Research article

Awareness and use of electronic medical records system among nurses at National Hospital, Abuja

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ABSTRACT

Background/Objectives: This study investigates the awareness and use of Electronic Medical Records (EMR) systems among Nurses working with National Hospital, Abuja, Nigeria. Electronic Medical Records systems have become essential in modern healthcare for improving patient care, reducing medical errors and enhancing data accessibility and storage. Despite these benefits, the adoption and effective utilization of EMR systems remain challenging in many healthcare settings. ***Methods/Design:*** The study employed a descriptive survey design, which has to do with the collection of data from a representative sample of nurses working at various levels and different specialties in National Hospital, Abuja. Key variables explored include the level of awareness, frequency of use, perceived benefits and challenges associated with EMR system utilization. ***Results:*** Findings indicate a high level of awareness among the nurses, but varying levels of use, largely influenced by factors such as training, system usability, and technical support. Major barriers identified include lack of comprehensive training, insufficient technical infrastructure and limited access to support resources. ***Conclusion:*** The study concludes with recommendations for targeted interventions to improve EMR training and support to enhance system adoption and efficiency. Enhanced EMR utilization is expected to promote accurate, timely, and integrated healthcare services, ultimately contributing to improved patient outcomes at National Hospital, Abuja.

Keywords: Electronic medical records; Nursing informatics; Health information technologies; Health outcome; Patient safety

INTRODUCTION

The adoption and utilization of Electronic Medical Records (EMR) systems have become increasingly important in modern healthcare settings, including the National Hospital, Abuja. Transition from traditional paper-based records to electronic systems is driven by the need for improved efficiency, accuracy, and accessibility of patient information. Awareness and effective use of EMR systems play a crucial role in realizing these benefits. Awareness among nurses regarding EMR systems is a critical factor influencing their adoption and use. Recent studies highlight that while there is a growing awareness of EMR systems' benefits, gaps in knowledge and training can impact their effective use. For instance, Adebayo *et al*. found that many healthcare professionals at National Hospital, Abuja, are aware of the existence of EMR systems, but lack comprehensive understanding and training on their functionalities[1]. This awareness is often influenced by previous exposure to digital tools and the level of support provided during the implementation phase[1].

The use of EMR systems among healthcare professionals at National Hospital, Abuja, reflects both the advantages and challenges associated with digital record-keeping. According to Ibrahim *et al*., nurses have reported improvements in record accuracy and patient care coordination due to EMR systems[2]. The effective use of these systems is often hindered by factors such as inadequate training, technical difficulties and resistance to change[2]. Efforts to enhance the usability of EMR systems through continuous training and support are essential for maximizing their benefits[3].

Challenges such as resistance to change, insufficient training and technical issues have been documented as barriers to effective EMR implementation. For example, Oladipo and Suleiman reported that despite the potential benefits of EMR systems, nurses at National Hospital face challenges that impact their efficiency and satisfaction[4]. Addressing these challenges through targeted training programs, user-friendly system design, and ongoing technical support is crucial. While there is significant awareness of EMR systems among nurses at National Hospital, Abuja, their effective use is influenced by various factors including training, system design, and support mechanisms. Continuous efforts to address these issues are necessary to optimize the benefits of EMR systems in enhancing healthcare service delivery.

Recent literature highlights a varied level of awareness among nurses regarding EMR systems in Nigeria. A research indicates that while awareness is growing, many healthcare professionals still have limited understanding of EMR functionalities and benefits[5]. Their study emphasizes the need for improved educational initiatives to enhance knowledge about EMR systems. It was found that awareness is often dependent on the region and availability of resources, with urban nurses showing higher awareness levels compared to their rural counterparts.

The usage patterns of EMR systems among Nigerian nurses reveal a range of practices is influenced by various factors[6]. According to a study, the adoption of EMR systems is typically higher in larger healthcare facilities, where resources are more abundant. Nurses in smaller or less-equipped facilities however often report lower usage rates due to system limitations and lack of integration with existing practices. The research highlights that despite the introduction of EMR systems, the extent of their utilization is inconsistent and often limited to administrative functions rather than comprehensive clinical documentation.

The adoption of EMR systems in Nigeria has been progressing, though at a slow pace. A study indicates that while there is an increasing interest in adopting EMR systems, widespread implementation is hindered by financial constraints, inadequate infrastructure, and a lack of standardized protocols[4]. The adoption process is often fragmented, with varying levels of integration across different healthcare facilities. Training and support are critical factors influencing the effective use of EMR systems among healthcare professionals. Adeoye *et al.*

underscore that insufficient training remains a significant barrier[7]. Their study reveals that many nurses receive inadequate training, which impacts their ability to utilize EMR systems efficiently.

Healthcare professionals' attitudes and perceptions towards EMR systems in Nigeria are mixed. A study by Eze *et al.* shows that while some healthcare professionals view EMR systems as valuable tools for improving patient care and data management, others expressed concerns about the complexity and time required for system use[8]. Positive perceptions are often associated with improved training and perceived benefits of EMR systems in enhancing patient care.

Challenges in adopting EMR systems in Nigeria are well-documented. Adeyemi *et al.* identify key issues such as inadequate infrastructure, high costs, and resistance to change[9]. Solutions proposed include increasing investment in healthcare IT infrastructure, improving training programs, and fostering a culture of adaptability among healthcare professionals. The study therefore, sought to examine the level of awareness and utilization of EMR among nurses at NH Abuja and their attitude towards its usage, with challenges associated with the use of EMR system by Health Professionals under study.

METHODS
Study design
A cross-sectional design was employed for the study. This design was convenient for the study because it permits the researchers to collect data at its normal scenery and review, scrutinize and deduce so as to achieve the aims and objectives of the study.

Study Area
The study was carried out among nurses at the National Hospital, Abuja.
Study population
The study population comprises nurses at various levels and different functions and / or specialties of nursing care. The study involved a total of 589 nurses in the employment of the National Hospital, Abuja classified as: DD/Nursing Services – 5, AD/NS – 51, CNO – 116, ACNO – 52, PNO – 122, SNO – 142, NOI – 51, and NOII – 50.

Sampling Technique and sample size
A stratified random sampling method was used to select the participants from different specialties among nurses at the NH Abuja. This method is appropriate because it provides a

systematic and effective approach to collecting a sample that accurately reflects the characteristics of the entire population thereby enhancing the reliability and validity of research findings. The sample size was calculated using Cochran's formula for sample size calculation.. Therefore, the sample size was 412.

Instrument for data collection

The instrument for data collection employed in this study was a structured questionnaire. This serve as the primary source of data collection and for which conclusion was drawn.

Data analysis and management

All returned questionnaires were checked for errors and necessary corrections were made before the data analysis. Data was analyzed using statistical package for social sciences (SPSS) software and subjected to descriptive statistics, such as frequencies, percentages and mean to summarize the data on awareness levels and usage patterns.

Ethical consideration

Participants were provided with an informed consent form outlining the study's purpose, procedures, and their right to confidentiality.

RESULTS

The study focuses on awareness and use of EMR system among nurses at NH Abuja. A total number of 412 questionnaires were administered and 400 (97%) were returned completed.Demographic data of participants shows that 287 (72%) of the nurses are female, 164 (41%) are registered nurses, 97 (24%) of them hold a Bachelor's Degree in Nursing Science and 145 (36%) had 6-10 years of experience.

The level of awareness regarding EMR system among the nurses shows that 396 (99%) of the nurses are aware of the EMR system. Self-assessment of nurses knowledge of EMR reveals that half of them (200, 50%) rated their knowledge excellent and, no participant reported their knowledge as poor. As regards the frequency with which nurses use various features of the EMR system at National Hospital, Abuja. The table indicates that 200 (50%) of the nurses use EMR system daily and none reported never using the system.

Table 1 examines the functions of the EMR system utilized by the nurses, shedding light on the specific areas of the system that are most frequently used. The table reveals that 120 (30%) nurses indicated they use EMR system for Patient records management, 90 (23%) used EMR system for appointment scheduling and medication

administration records respectively and only 20 (4%) used it electronic prescribing. Table 2 identifies the main challenges nurses face, when using the EMR system. The table shows that that 110 (29%) of them encountered technical issues in using EMR system, 80 (20%) of them encountered difficulty in navigating the system and integration with other systems respectively and only 10 (2%) of the participants encountered challenges of inadequate power supply.

Table 1: Functions of EMR system do you utilize

Function	Frequency	Percentage (%)
Patient records management	120	30
Appointment scheduling	90	23
Medication administration records	90	23
Laboratory results tracking	0	0
Electronic prescribing	20	4
Reviewing patient history	80	20
Accessing test results	0	0
Total	**400**	**100**

Table 2: Challenges associated with the use of EMR system

Function	Frequency	Percentage (%)
Patient records management	120	30
Technical issues	110	29
Lack of training	100	25
Time consuming	20	4
Difficult to navigate	80	20
Integration with other system	80	20
Inadequate power supply	10	2
Total	**400**	**100**

DISCUSSION

The study revealed that the majority of nurses at National Hospital, Abuja, are aware of the EMR system, demonstrating successful awareness initiatives. Training sessions were the most significant source of awareness, highlighting the hospital's effort to equip staff. Reliance on informal sources like colleagues however indicates the need for structured communication regarding EMR features. High daily usage (50%) suggests integration into routine workflow, however limited

use of advanced features like lab results tracking and electronic prescribing signals under-utilization. These gaps may stem from insufficient training or system limitations. These findings are in congruent with studies one of which was conducted in the same hospital and two others from another hospital in the same region[10-13].

The self-assessed excellent knowledge by half of the participants implies adequate foundational training however, the fair ratings by 23% indicate the need for more tailored training, especially for newer staff or those less familiar with the technology. Technical issues and lack of training were the primary barriers. This is congruent to reports from previous studies?? Navigation difficulties and integration challenges emphasize the need for more user-friendly interfaces and robust technical support. Further ICT and EMR training has been advocated by Adeleke *et al.* as discovered by this current study that more tailored training is required but, the findings are not in tandem with other study that discovered optimum use of the technologies[11,12].

Implications

1. Training gaps: While awareness is high, usage of advanced EMR functionalities remains low. Comprehensive training tailored to all skill levels is crucial.
2. Daily utilization vs. advanced features: Efforts should be focused on encouraging the use of lesser-utilized features to maximize the system's potential.
3. Addressing barriers: Investments in technical support, user interface improvements, and system integration could enhance overall efficiency.
4. These findings underline the necessity for ongoing professional development, infrastructural upgrades, and strategic system enhancements to ensure the full benefits of EMR systems are realized.

CONCLUSION

The study concluded that the nurses have high level of awareness and use of the Electronic Medical Records (EMR) system at National Hospital, Abuja, which therefore provides valuable insights into the current state of EMR adoption and utilization within the hospital. Formal training session is the primary source of information for most healthcare professionals with peer support and department meetings also playing a crucial role in knowledge dissemination.

In addition, these healthcare professionals used the EMR system regularly and do encounter some challenges in using EMR system in the hospital. By addressing the awareness gaps, improving system utilization and providing continuous professional development, the hospital can enhance the overall effectiveness of the EMR system, leading to improved patient care, operational efficiency, and better healthcare outcomes.

RECOMMENDATIONS

Based on the findings, the study recommends the followings:

1. There ensure effective EMR system use, the hospital should implement regular, comprehensive training and refresher programs for all nurses.
2. To increase awareness of EMR's benefits and encourage its full adoption, awareness campaigns could be introduced.
3. To enhance familiarity and confidence in using the EMR system, a peer support structure could be established. Nurses with advanced EMR skills could mentor others, providing hands-on guidance and fostering a collaborative learning environment.

Need for further study

1. Future studies could examine the long-term impact of EMR system usage on patient outcomes, such as the accuracy of medical records, patient safety, and treatment efficiency. A longitudinal study tracking EMR usage over time could reveal trends in system adoption and identify whether increasing familiarity with the system correlates with improvements in patient care.
2. Further research could focus on identifying specific barriers to full utilization of EMR functionalities, particularly among nurses who report lower usage of features like electronic prescribing, lab result tracking, and test result access.
3. A more in-depth qualitative study could explore nurses' personal experiences with the EMR system, focusing on their satisfaction levels, the challenges they face, and suggestions for improvement.
4. A comparative study involving multiple hospitals within Abuja or across Nigeria could provide broader insights into the factors that influence EMR adoption. This would allow for the identification of best practices and the development of standardized approaches to EMR training, usage, and troubleshooting that could be applied across different healthcare facilities.

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Authors Contribution:

AW conceived of the study, initiated the design, participated in literature search, and data collection, analysis and coordination. SN and AJA participated in the design, literature search, data collection, technical process, data analysis and coordination and reviewed the final manuscript.