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Literature Review
Nurses' Perception on the Implementation of Nursing Care Documentation Using Electronic Medical Record: A Literature Review

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Abstract

Background: The global use of Electronic Medical Records in healthcare service organizations such as hospitals is currently undertaken as a measure to enhance efficiency and safety in healthcare provision. Despite considerable attention being given to this aspect, the benefits of this technology are often not fully realized.

Objectives: This research aims to examine the concept of electronic medical records about nurses' perceptions of nursing care documentation, particularly in healthcare services.

Methods: The design of this research utilizes a literature review approach by collecting several articles from selected databases, including ScienceDirect and PubMed, with articles published from 2016 to 2023. An article search was conducted by using the keywords "(Electronic medical record) OR (EMR) OR (e-Health Record) AND (perception) OR (Perceived)". The search for articles was limited by inclusion and exclusion criteria. Inclusion criteria for this study encompassed articles investigating electronic medical records, Electronic Health Record (EHR), or Electronic Medical Record (EMR) with a design of a Crossectional Study, while exclusion criteria included non-health service-related articles, abstracts, and books only, as well as letters to the editor.

Results: EMR provides significant benefits in clinical practice and healthcare services. The majority of respondents view EMR as a highly advantageous technology in terms of patient data access, workflow efficiency, and the improvement of service quality.

Conclusion: This research can be used as a foundation for further development and improvement in the implementation of EMR to enhance the quality of service and patient safety in clinical practice.

Keywords: electronic medical record, nurse, perception

Introduction

The electronic medical record (EMR) system has been widely adopted and implemented in various healthcare organizations. EMR is a computerized patient record that serves as a method for managing and utilizing patient healthcare records more efficiently.[1] EMR can be used for various purposes at the individual, organizational, and system levels, including clinical care for individual patients, billing processes, workforce planning, epidemiological and public health studies, as well as the development and evaluation of health policies.[2] Additionally, EMR also plays a crucial role as a legal document in addressing patient complaints.[3] EMR was first introduced as a clinical information system in the mid-1960s.[4] Since then, Electronic Health Records (EHRs) have proliferated globally with varying levels of integration in different clinical settings in North America, the UK, and Europe.[5] There is evidence indicating significant potential to improve the quality and safety of healthcare through the use of EMR.[6] National studies involving the United States also reported significant clinical benefits from the use of EMR. Participants noted that EHR improves overall patient care and enables remote access to their patient records.[7] Various studies in different healthcare settings have extensively examined the impact of EMR on clinical outcomes.[8] In hospital environments, the focus of evaluation is primarily on the positive benefits of EMR usage. EMR has proven to play a role in reducing medication errors in two private hospitals in Australia, improving treatment accuracy in community health facilities in the United States, detecting drug side effects in hospitals in the UK, and enhancing drug administration processes in emergency units in the U.S.[9,10]
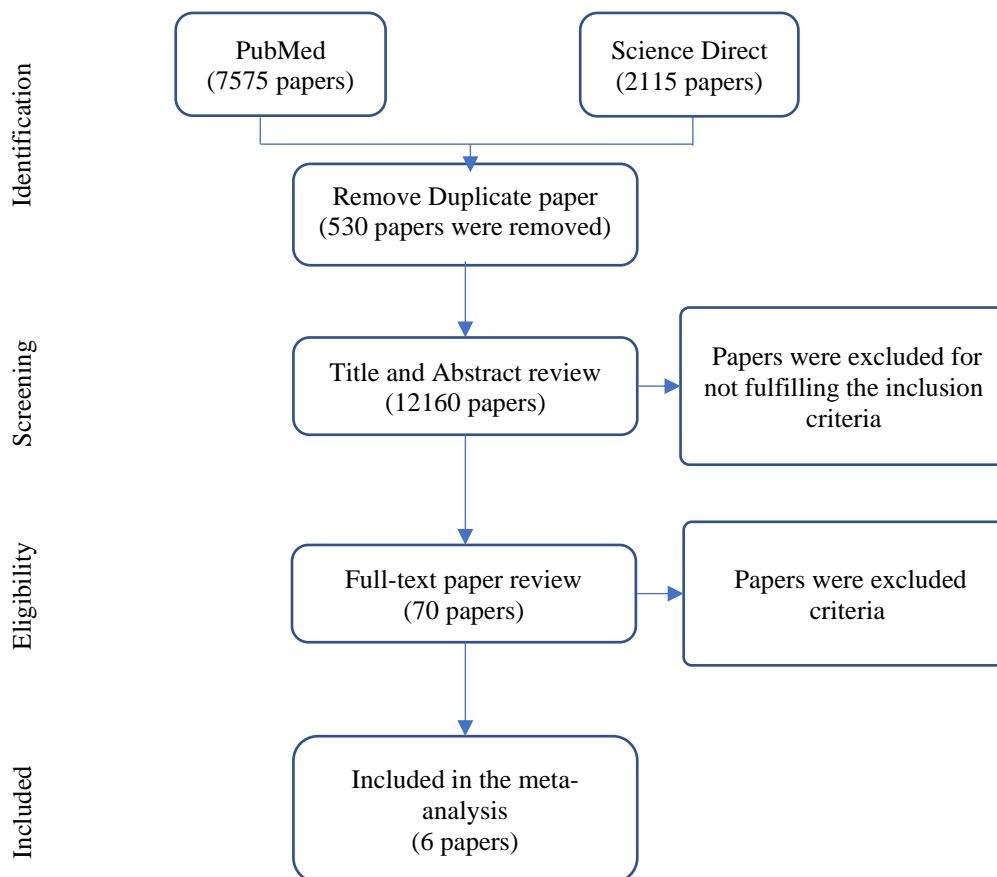
The importance of nurses' acceptance of the EMR system becomes crucial in integrating EMR with patient-focused nursing care practices.[11] Not surprisingly, the level of acceptance of this system by nurses heavily depends on how nurses perceive the benefits that can be gained from using EMR, as its use directly impacts the quality of healthcare services.[12] The use of EMR by nurses should also be effective and efficient to enhance or achieve quality healthcare services for patients. Effectiveness occurs when EMR assists nurses in achieving a high level of accuracy and completeness in their healthcare practice. Efficiency, on the other hand, is related to the appropriate use of resources in the context of the accuracy and completeness of nurses in performing their tasks. A study conducted by Rose et al. using two independent qualitative ethnographic research confirmed that adjusting the EMR system is key to enhancing the benefits and efficiency of nursing care.[13] Although there is emerging evidence supporting the widespread and beneficial use of EMR in healthcare services, there is not yet sufficient evidence addressing nurses' perceptions of the current implementation and utilization of EMR. Therefore, this research aims to understand nurses' perceptions in the implementation of nursing care documentation using EMR.

Methods

The research study design in this research utilizes the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA). This study employs the PIO (Population, Intervention, Outcome) format consisting of P: Nurses, I: Electronic Health Record, and O: Nurses' Perceptions. In searching for articles used in this research, the researcher utilizes two databases, namely Pubmed and ScienceDirect. The researcher chose these databases as they are comprehensive databases for health and medical documents worldwide.[14] The keywords used in the search for this research are a set of terms: "(Electronic medical record) OR (EMR) OR (e-Health Record) AND (perception) OR (Perceived)". The researcher applies inclusion and exclusion criteria in this study to avoid research bias that may occur.[15] The inclusion criteria for this study consist of (1) articles with a cross-sectional research design, (2) articles with the nurse and general healthcare personnel as research subjects, (3) articles in the English language, (4) articles of observational paper type, (5) Last 10 years, Meanwhile, the exclusion criteria for this study

are (1) articles discussing research subjects other than nurse patients, (2) articles of survey paper, editorial paper, abstract, book, (3) proceeding types, (4) study protocol.

Scheme 1. PRISMA Method for Article Search

Results

The literature review research conducted using the PRISMA method resulted in the researcher obtaining 7575 articles from the PubMed database, 2115 articles from the ScienceDirect database, and a total of 12610 articles. Subsequently, the researcher conducted a duplication check for the total articles obtained, and 530 duplicated articles were removed from the study. After that, 12690 articles were eliminated based on title and abstract, resulting in 70 articles that were reviewed in-depth. The elimination was further carried out based on inclusion and exclusion criteria, resulting in a final total of 6 articles for discussion in this study. The research results findings from the various studies on Electronic Medical Records (EMR) and Electronic Health Records (EHR) usage suggest a generally positive reception among healthcare professionals, particularly nurses, despite persistent challenges. The majority of participants expressed satisfaction with the systems, emphasizing their usefulness and ease of use. However, notable barriers such as time demands, fatigue, and technical difficulties hinder widespread adoption. Demographic factors, including age and gender, do not significantly influence perceptions, while training plays a crucial role. Recognizing the need for better infrastructure, technical support, and regional policy attention is crucial for enhancing the successful implementation of EMR/EHR systems.

Table 1. Literature Review Persepsi Perawat Pada Penerapan Dokumentasi Asuhan Keperawatan Menggunakan Electronic Medical Record

Author/ Year	Title	Country	Study Design	Objective	Intervention Instrument	Results	Conclusion
A. Karim Jabali, Fuad A. Abdulla, 2023	Electronic health records perception among three healthcare providers specialties in Saudi Arabia: A cross-sectional study	Saudi Arabia	Cross-sectional study	To examine the perception of three healthcare professions in Saudi Arabia regarding the use of EMR.	Questionnaire	Respondents' feedback regarding the benefits and drawbacks of using EMR is as follows: The majority of respondents (75% or more) indicated that EMR is highly beneficial or beneficial for their clinical practice, according to the provided criteria. However, when asked about the benefits of EMR in preventing errors, such as avoiding drug interactions, only 36.4% reported that EMR is highly beneficial or beneficial. More than 50% stated that EMR is detrimental in this regard. Respondents expressed satisfaction with the use of EMR, particularly in terms of system usability and as a viable alternative to paper-based records. Nevertheless, they were less satisfied with the stress levels that can be induced in doctors. Most respondents reported that EMR is very easy or easy to use for the tasks indicated. The highest scores were given for timely viewing of patient laboratory test results,	This study indicates that the majority of research participants have a positive view of the use of the EMR system. The main constraints of the EMR system, as reported by research participants, are time demands and their impact on fatigue in the healthcare profession. The demographics of participants, including age, specialization, work experience, experience with EMR, and rank, seem to not influence their perspectives on EMR usage.

						while the lowest scores were given for managing patients' chronic conditions.	
Zining Xia, et al, 2020	Perceived Value of Electronic Medical Records in Community Health Services: A National Cross-Sectional Survey of Primary Care Workers in Mainland China	China	Cross-sectional study	To evaluate the extent of EMR use in primary healthcare and its perceived value among primary care workers in China.	Questionnaire	Most respondents, namely 89.4%, believe that it is important to build an Electronic Medical Record (EMR) system in primary care services. EMR functions that received approval ("agree" or "strongly agree") from respondents encompassed all evaluated aspects, including decision support for diagnosis and treatment (76.1%), sharing information between organizations (77.7%), improving work efficiency (76.6%), and providing real-time health questions (78.9%). It was found that respondents from less developed regions in the western part had a lower level of appreciation (p <0.05) for the value of EMR compared to respondents from more advanced eastern and central regions. The difference in ratings between patients using EMR and those who do not was found in one aspect, namely that patients using EMR tend to be more aware of the benefits of EMR in "facilitating contracts between patients and general practitioners."	In short, more than 58% of public health services in mainland China have implemented Electronic Medical Records (EMR). However, the lack of recognition of the existing benefits of EMR is a concerning issue. Limitations in data acquisition and referral arrangements do not align with the requirements for "chronic condition management," which is the most desired feature of EMR in public health services. There needs to be greater attention to regional disparities in the implementation of EMR values in public health services through appropriate policies.

Wegdan Bani-issa, 2016	Satisfaction of health-care providers with electronic health records and perceived barriers to its implementation in the United Arab Emirates	UEA	Cross-sectional study	To evaluate the satisfaction level of the Healthcare Profession in the United Arab Emirates regarding the impact of Electronic Medical Records (EMR) on access/examinations, documentation, and treatment administration, and to identify the obstacles faced in its utilization.	Telepon vs Android-based smartphone application, voice messages system	From 680 participants, a total of 317 (46.6%) expressed a high level of satisfaction with the EMR system, with 295 (43.4%) of them giving a rating of 5 (very satisfied) on the Likert scale. The overall average score for satisfaction with the EMR system was 4.02/5 (SD = 0.89), encompassing three quality aspects: access/viewing (M = 4.08, SD = 0.52), documentation (M = 3.92, SD = 0.55), and medication administration (M = 4.05, SD = 0.52). There were significant differences in average scores between Healthcare Profession groups related to overall satisfaction with EMR (F(2, 679) = 21.97, P = 0.001). Post hoc group comparisons, using Scheffé post hoc criteria for determining significance, indicated that doctors reported significantly higher average scores in overall satisfaction with EMR (M = 4.8, SD = 0.64) compared to nurse and other combined Healthcare Profession scores (P-value = 0.001). Table 2 contains scores (means and standard deviations) for the impact of EMR on quality, including	This study provides information about the satisfaction of Healthcare Professionals with Electronic Medical Records (EMR) and identifies barriers faced in its implementation. This research can serve as a learning resource for the challenges associated with the early stages of EMR implementation, which may be beneficial for policymakers and administrators at the local level, as well as in similar locations and countries. Reflection and feedback from nurses regarding EMR are necessary to significantly improve the quality of documentation and nursing strategies. Nurses also need to be empowered to voice their concerns to IT vendors and be involved in its implementation from the outset, allowing them to continue providing a patient-

						access/viewing, documentation, and medication administration, as perceived by the Healthcare Profession.	centered approach.
Hamish S F Fraser, et al., 2022	User Perceptions and Use of an Enhanced Electronic Health Record in Rwanda With and Without Clinical Alerts: Cross-sectional Survey	USA	Cross-sectional study	This research aims to evaluate the utilization and staff perception of the widely used Electronic Health Record (EHR) for HIV services in >300 health facilities in Rwanda.	Questionnaire	From 100 participants, a total of 90 participants (response rate 90%) were interviewed at 54 health centers, where 44 participants (49%) were clinical interviewees, and 46 participants (51%) had technical backgrounds. The primary use of the Electronic Health Record (EHR) was to easily or quickly access client data, as mentioned by 62 out of 90 participants (69%). Additionally, other uses included updating patient records (56/89, 63%), creating new patient records (49/88, 56%), generating various reports (38/85, 45%), and reviewing previous records (43/89, 48%). More than 90% of respondents (81/90) agreed that the EHR facilitates accurate decision-making, is worth using, and has improved the quality of patient information. Regarding availability, 75% of participants (66/88) stated that they could always or almost always rely on the availability of the EHR,	This survey provides evidence that the Electronic Health Record (EHR) system has become a more accepted component in providing HIV services in Rwanda. Generally, the staff supports the system, although many of them desire further training, better technical support, as well as stronger infrastructure and improved networks. Staff at the intervention sites are more likely to use or have positive experiences with the enhanced key features in the EHR.

						while 7% of participants (6/88) said they never or rarely could rely on it. In the intervention locations, a significantly larger number of staff were more likely to update existing records (P = 0.04), create summaries before or during visits (P <0.001), and agree that "EHR provides useful alerts and reminders" (P <0.01).	
Mohammad Alboliteeh, 2022	Cross-sectional Study of Nurses' Perception Toward Utilization A Cross-sectional Study of Nurses' Perception Toward Utilization and Barriers of Electronic Health Record and Barriers of Electronic Health Record	Saudi Arabia	Cross-sectional study	The research aims to understand nurses' perceptions regarding the utilization and obstacles of Electronic Health Records (EHR).	Questionnaire	No significant differences were found between demographic profiles and perceptions of usefulness (PU), perceived ease of use, and intention to use. Gender did not show significant differences in PU ($p > 0.671$), perceived ease of use ($p > 0.605$), and intention to use ($p > 0.880$). However, there were significant differences in terms of age, particularly related to PU ($p = 0.045$), although there were no significant differences in perceived ease of use ($p > 0.883$) and intention to use ($p > 0.223$). Regarding training, significant differences were found, especially in the amount of training received and its impact on PU ($p = 0.039$) and intention to use ($p = 0.007$), while there were no significant differences in perceived ease of use ($p > 0.142$). On the other	Nurses have a positive view of the Electronic Health Record (EHR), considering it useful, and easy to use, and expressing a desire to use it. Gender does not influence perceptions of usefulness (PU), perceived ease of use, or the intention to use it. However, there are significant differences in PU based on age factors. Training also plays a crucial role, with significant differences in PU and the intention to use it.

						hand, the duration of experience did not show significant differences in PU (p > 0.708), perceived ease of use (p > 0.577), and intention to use (p > 0.949). Other data reveal the barriers faced by nurses in utilizing Electronic Health Records (EHR). Therefore, a lack of training is considered the most common barrier experienced (77.9%), followed by resistance to adopting EHR (65.1%), and a lack of technical support (57.8%).	
Fatma Arikan et al, 2021	Barriers to Adoption of Electronic Health Record Systems from the Perspective of Nurses	Turkiye	Cross-sectional study	This research report aims to investigate barriers to the implementation of electronic health record systems from the perspective of nurses.	Questionnaire	The research sample consisted of 160 nurses currently working in university hospitals. Four incomplete questionnaires were excluded from the study. The average age of the participants was 30.94 ± 0.59 years, and 77.5% of them were university graduates. Analysis of the departments where nurses worked showed that the majority of participants worked in the internal medicine department (55.4%), followed by those working in the surgical clinic (21.9%). Around 86.3% of nurses worked as ward nurses, with 80% of them working on day and night shifts. Work experience was assessed in two categories, with the	To ensure the successful integration of nurses into the EMR system, the initial step that needs to be taken is to investigate potential barriers that may limit the system's usage. Additionally, it is essential to identify factors supporting the adoption of digital health technology and devise creative solutions to overcome challenges in EMR implementation. In this context, ensuring the active participation of nurses in efforts to customize the product

number of nurses with more than 5 years of experience equivalent to the number of nurses with less than 5 years of experience in their profession. The number of patients receiving daily nursing care ranged from 3 to 30 depending on the department, with an average of 13.08 patients (high patient load).

Commonly used EHR functions by nurses, along with their pros and cons, are as follows. Nurses reported that they most frequently use the EHR system to access ward records (29%). Other EHR domains frequently used by nurses in routine nursing care include laboratory results (80.6%), Braden and Itaki scales (73.5%), patient identification (68.4%), patient education (66.5%), blood glucose monitoring (60.6%), pain management (55.5%), and isolation (52.9%). Meanwhile, the least used segments are the safety diagnosis system (20.6%), Glasgow scale (21.9%), pathology results (23.2%), blood transfusion (26.5%), fluid monitoring (29.7%), and vital signs measurement (43.9%). Participants reported that the

with better features and functions is crucial. Technical difficulties associated with the system must be addressed, prioritizing patient and nurse safety as the top priority. Reducing the nurse-patient ratio and improving aspects of the EMR that are most critical for nurses should also be a primary concern. While most nurses may understand the benefits of EMR usage, they still perceive a high patient load, limited time, and user-unfriendly interfaces as major obstacles to widespread EMR adoption.

most significant benefits of the EHR system are accessibility of test results (91.8%), availability of medical records and information (78.6%), and time-saving ability (54.1%). Drawbacks include technology-related difficulties (45.6%), the time needed to input data into the system (42.3%), lack of hardware (such as tablets for recording bedside information, etc.) (37.6%), and increased workload (36.9%).

Discussion

Based on the research findings, it was found that the majority of respondents considered EMR very beneficial or beneficial for their clinical practice. However, there were differences in the perception of the benefits of EMR in preventing medical errors, especially in avoiding drug interactions. Some respondents considered EMR detrimental in this regard.[16] This may indicate the need for improvement in the ability of EMR to detect and prevent medication-related medical errors. Respondents generally expressed satisfaction with the use of EMR, especially in terms of system user-friendliness and as an alternative to paper-based recording. However, it should be noted that some healthcare professionals experienced higher levels of stress due to EMR use.[16]

Other results showed that the majority of respondents supported the development of EMR systems in primary care.[17] EMR functions that received approval from respondents included decision support, information sharing between organizations, improving work efficiency, and providing real-time health questions.[18] However, differences in perception were found between less developed and more advanced regions. This indicates the need to pay attention to different needs and challenges in implementing EMR in various geographical contexts. This research also indicates that patients using EMR tend to be more aware of its benefits, emphasizing the importance of better communication between patients and medical professionals supported by EMR.[18] Other studies revealed that the majority of respondents were satisfied with the EMR system. The average scores for overall satisfaction were positive and covered three main quality aspects: access/viewing, documentation, and medication administration.[19] However, it should be noted that doctors reported higher levels of satisfaction compared to nurses and other healthcare professionals. This may reflect differences in perceptions and experiences of EMR use between these groups.

The primary use of EHR is to easily or quickly access client data. Respondents also stated that EHR facilitates accurate decision-making and has improved the quality of patient information.[20] Nevertheless, there were no significant differences in perceptions of usefulness, ease of use, or intention to use EMR based on gender. However, there are differences in perceptions related to age and the received training. Age influences perceptions of usefulness, while training has a positive impact on perceptions and intentions to use EMR.[21] The obstacles faced by nurses in utilizing EHR include a lack of training, resistance to adopting EHR, and a lack of technical support. Therefore, it is crucial to pay attention to proper training and technical support in the implementation of EHR.[22] The majority of nurses use EHR to access ward records and laboratory results. They report that the main benefits of EHR are the accessibility of test results and the availability of medical records and information.[23] However, some nurses also face difficulties related to technology and an increased workload. Therefore, there needs to be special attention to training and technical support for nurses to maximize the benefits of using EHR and overcome the obstacles they encounter.[24] Overall, the findings of this research provide a comprehensive overview of perceptions and experiences regarding the use of EMR and EHR in healthcare settings. The study identifies various benefits and challenges associated with the implementation of this health technology, as well as valuable insights for further development and improvement in the utilization of EMR and EHR in clinical practice.

Conclusion

Electronic Medical Records (EMR) and Electronic Health Records (EHR) provide significant benefits in clinical practice and healthcare services. The majority of respondents consider EMR and EHR highly beneficial in terms of patient data access, workflow efficiency, and improving service quality. However, there are differences in perceived benefits, especially in preventing medical errors, with some respondents feeling that improvement is needed in this aspect for both EMR and EHR. The implementation location also plays a crucial role, with more developed regions having more positive perceptions regarding EMR and EHR. The role of patient communication in facilitating the use of EMR and EHR is also proven to be significant, and adequate training and technical support are crucial factors in enhancing acceptance and benefits from this technology. The implications of this study for Indonesia are that the implementation of EMR and EHR has the potential to provide significant benefits in clinical practice and healthcare services. Therefore, efforts are needed to enhance this aspect for a more optimal implementation of EMR and EHR in Indonesia

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