the research questions and prompts as themes emerge from the interviews. The data analysis continued until theoretical saturation was reached, meaning that no new themes or insights emerged from the data. Thematic analysis is a widely used qualitative research method that involves identifying and analysing patterns of meaning, or themes, within qualitative data. Its advantages include its flexibility, allowing researchers to analyse data inductively, deductively or both.

## Results

Twenty clinical workers (ten doctors and ten nurses) participated in the interview. Six themes were identified through an analysis of the data, each with subthemes. The themes were classified as:

- Perceived benefits and mixed experiences.
- Usability challenges in EMR usage.
- Infrastructure and staffing challenges.
- Data security and confidentiality concerns.
- Peer mentoring and physician champions.
- Recommendations for improving EMR usage.

The themes with their subthemes are discussed below.

### Theme 1: Perceived benefits and mixed experiences

This theme captures the respondents' perceptions of the benefits associated with the introduction of EMR in the hospital and the mixed experiences they encountered.

#### Subtheme 1: Perceived usefulness and workflow enhancement

Many respondents held a positive perception of the EMR introduction, perceiving it as a useful tool that would ease their workflow. Nurses, in particular, saw the potential for EMR to support research and education, indicating their recognition of the broader benefits beyond day-to-day clinical activities. Accessing patient records from anywhere was also seen as a significant advantage, highlighting the convenience and enhanced accessibility provided by EMR.

I was so happy when they first introduced it to us. The usefulness of EMR is a great tool for technology development and improvement because of its positive influence on training, education, and research purpose. (Respondent 17, Nurse).

Similarly, experiences were largely positive, with many respondents reporting an enhanced workflow using the EMR.

It has reduced the use of paperwork; for example, when an investigation has been requested, instead of carrying paper up and down, a lot of things can be destroyed, water can pour on it, something can pour on it, but on the system, it can be safe forever. You can access it anytime, any day, anywhere, where you are. (Respondent 8, Nurse).

#### Subtheme 2: Mixed feelings and experience

Some respondents expressed mixed feelings about EMR usage. They cited concerns about increased workload and difficulties using the system. Some reasons for the perceived difficulties included a long learning curve because of computer illiteracy among some users and potential technical issues such as poor networks and erratic grid supply in Nigeria.

I felt this thing they are introducing, if we are going to write all these things we are writing, it's going to take much of our time, our patients are going to wait for more during consultations... (Respondent 12, Doctor).

### Theme 2: Usability challenges in EMR usage

This theme summarises the respondents' opinions on the experiences and difficulties they encountered with the introduction of EMR in the hospital.

#### Sub-theme 1: Technical challenges

Many staff reported user frustrations from technical challenges, poor network, numerous system downtimes from grid failures, poor network, and other technical glitches.

When rain falls, maybe there's heavy rain, thunder lightening, at those times, EMR will just stop functioning, ..., there is usually no network for like days, when I mean days, for like 3-5 days, and we will resolve back to the use of paper (Respondent 20, Doctor).

### **Sub-theme 2: Poorly designed EMR system**

Another factor that impacted user experience was difficulty using the EMR page from a poorly designed, non-intuitive user interface. The specific factors mentioned were the absence of certain utilities that will ease workflow, like patient monitoring charts, text auto-generating capabilities to decrease writing time and drop-down menus for selecting options, the lack of flexibility for error correction, the nonexistence of department-specific segmentation and the absence of regular software updates.

I feel there are some things they should put in place in the EMR, like if you are in the paediatric department, ... EMR has to be segmented according to departments. So that when I log in through the paediatric department, I know what I will see is everything relating to children. It is not something that will be general to everybody (Respondent 12, Doctors).

### **Sub-theme 3: Training challenge**

Worsening the usability challenge is suboptimal training on using the EMR system. Most respondents reported inconsistent, inadequate, and poor EMR training schedules for the end users. At times the training period clashes with the duty schedule of workers:

At times, we use our off-time to attend training like the one we did last, it is my off that I used, and they promised to refund it, but since then, they have not given me my off. So that does not encourage me to go next time. (Respondent 17, Nurse).

### **Theme 3: Infrastructure and staffing challenges in EMR usage**

This theme emphasises the respondents' answers regarding EMR hardware and personnel capacity affecting its usage in the hospital.

#### **Sub-theme 1: Insufficient hardware and sharing delays**

Participants reported insufficient hardware like laptops as hindrances to effective EMR usage. They noted that the challenges arising from the need to share limited computers lead to delays in documentation.

Compared to when we were still using case files, you will just take it and write. But for EMR, the computer might be the only one in the ward, and it is not only us that use it. We share it with doctors. When they come to the ward, I might want to document, and they, too, will want to document. So, we start dragging the system. That makes our work very slow. (Respondent 17, Nurse).

#### **Sub-theme 2: Inadequate manpower (Staff and ICT personnel)**

Participants recognised the impact of inadequate staffing on efficient EMR usage and emphasised the hindrance caused by limited personnel to handle EMR-related tasks effectively. Also, they bemoaned the non-availability of ICT personnel to help them resolve technical issues, especially in emergencies.

In this EMR era, you must document patient care at the right time. If we have enough staff, like 4 or 5 per shift, individuals can attend to

their patients. ... In the EMR era, manpower shortages still affect patient care. (Respondent 3, Nurse).

### **Sub-theme 3: Staff resistance to EMR usage**

Some respondents reported staff resistance as a hindrance. Such attitudes include the unwillingness of staff to document in the EMR and to upload paper records onto the EMR platform.

Some of them (staff) don't like it. When you call them to come and document, though they will still do it, the way they would react, I have to force them to come and document (Respondent 17, Nurse).

### **Theme 4: Data security and confidentiality concerns**

This theme captures participants' concerns with privacy and confidentiality issues with the EMR.

#### **Sub-theme 1: Lack of protective features**

Participants identified the lack of protective features in the EMR system, such as robust access control and data encryption, which raised concerns about unauthorised access to patient information, potentially compromising privacy.

The issue of confidentiality. I can be in my ward and check the documentation of patients in another ward. I feel that is very wrong and not too good. (Respondent 13, Nurse).

#### **Subtheme 2: Need for enhanced data confidentiality and security measures**

Respondents emphasised the need for enhanced data confidentiality and security measures to protect patient data.

Another thing that I noticed in this EMR is that there's no confidentiality. Anybody can log in to know about patient care which is supposed not to be because in Nursing, there's something we call privacy and confidentiality, so there should be confidentiality (Respondent 3, Nurse).

### **Theme 5: Peer mentoring and physician champions**

This theme captures participants' recognition of the importance of peer support and influential individuals in promoting EMR usage and addressing computer illiteracy among clinical care providers.

#### **Sub-theme 1: Importance of peer mentoring**

Participants acknowledged that peers could play a vital role in enlightening and supporting colleagues, especially those not versed in computer usage, in understanding the advantages of EMR usage.

Well, by encouraging and enlightening other professional members, because we are not the only ones using it, even the medical records members, on the advantages derived from using it. (Respondent 17, Nurse).

#### **Sub-theme 2: Role of physician champions**

Additionally, participants acknowledged the role of physician champions as influential figures who can advocate for EMR adoption, share their positive experiences, and encourage their colleagues to embrace the technology.

Not everybody is good at using electronic devices. Some of us are still finding it difficult to navigate, but once you have somebody with you on duty, the person can put you through. (Respondent 18, Doctor).

### **Theme 6: Recommendations for improving EMR usage**

The final theme summarises the recommendations made by the respondents to improve the adoption and usage of EMR in the hospital (Table 1).

Theme	Response	Respondents
Usability challenge	Provision of more network access points	16, 13, 18, 19, 21, 14, 5
	Provision of a more stable electricity supply	10, 8, 18, 20
	Provision of regular training	13, 11, 8, 7, 3, 19, 20, 5, 4, 2
	Involve end-users in the EMR design	5
	Proper speciality-specific design/improved U.I. friendliness/provide drop- down options/flexibility/text auto-generating capability and regular updates of EMR.	16, 18, 14, 12, 9, 6, 4, 2
Infrastructure and staffing challenges	Provision of more computers and other hardware	16, 13, 8, 3, 1, 21, 14, 9, 4
	Ensure the availability of ICT support personnel	16, 11
	Employment of more workforce	18, 3, 18
	Periodic staff monitoring	12, 5
	Intermittent meetings between EMR vendors, management, and end-users	
Data security and confidentiality concerns	Improve the security features of the EMR to maintain confidentiality	13, 3
Peer mentoring and physician champions.	Encouraged peer mentoring	17, 18

**Table 1:** Summarises participants' suggestions on how to improve the adoption of EMR.

## Discussion

This study shows that the overall EMR perception of doctors and nurses in FMC Abeokuta was positive despite the initial fears entertained by some participants before its introduction. Staff who positively perceived EMR believed it would ease their work. This is one arm of the technology acceptance model proposed as early as 1989 by Davis, which suggests that the acceptance of technology by a user depends on the user's attitude towards it, which is determined by the Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) of the technology. This positive perception was higher among nurses than doctors, which is not surprising as nurses seem to benefit more from the streamlined operations of the EMR. This EMR capability saves time spent on documentation, which according to one review, accounted for 7.7% to 128.4% of nurses' work time. Similarly, many authors have reported the time-saving feature of the EMR.

Nurses also acknowledged the potential of EMR to contribute to research and education, underscoring their awareness of the wider advantages beyond their regular clinical responsibilities. EMRs role in easing research has been well documented. Researchers documented the EMR's ability to enable accurate and efficient data collection by providing access to comprehensive patient records, reducing manual entry errors. Also, studies demonstrated that EMR promotes data sharing and collaboration among researchers, facilitating multi-centre studies and larger sample sizes. Similarly, real-time data analysis is made possible through advanced analytics tools, allowing for timely monitoring of patient outcomes and treatment evaluation. In addition, EMR supports patient recruitment and study enrollment by identifying eligible participants based on specific criteria, expediting the recruitment process.

It also ensures patient safety and ethical compliance by providing reminders for informed consent, privacy regulations, and efficient tracking of adverse events.

Respondents with mixed and negative perceptions had the opposite opinion, expressing fears of adding more time and work to their schedules. More doctors than nurses were pessimistic regarding the usefulness of EMR. Studies have documented that the physician's perceived threat to professional autonomy adversely affects EMR uptake. Doctors may be concerned because they are used to managing the medical team without consulting others. However, with the implementation of EMR, they will need to consult the system for guidelines and protocols, and their practice may be more susceptible to critique, which they may find uncomfortable. Ajami and Bagheri-Tadi noted that low EMR adoption in a hospital is strongly linked to physicians' resistance since doctors are the main frontline users of this technology in a clinical setting. They cited reasons such as the absence of computer skills, workflow disruption, security concerns, interference with the doctor-patient relationship, lack of incentives, and interoperability issues, among other issues, as reasons for the unwillingness of physicians to adopt EMR. Two factors cited by most respondents with mixed perceptions were the perceived ease of use challenge brought about by Nigeria's low internet speed, unstable grid supply, and computer illiteracy of some staff. Lakbala and Mugo have separately documented that poor internet speed affected staff usability of EMR.

Evidence shows that computer literacy levels correlate with EMR acceptance.

However, contrary to perception, most respondents had positive experiences using the EMR. Visible benefits occurred in the areas of

minimising the amount of paperwork by healthcare providers, eliminating missing paper-based records, reducing documentation time, decreasing mistakes from misinterpreting written instructions, and providing prompt access to information irrespective of location. This experience was shared among doctors and nurses, albeit with more nurses reporting a more positive experience, which is expected since a greater positive perception generally yields greater experience. Many authors have documented these benefits of EMR. Sarfraz, et al.; Hasanain, et al.; Al-Azmi, et al.; Asiri, et al.; Alasmay, et al.; and Khalifa reported that EMR eases access to patient's records, including laboratory results and charts. Similarly, Shaker et al. noted that EMR eliminated paperwork in hospital practice.

Despite these positive experiences, some respondents had mixed feelings about using EMR. Usability factors, including poor internet connectivity and grid power outage, were the main reasons cited by these participants. This problem was accentuated during rainy weather and thunderstorms, which could make the system unusable for days, forcing users to resort to paper-based records. Many authors have documented similar technical problems in developing nations. Alobo et al., documented poor internet and power outages as challenges of EMR use in a specialist hospital in Nigeria. Similarly, Hannan, et al., reported that a lack of electricity impeded EMR in a rural Kenyan hospital. In a systematic review, Jawhari, et al., concluded that inadequate electricity supply affects healthcare delivery in sub-Saharan African countries.

In addition, another factor that frustrates EMR usability is the poor design of the software. Some respondents reported that the user interface is unintuitive. Respondents cited features such as a lack of patient monitoring charts, text auto-generating capabilities, drop-down options, inflexibility to accommodate specific inputs, and lack of speciality-specific features as flaws hindering the usefulness of the EMR. According to Ludwick and John, designing a computer system's graphical interface and the user experience play a crucial role in successfully implementing an electronic medical record system. Janssen et al., supported this position and found that doctors prefer design features such as dictation and drop-down options to ease workflows.

Similarly, compounding the challenge of an unintuitive user interface is the suboptimal training of clinical staff on EMR usage. Many respondents cited inadequate or poorly designed training schedules as a challenge. Samadbeik, et al., have emphasised the importance of end-user

training on adopting EMR. Training breeds familiarity with the EMR software and enhances perceived ease of use, and Morton noted that staff are likely to adopt EHR if they think it is easy to use than if it is complicated.

This study's major theme was the EMR infrastructure and human resource challenges. Most respondents reported insufficient hardware, usually a single laptop in each ward to be shared by nurses and doctors. This often resulted in conflicts and slowed workflow, as one party must wait for the other to finish using the laptop. Essuman, et al. have shown that the cost of EMR resources and facilities limits the full deployment of EMR in Ghana. Other studies confirmed that this resource deficit is widespread in other developing nations. In addition, respondents lamented insufficient clinical staff to handle EMR-related tasks effectively. Inadequate staffing posed challenges to handling EMR-related tasks and maintaining workflow effectively. Also, the lack of ICT support personnel to guide them when encountering

problems using the EMR was emphasised. Lack of knowledge about EMR is linked to low adoption, and the absence of technical personnel to guide users leads to EMR abandonment. Exacerbating the problem of insufficient staff was staff resistance to EMR adoption. Beglaryan, et al. noted that staff resistance could frustrate EMR adoption, and studies have shown that supportive and transformational leadership is associated with encouraging EMR adoption by staff.

Data security and confidentiality were cited as one of the EMR challenges by the respondents. According to them, the EMR did not incorporate security protocol, as anyone could access information once logged in. Adamu, et al. identified several security vulnerabilities in EMR systems, including weak authentication, cross-site scripting, SQL injection, and cross-site request forgery. Such weakness could result in data manipulation and theft by malicious individuals. Implementing robust safeguards and privacy protocols within the EMR system is crucial to instill trust and confidence among users and promoting the secure and responsible use of electronic medical records.

Participants understood the importance of peer support and influential individuals in promoting EMR usage and addressing computer illiteracy among clinical care providers. They recognised the value of peer mentoring in helping colleagues overcome challenges related to computer literacy and fostering a better understanding of the advantages of using EMR. Additionally, participants acknowledged the role of physician champions as influential figures who can advocate for EMR adoption, share their positive experiences, and encourage their colleagues to embrace the technology. Encouraging and enlightening professionals about the benefits of EMR usage was seen as a means to increase adoption rates and overcome challenges. Few respondents admitted to having low computer literacy and prefer having a peer to assist them in using the EMR. These influential users or "physician champions" have been documented to be central in maximising the adoption of EMR as they bridge the technical gap between the EMR vendors and the end-users.

On suggestions to improve EMR adoption, most respondents gave answers addressing the challenges they identified. Of the suggestions given, end-users involvement in the conception and design of the EMR had strong literature support in encouraging staff adoption of the technology. Anyango found a lack of physician involvement and buy-in as a significant reason for the slow adoption of EMR. Since physicians' use of the EMR is integral to its success, their involvement would help sustain the success of the technology. In addition, supportive management and accommodative leadership style are associated with successful EMR implementation in various studies. Such leadership fosters open communication with users' necessary feedback to improve the EMR experience.

## Conclusion

Based on the comprehensive study conducted at FMC Abeokuta, the findings offer valuable insights into the experiences and perceptions of doctors and nurses regarding the implementation of Electronic Medical Records (EMR) in the healthcare setting. The overall results indicate a positive reception and acceptance of EMR among healthcare professionals, demonstrating its potential to enhance clinical practices and patient care. Among the participants, nurses exhibited a particularly positive perception of EMR compared to doctors. This can be attributed to the direct benefits they experience in

their day-to-day workflow, such as reduced time spent on documentation and the improved management of patient charts. The introduction of EMR has streamlined processes and facilitated comprehensive access to patient information, contributing to more efficient diagnosis and treatment decisions. However, the study also identified several challenges that hinder the smooth operation of EMR. The most prominent obstacles were poor internet connectivity and frequent power outages, which compromised the reliability and availability of the system. These infrastructural limitations must be addressed to ensure uninterrupted access to EMR and prevent disruptions in healthcare services. In addition, inadequate training and suboptimal design of the EMR software were identified as factors that hindered its effective utilisation. These findings highlight the importance of comprehensive training programs and user-friendly interfaces to optimise the adoption and utilisation of EMR. Data security emerged as another significant concern. Protecting patient information is paramount, and healthcare institutions must invest in robust security measures to safeguard the confidentiality and integrity of EMR data. Addressing these data security issues requires strategic planning, resource allocation, and adherence to industry best practices. The study also highlighted the need for additional hardware resources and staffing support. Investing in adequate hardware infrastructure and increasing the number of trained personnel can enhance the efficiency and effectiveness of EMR implementation. This, in turn, can improve healthcare professionals' motivation and minimise resistance to adopting EMR.

In conclusion, the study at FMC Abeokuta emphasises the importance of addressing challenges related to infrastructure, training, software design, and data security to harness the benefits of EMR in healthcare delivery fully. Enhancing internet connectivity and power infrastructure, providing comprehensive training programs, designing intuitive user interfaces, and investing in personnel can significantly contribute to the successful integration and utilisation of EMR. By addressing these areas, healthcare institutions can improve patient care, streamline workflows, and ultimately enhance healthcare services' overall quality and efficiency. Future work can leverage the study's findings in developing EMR to address the identified and discussed challenges.

## Study Limitations

The few limitations encountered were several re-advertisements because of the lack of physical presence of the researcher. Also, some of the interviews were rescheduled because participants were unavailable at the previously agreed time.

## References

1. Abdekhoda M, Dehnad A, Zarei J (2019) Determinant factors in applying electronic medical records in healthcare. *East Mediterr Health J* 25: 24-33.
2. Adamu J, Hamzah R, Rosli MM (2020) Security issues and framework of electronic medical record: A review. *Bull Electr Eng Inform* 9: 565-572.
3. Adedeji P, Irinoye O, Ikono R, Komolafe A (2018) Factors influencing the use of electronic health records among nurses in a teaching hospital in Nigeria. *J Health Informatics Dev Ctries* 12.
4. Ajami S, Bagheri-Tadi T (2013) Barriers for adopting electronic health records (EHRs) by physicians. *Acta Inform Med* 21: 129.
5. Akanbi MO, Ocheke AN, Agaba PA, Daniyam CA, Agaba EI, et al. (2012) Use of electronic health records in sub-Saharan Africa: progress and challenges. *J Med Trop* 14: 1.
6. Alasmay M, El Metwally A, Househ M (2014) The association between computer literacy and training on clinical productivity and user satisfaction in using the electronic medical record in Saudi Arabia. *J Med Syst* 38: 1-13.
7. Albagmi S (2021) The effectiveness of EMR implementation regarding reducing documentation errors and waiting time for patients in outpatient clinics: a systematic review. *F1000Res* 10: 514.
8. Aloba IG, Soyannwo T, Ukponwan G, Akogu S, Akpa AM, et al. (2020) Implementing electronic health system in Nigeria: perspective assessment in a specialist hospital. *Afr Health Sci* 20: 948-954.
9. Al Alawi S, Al Dhaheri A, Al Baloushi D, Al Dhaheri M, Prinsloo EA, et al. (2014) Physician user satisfaction with an electronic medical records system in primary healthcare centres in Al Ain: a qualitative study. *BMJ Open* 4: e005569.
10. Al-Azmi SF, Saleh K, Ojayan O (2008) Physicians' perceptions about the newly implemented electronic medical records systems at the primary health care centers in Kuwait. *Alex J Med* 44: 303-312.
11. Al-Mamary YH, Shamsuddin A, Hamid NAA (2015) Enhancing technological capability of telecommunications sector in Yemen: a technology adoption approach. *Mediterr J Soc Sci* 6: 108.
12. Al-Mujaini A, Al-Farsi Y, Al-Maniri A, Ganesh A (2011) Satisfaction and perceived quality of an electronic medical record system in a tertiary hospital in Oman. *Oman Med J* 26: 324.
13. Antwi HA, Yiranbon E, Lulin Z, Maxwell BA, Agebase AJ, et al. (2014) Innovation diffusion among healthcare workforce: Analysis of adoption and use of medical ICT in Ghanaian tertiary hospitals. *Int J Acad Res Business Soc Sci* 4: 63.
14. Arabi YM, Al Ghamdi AA, Al-Moamary M, Al Mutrafy A, AlHazme RH, et al. (2022) Electronic medical record implementation in a large healthcare system from a leadership perspective. *BMC Med Inform Decis Mak* 22: 66.
15. Archibald MM, Ambagtsheer RC, Casey MG, Lawless M (2019) Using zoom videoconferencing for qualitative data collection: perceptions and experiences of researchers and participants. *Int J Qual Methods* 18.
16. Asiri H, AlDosari B, Saddik B (2014) Nurses' attitude, acceptance and use of electronic medical records (EMR) in King AbdulAziz medical city (KAMC) in Riyadh, Saudi Arabia. *Merit Res J* 2: 66-77.
17. Ayaad O, Alloubani A, ALhajaa EA, Farhan M, Abuseif S, et al. (2019) The role of electronic medical records in improving the quality of health care services: Comparative study. *Int J Med Inform* 127: 63-67.
18. Barbazza E, Allin S, Byrnes M, Foebel AD, Khan T, et al. (2021) The current and potential uses of Electronic Medical Record

- (EMR) data for primary health care performance measurement in the Canadian context: A qualitative analysis. *BMC Health Serv Res* 21: 1-11.
19. Beglaryan M, Petrosyan V, Bunker E (2017) Development of a tripolar model of technology acceptance: Hospital-based physicians' perspective on EHR. *Int J Med Inform* 102: 50-61.
20. Bhartiya S, Mehrotra D (2015) An access control framework for secured sharing of electronic health records using hierarchy similarity analyser. *Int J Electron Healthcare* 8: 121-141.