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Nurses' experiences using electronic medical record (EMR): A systematic review

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Abstract

Background: The evolution of information and communication technology has led to significant changes in nursing care and the health care system, particularly through the use of Electronic Medical Records (EMR). This literature review focuses on the pivotal role of nurses in the development and implementation of EMR for the documentation of nursing care.
Purpose: To investigate nurses' experiences with electronic medical records (EMR) for documenting nursing care.
Method: A systematic review approach in line with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. Articles were sourced from online databases such as PubMed, Google Scholar, Garuda, and Science and Technology Index (SINTA). The review was organized according to the PICOS framework. In this article, the PICOS criteria were defined as follows: P: Nurse and health worker, I: Nursing documentation uses electronic medical records, C: Explains the influence, impact of electronic documentation, O: Efficiency, quality of health care and safety of patient care, S: qualitative research methods. The keywords used in the search included “documentation of nursing”, “electronic medical record” and “nurse performance”. Articles were selected based on specific inclusion criteria: publication within the last five years (2019-2024), English language, use of qualitative research methodology, the nurse uses electronic medical records, and with full-text availability.
Results: The literature review found that most nurses felt a sense of ease and efficiency in filling out documentation, higher data accuracy, increased work productivity, and ease in identifying patient data to carry out nursing diagnoses regarding patient care, thereby underscoring the integral role of nurses in the development and use of EMR.
Conclusion: Computer-based nursing care documentation provides various conveniences and helps nurses deliver their care. Thus, considering the use of EMR in nursing documentation may increase the quality of care.

Keywords: Documentation; Electronic Medical Record; Nurse Experience.

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INTRODUCTION

The use of manual, paper-based nursing documentation can reduce the time nurses have to interact with patients' families. Some challenges with this method include the time-consuming nature of filling out forms, high printing costs, frequent misplacement or loss of documents, the need for extensive storage space, and difficulties in retrieving the forms when necessary (Andriani, Wulandari, & Margianti, 2022).

Nursing documentation is an essential component of nursing care, requiring that all nursing activities be recorded with critical thinking. Inaccurate or unclear documentation can lead to suboptimal interprofessional communication and hinder effective nursing evaluation. Nurses must document patient interventions across various records, but the lack of a standardized national system leads to inconsistent documentation practices across different hospitals, resulting in varying interpretations of nursing records. This underscores the need for a standardized system that fosters multidisciplinary efficiency (Asmirajanti, Hamid, & Hariyati, 2019).

In Indonesia, the development of an integrated electronic documentation system, known as the Electronic Medical Record (EMR), is underway. Advances in information and communication technology have transformed healthcare services, with the adoption of EMRs improving the quality of nursing care (Baumann, Baker, & Elshaug, 2018).

Some benefits of EMRs include easier access to services, structured assessments, better-organized data management, enhanced patient safety, smoother collaboration among healthcare professionals, and improved communication in line with patient conditions (Wikansari & Santoso, 2022). Despite these advantages, nurse productivity with EMRs has not reached its full potential in some institutions, likely due to the shift from traditional paper documentation to an electronic system. This transition requires nurses to adapt to the new method of electronic documentation (Kernebeck, Busse, Jux, Dreier, Meyer, Zenz, & Ehlers, 2022).

Since nurses are the largest group of EMR users in healthcare, it is crucial to assess their proficiency with the system. Nurses' acceptance of EMRs is vital for integrating them into patient-centered nursing care, influencing both their willingness to use the system and the overall quality of healthcare services (Koten, Ningrum, & Hariyati, 2020).

The implementation of new work systems, like EMRs, can increase workloads and thus necessitates motivation, knowledge, and coordination. This transition requires nurses to be well-prepared and calls for regular evaluations to assess the effectiveness of electronic documentation (Herlina, 2023).

RESEARCH METHOD

A systematic review with article selection guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. The systematic review process begins with the formulation of clinical questions relevant to the topic. Before this, the authors establish PICOS criteria, which stand for: P (problem, patient, or population), I (intervention, prognostic factor, or exposure), C (comparison or control), O (outcome), and S (study design). For this article, P: Nurse and health worker, I: Nursing documentation uses electronic medical records, C: Explains the influence, impact of electronic documentation, O: Efficiency, quality of health care and safety of patient care, S: qualitative research methods.

The article search was conducted systematically using the keywords: “Documentation of Nursing” AND “Electronic medical Record” AND “Nurse Performance”. The search spanned four databases: PubMed, Google Scholar, Garuda, and Science and Technology Index (SINTA). The search process was guided by predefined inclusion and exclusion criteria. The inclusion criteria required articles published within the last five years (2019-2024), written in English and Indonesia, employing a qualitative research methodology, the nurse uses electronic medical records, and with full-text availability. The exclusion criteria ruled out articles published before 2018, those not in English, irrelevant to nursing documentation uses electronic medical records, review articles, and studies not using qualitative research methods.

The initial search resulted in 14 articles from PubMed, 12 from Google Scholar, 8 from Garuda and 9 from SINTA, totaling 43 articles. After screening and filtering based on the predefined criteria, 7 articles met the inclusion criteria and were selected for further analysis. These articles were then assessed for quality using a 19-item questionnaire related to qualitative research methods.

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RESEARCH RESULTS

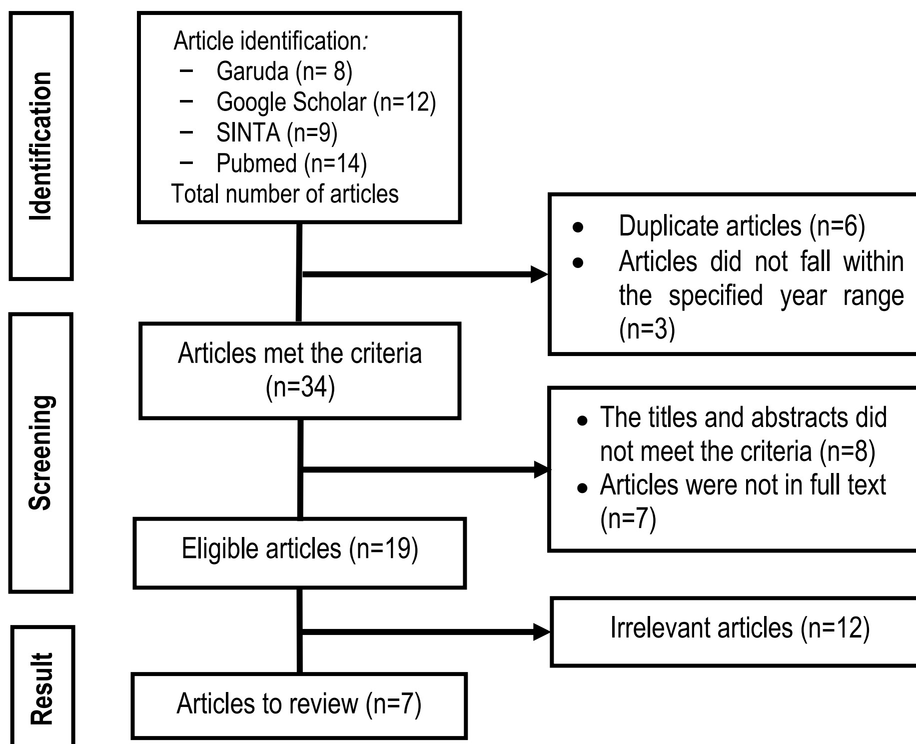

Figure 1. PRISMA Flow Diagram

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Table 1. The Main Characteristics of Included Studies

Author (Year) (Country)	Purpose	Method	Results
(Jedwab et al., 2022) (Australia)	To report on the development of an iterative quality improvement program for nursing, midwifery, and medical EMR documentation.	The Model for Improvement quality improvement framework guided cycles of "Plan, Do, Study, Act." Steps included design, pre- and pilot testing of an audit tool to reflect expected practices for EMR documentation that examined quality and completeness of documentation 1-year post-EMR implementation. Analysis of initial audit results was then performed to (1) provide a baseline to benchmark comparison of ongoing improvement and (2) develop targeted intervention activities to address identified gaps.	Analysis of 1,349 ESDM medical record audits as a baseline for ESDM cycle I quality improvement showed that five of the nine components of nursing and midwifery documentation, and four of the ten components of completeness and quality of medical documentation were classified as good (>80%). The output of this effort also includes a strategic framework for improving the quality of EMR documentation, as well as an EMR data dashboard to monitor compliance.
(Kaipio et al., 2020) (Finland)	To compare user experiences regarding the usability of electronic health record (EMR) systems based on field workers (health workers) and EMR vendors.	To measure usability, we used the validated National Usability-focused HIS Scale (NuHISS). For this study, we selected 11 usability statements that relate to technical quality (n = 3), ease of use (n = 6), benefits (n = 1) and collaboration (n = 1), and were identical in both surveys. We report the responses from 3013 physicians and 2560 nurses working in public sector hospitals or primary care health centers in 2017.	Overall and by healthcare sector, there were significant differences between nurses' and physicians' performance in their EMR usability experiences. Results showed that physicians were more satisfied with EMRs than nurses in terms of technical quality and system learning, while nurses perceived ease of use better and were more satisfied with collaboration aspects than physicians. The two EHR brands used in hospitals appeared to support physicians' workflows, while the other two used in health centers were more suited to nurses' needs. Conclusions: Nurses' and physicians' EHR usability experiences appeared to vary more by EHR brand and employment sector compared to the more satisfied professional groups in general.

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Author (Year) (Country)	Purpose	Method	Results
(Jedwab et al., 2022) (Australia)	To explore the experiences of Australian nurses following the implementation of an EMR system across their organisation.	This qualitative descriptive study used focus group and individual interviews and an open-ended survey question to collect data between 12 and 18 months after the implementation of an EMR across 6 hospital sites of a large health care organization in Victoria, Australia. Data were collected between November 2020 and June 2021, coinciding with the COVID-19 pandemic. Analysis comprised complementary inductive and deductive approaches. Specifically, reflexive thematic analysis was followed by framework analysis by the coding of data as barriers or facilitators to nurses' use of the EMR using the Theoretical Domains Framework.	The implementation of EMRs dramatically changed the work and work of nurses, and nurses are still adapting to the implementation of EMRs 18 months after implementation. Researchers explore how EMR adoption impacts nurses, patient care, and the broader nursing profession. This time, the issue is that nurses' beliefs about EMR implementation are causing larger changes in nurses as individuals and nursing as a profession in how they document.
(Lloyd et al., 2023) (Australia)	To explore medical and nursing perspectives on the usability of EMR using free text data collected in a survey.	Qualitative analysis of one free-text optional question included in a web-based survey. Respondents included medical and nursing/midwifery professionals in Australian hospitals (85 doctors and 27 nurses), who commented on the usability of the main EMR used.	Our study found that healthcare professionals working in hospitals experience a variety of usability issues, including hybrid record-keeping systems, multiple logins, poor EMR integration with clinical workflows, limited communication with external providers, potential for new errors, warnings and alerts, system response times and stability, and lack of intuitiveness/learnability.
(Chipps et al., 2020) (England)	The objectives of this study were to: (a) study the process of incorporating EBP into an EMR, (b) uncover facilitators and barriers to documenting new evidence-based nursing practices into an EMR & (c) identify strategies and processes that have been successfully implemented in healthcare organizations.	A qualitative study design was utilized. Purposive sampling was used to recruit nurses from across the country (N = 29). Nine focus group sessions were conducted. Semistructured interview questions were developed. Focus groups were conducted by video and audio conferencing. Using an inductive approach, each transcript was read and initial codes were generated resulting in major themes and subthemes.	Five major themes were identified: (a) barriers to documenting EBP into the EMR, (b) organizational structures and processes governing the EHR, (c) priorities for EMR change, and (d) impact on physicians' ability to implement EBP.

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Author (Year) (Country)	Purpose	Method	Results
(Guo et al., 2019) (Colombia)	To understand the patterns associated with EMR documentation, real-time measurement system data was used. This log data is a representation of the actions taken by ICU nurses during EMR documentation. To analyze ICU nurses' workflows associated with EMR documentation.	This log data is a representation of actions taken by ICU nurses during EMR documentation. To analyze the ICU nurse's workflow related to EMR documentation, a hierarchical task analysis (HTA) was conducted. Multiple HTA charts were used to identify different patterns of EMR documentation between more experienced nurses and less experienced nurses.	The results of the study revealed that nurses' experience had a significant impact on the frequency of updating the assessment results page and reviewing clinical results in the EMR. The findings of this study will contribute to uncovering the unknown usability issues of the EMR documentation process.
(Dhamar, & Rahayu, 2020) (Indonesia)	The purpose of this study was to obtain an overview of nurses' experiences using electronic medical records.	This study was a qualitative research, used purposive sampling technique. The research was conducted at Panti Rini Hospital Yogyakarta and conducted in May 2020 and interviewed 5 nurses and 1 head of the ward in the inpatient ward.	The results of the study found 4 themes, namely: the use of electronic medical records provides convenience, supporting factors for the use of electronic medical colleagues, obstacles in the use of electronic medical records and nurses' expectations in the use of electronic medical records.

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DISCUSSION

Based on the research reviewed, nurses' experiences using EMR for documentation highlighted several benefits, such as ease of use, comprehensive functionality, and improvements in the quality of care provided to clients. While EMR offers significant advantages, challenges such as a limited number of devices, low user knowledge, and network issues during documentation were also identified (McCarthy, Fitzgerald, O'Shea, Condon, Hartnett-Collins, Clancy, & Savage, 2019).

Nurses generally agreed that EMR made documentation easier, but many encountered delays due to the insufficient number of devices compared to the number of nurses on duty (Lloyd, Long, Alvandi, Di Donato, Probst, Roach, & Bain, 2021).

Further clarification from the study emphasized that proper facilities and infrastructure, such as computers, internet access, motivated staff, hospital policies, IT support, and training, are essential for maximizing the effectiveness and efficiency of EMR in nursing documentation (Sugiharto, Agushybana, & Adi, 2022). Nurses also perceived that electronic health records (EHRs) sped up documentation and allowed for quicker access to patient information, reducing the need for handwritten records and decreasing paper usage (Amin, Setyonugroho, & Hidayah, 2021). EMR, equipped with structured templates like those based on NANDA nursing diagnoses, helps nurses organize their care and interventions more accurately (Adereti, & Olaogun, 2019).

Despite its benefits, EMR has limitations, such as a shortage of devices, wireless network problems, and insufficient human resources, which can hinder timely documentation and planning (Nugroho & Pramudita, 2024). Adequate resources and proper training are crucial to fostering a positive attitude among users and enhancing documentation efficiency (Winata & Hariyati, 2021). While EMR has great potential to improve healthcare quality and safety, continuous improvement and feedback are necessary to fully realize its benefits (Asih & Indrayadi, 2023). Nurses need to adapt and develop skills to efficiently use the system, which, despite initial challenges, has proven to reduce workload over time (Sulastri, & Sari, 2018; Tandi, Syahrul, & Erika, 2020).

CONCLUSION

Nurses' experiences with documenting using EMR include the ease of application, better readability, improved comprehension and recording of nursing care, reduced paper usage, and enhanced service quality in hospitals.

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