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Application of Electronic Health Record (EHR) In Nursing Documentation: Literature Review

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Abstract

Nursing documentation in Indonesia generally uses paper and has several limitations to completeness, efficiency, and accessibility of patient information. Electronic Health Record (EHRs)-based nursing documentation is an alternative to solving nursing documentation problems. This study aimed to analyze factors influencing the implementation of EHRs in nursing documentation and their impact on nursing services. This study used a literature review with the PICOS framework. Article search using electronic databases: Google Scholar, Research Gate, PubMed, and Science Direct with the keywords related to nursing documentation and EHRs. Articles published between 2019 and 2022 were screened based on inclusion and exclusion criteria, resulting in 10 eligible articles for review. The findings showed that the successful use of EHR-based documentation is determined by nurse perception factors, leadership and organizational support, availability of infrastructure, system usability and training to improve nurses' competence. EHR improves the quality of nursing care because it is more integrated, nurses feel satisfied because it is helped, and there is time efficiency in documenting nursing care.

INTRODUCTION

The nursing process solves client problems systematically, is structured, and is implemented following nursing standards. Therefore, the nursing process is the core of nursing practice and the main content of nursing documentation. Nursing documentation contains data from the entire series of nursing processes arranged systematically, validly, morally, and legally accountable (Olfa, Yustiana., & Ghofar, 2016). Nursing documentation in Indonesia is generally paper-based. The documentation model has many weaknesses, so innovation is needed in using electronic-based documentation (Wulandari, D. F., & Handiyani, 2019).

Several studies have reported problems related to the quality of nursing documentation. Tasew et al. (2019) found that nursing care documentation practices were inadequate in 47.8% of respondents due to insufficient documentation sheets, limited time, and non-compliance with documentation standards. Likewise, Maryam (2015) reported that only 57.2% of nursing documentation was complete, while 42.8% remained incomplete. Incomplete nursing documentation indicates that the nursing care process is not implemented optimally and continuously.

The standard for the accuracy of the nursing process is 100%. However, the evaluation results of applying nursing care standards in private hospitals in East Java have not been on target. The data was obtained using observation sheets based on diagnosis standards, outcome standards, intervention standards, implementation and evaluation standards determined by the Indonesian National Nurses Association (PPNI). The accuracy of nursing care based on PPNI standards is moderate (69%). 59% of nursing plans, 66% of nursing implementation, 60% of nursing care evaluations, and 62% of nursing care documentation are adequate (Trisno et al., 2020).

This phenomenon became a basis for developing documentation. Strategies to improve the quality of nursing documentation include utilizing advances in information technology. The era of the Industrial Revolution 4.0 shows the rapid development of technology in the world, including related to information management systems. Electronic Health Record (EHR)-based nursing documentation integrated with the health service information system is an alternative to solving nursing documentation problems.

Electronic-based nursing documentation can help in meeting documentation standards, improve the quality of documentation, facilitate decision making and provide information that is easy to access, can minimize potential loss or damage to progress records, improve information exchange and coordination between nurses or other health teams, documentation can be easily audited, help improve the accuracy of client data, can access progress client health and reduce treatment costs (Sari, 2018).

Electronic Health Record (EHR) is an effective documentation medium for delivering health and nursing services. Electronic-based nursing documentation minimizes nurses' time completing patient data, and other core activities that were initially carried out manually became computerized. This facilitates nurses in improving work efficiency and generates more time to improve the quality of care services. Electronic Health Record (EHR) provides convenience in receiving information that is useful for professions related to patient health services and can also support the nursing process (Wardani, G.I., Tri, K., Suhendar, 2022; Mulyani, I., Zamzani, E.M., & Zendrato, 2019; Mc Carthy, 2019).

EHRs use in nursing documentation has grown, it is used in many countries including applied to several health services in Indonesia (Saputra, C., Arif, Y., & Yeni, 2020). Dr. M. Yunus Bengkulu Hospital has implemented telenursing technology based on BAN (body area network) technology. The benefits obtained are that monitoring results are provided in real-time and connected. The advantages of the program system design include the delivery of patient medical documentation reporting data consisting of main complaints, mild, moderate, and severe degrees of perceived disease, and data visualization in image, sound, and text. The application is also equipped with video as a digital-based patient health detector through video, email, and family medical history with multimedia medical records techniques connected to health care centers.

One form of EHR is an Android-based mobile - health application. This application is an effort to improve the quality and completeness of nursing care documentation, especially in the diagnostic documentation component and nursing intervention. The application increases the accuracy and efficiency of writing nursing documentation, facilitates nurse communication within the team when treating patients, and prevents medication errors (Efendi & Sari, 2017; Atmanto, A.P., Anggorowati., & Rofii, 2020).

Nursing documentation using EHR can also help integrate patient data into hospital budget efficiency, ease nurse workload, and improve patient safety. Patient data integrated with one database can be accessed quickly by nurses to improve the quality of nursing services. The implementation of EHR should be accompanied by the support of adequate EHR facilities and systems as well as the readiness of nurse resources to use it so that patient health records can be well documented (Fattah, T. I., & Hariyati, 2022).

Although the implementation of EHRs in nursing documentation has increased globally, previous studies have primarily focused on specific aspects such as usability, nurse satisfaction, or technical implementation in single healthcare settings. Evidence regarding the broader factors influencing successful EHR implementation—including organizational support, infrastructure readiness, nurse competence, and documentation efficiency—remains fragmented across studies. In addition, findings related to the impact of EHR implementation on nursing documentation quality and patient care outcomes are still varied. Therefore, a comprehensive synthesis of current evidence is needed to identify the determinants and impacts of EHR implementation in nursing documentation practice.

This review contributes to the existing literature by integrating evidence from multiple dimensions of EHR implementation, including human factors, organizational support, infrastructure readiness, usability, and patient care outcomes, to provide a more comprehensive understanding of EHR utilization in nursing documentation. Therefore, this literature review aims to synthesize evidence regarding factors influencing the implementation of EHRs in nursing documentation and to examine their impact on documentation quality, nurse satisfaction, work efficiency, and patient care.

RESEARCH METHODS

This study used a literature review approach guided by the PRISMA framework and PICOS approach (Population, Intervention, Comparison, Outcome, and Study Design). Literature searches were conducted through Google Scholar, PubMed, ScienceDirect, and ResearchGate databases using the keywords: “nursing documentation” OR “nursing care documentation” AND “electronic health

record" OR "electronic nursing documentation" OR "EHR". The inclusion criteria were original research articles related to EHR implementation in nursing documentation, published between 2019–2022, and available in full text. Review articles, conference proceedings, inaccessible full-text articles, and studies unrelated to nursing documentation were excluded. The article selection process followed the PRISMA flowchart. A total of 758 articles were identified, 125 articles were assessed for eligibility, and 10 articles met the inclusion criteria for review. Data extraction included author, year, study design, sample, instruments, and main findings. The data were analyzed descriptively and grouped into themes related to factors influencing EHR implementation and its impact on nursing documentation.

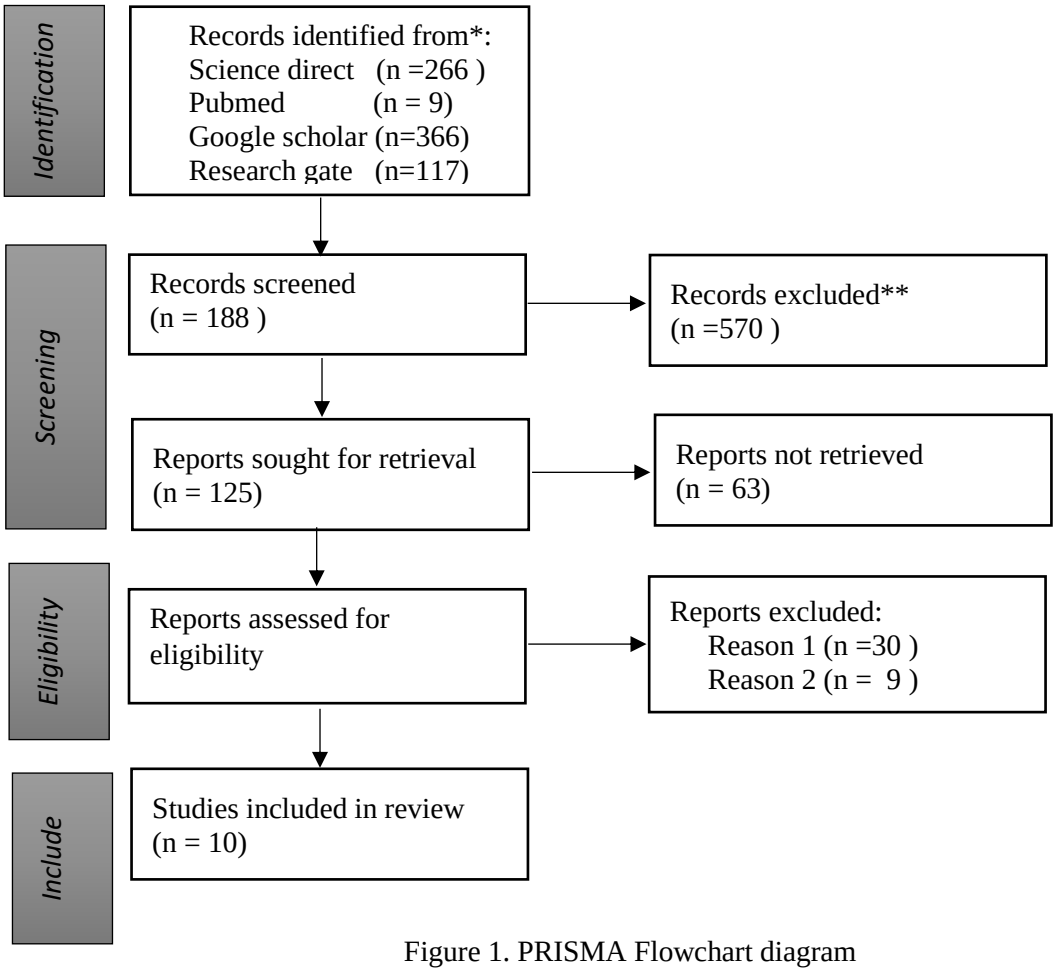

Figure 1. PRISMA Flowchart diagram

RESULT

A total of 10 studies were included in this literature review, consisting of cross-sectional, descriptive, quasi-experimental, pre-post design, experimental, and mixed-method studies. The sample sizes ranged from 53 to 7,606 participants, involving nurses, physicians, and nursing documentation records in various healthcare settings. Most studies examined factors influencing the implementation of Electronic Health Records (EHRs), including nurses' perceptions, organizational support, infrastructure readiness, usability, and training. Several studies also evaluated the impact of EHR implementation on nursing documentation quality, nurse satisfaction, work efficiency, and patient safety. Statistical analyses used in the included studies included chi-square tests, paired t-tests, Partial Least Squares (PLS), descriptive statistics, thematic analysis, and usability evaluation models.

Table 1. Flowchart of the literature search indicating the number of papers in each condition

No	Author & years	Title	Research design	Outcome	Summary of result
1	Kaipio et al. (2020)	Physicians' and " nurses' experiences on EHR usability: Comparison between the professional groups by employment sector and system brand	Design: crossectional Sample: 3999 doctors and 3607 nurses working in healthcare Instrument: National Usability-focused HIS Scale (NuHISS) Analysis: The Chi-square test or Fisher's exact test	Identify Electronic Health Record (EHR) usage experience	Nurses experience ease of use of EHR and are more satisfied on the collaboration aspect
2	Lindsay, M.R., & Lytle (2022)	Implementing Best Practices to Redesign Workflow and Optimize Nursing Documentation in the Electronic Health Record	Design: pre-post design Sample 1.095 registered nurse staff by job classification and clinical ladder level. Instruments: Flowsheet documentation workflow Analysis: The Keystrok Level Model.	Improve performance, reduce duplication, and remove non-value-added tasks by redesigning patient assessment templates in EHR.	- 18.5% time reduction with EHR, time savings of 1.5 to 6.5 minutes per patient reassessment; - Redesign workflows to improve usability and functionality, reduce documentation time, and increase productivity. - Time savings correlate with increased maintenance activity.
3	Karp et al. (2019)	Changes in Efficiency and Quality of Nursing Electronic Health Record Documentation After Implementation of an Admission Patient History Essential Data Set	Design: experimental pre- and post-non-randomized prospective cohorts Samples: 215 documentation performed by RN (medical-surgical personnel, ICU, emergency, step-down, and telemetry clinical documentation for adult APH performed by RN) Instrument: EHR timers and logs	Evaluate the efficiency and quality of clinical processes in electronic health records.	EHR systems should be designed to reduce documentation time so nurses can improve/ spend more time on patient care
4	Ausserhofer, Favez, Simon, &	Electronic Health Record Use in Swiss	Design: cross-sectional multicenter	- Describe nurses' perceptions of the benefits of EHR	- Nurses have a more positive perception of the benefits of EHR.

	Franziska (2021)	Nursing Homes and Its Association With Implicit Rationing of Nursing Care Documentation: Multicenter Cross-sectional Survey Study	Samples: 107 NHs, 302 nursing units, and 1975 nurses (registered nurses and licensed practical nurses) Instrument: Basel Extent of Rationing of Nursing Care NH version. Analysis: Descriptive statistics (frequency, percentage, average, and SD), chi-square test.	- Explore the relationship between the perception availability of computer devices and nursing care documentation implementation.	69.42% guarantee safe care and treatment, and 78.32% allow quick access to relevant information, thus enabling timely documentation. 46.61% availability of sufficient computers to allow timely documentation - EHR system influences the development of nursing care documentation
5	Whalen et al (2021)	Nursing Attitudes and Practices in Code Documentation Employing a New Electronic Health Record	Design: Descriptive Population: 3,121 nurses Sample: 432 nurses Instrument: Electronic survey with Model of Human-Computer questionnaire	This research aims to identify the attitudes and practices of inpatient nurses in documentation and identify opportunities for improvement.	- 80% of respondents said they felt very comfortable using computer-based documentation - More than 90% expressed interest in having the opportunity to practice documentation through EHR. - Lack of practice navigating the code and understanding its functions significantly contributes to discomfort.
6	Agarta, A., & Febriani (2019)	Nurse Satisfaction Documenting Nursing Care Using the Electronic Health Record Method in Hospitals	Design: Cross Sectional. Sampling: total sampling Samples: 81 Instruments: Questionnaire on job satisfaction, impact of EHR documentation Analysis: Chi-square	This research aims to identify the relationship between implementing nursing care using Electronic Health Records and job satisfaction.	Documentation methods using Electronic Health Records correlate with nurse job satisfaction.
7	Wardani, Tri, & Suhendar (2022)	Nurse competency, infrastructure for electronic nursing documentation	Design: cross-sectional Population: 53 Sampling: total sampling Sample: 53 nurses	Identify the effect of nurse competence and infrastructure on electronic nursing documentation and	Electronic nursing documentation can improve patient safety when supported by good nurse competence and infrastructure.

		, impact on patient safety	Analysis: Partial Least Square (PLS)	its impact on patient safety.	
8	Hariyati, & Winata (2021)	Nurse satisfaction level using electronic nursing documentation	Design: cross-sectional Sampling: convenience sampling. Samples: 98 Instrument: End User Computing Satisfaction (EUCS) model questionnaire.	Know the relationship of computerized nursing documentation with nurse satisfaction.	53.1% of nurses are satisfied with the END system. The implementation of information systems that take into account nurse satisfaction significantly affects system utilization and service quality.
9	Hariyati, Hamid, & Hasibuan (2020)	Usability and satisfaction of using electronic nursing documentation , lesson learned from new system implementation at a hospital in Indonesia	Design: Quantitative and descriptive qualitative Sample Quantitative 219, qualitative 8 participants Instrument: interview Analysis: thematic analysis, paired t-test.	Explore and describe usability and satisfaction using electronic documentation.	- Generate themes of perception of usability, positive and negative responses, barriers, and expectations for successful implementation. - SIMPRO was shown to increase satisfaction (p = 0.001). - Training on change motives can strengthen nurses' motivation and facilitate the transition to the new system. - Electronic nursing documentation is an effective way to improve nursing documentation. - Leadership and organizational support affect the effectiveness of system implementation.
10	Mansuri (2022)	Effectiveness and evaluation of electronic nursing documentation program in terms of nurses' perception and quality of nursing documentation	Design: quasi-experimental (one group pre-test and post-test design) Sample: 152 paper-based nursing records, 644 randomly chosen electronic nursing records Sampling: total sampling	- Comparing the quality of paper-based documentation and electronic nursing documentation - Explore nurses' perceptions of electronic nursing documentation.	- Electronic-based documentation programs are effective in improving the overall quality of nursing documentation. - Positive nurses' perceptions of electronic nursing documentation.

	in selected hospital of Rajasthan	Instrument: Perception assessment scale. Quality of nursing documentation assessed by audit tool

DISCUSSION

1. Factors affecting the application of nursing documentation through EHR

The results of the analysis of several journals on the application of nursing documentation through EHR are influenced by several factors, including nurse perceptions, leadership and organizational support, infrastructure, documentation design, and training to improve nurses' abilities to carry out EHR-based nursing documentation well.

Nurses' perceptions of nursing documentation in EHR

The analysis showed that nurses have positive and negative perceptions regarding the use of EHR in nursing documentation. 80% of respondents said they felt very comfortable using computers, and more than 90% were motivated to have the opportunity to practice documentation through EHR. Positive perceptions are associated with the benefits of using EHRs, such as improved work efficiency, quality of care, communication, and patient data access. Conversely, negative perceptions are associated with challenges or risks of using EHR, such as disruption of provider-patient communication, privacy and security concerns, and high initial costs. Perception is also influenced by personal factors and system factors such as perceived benefits and perceived ease of use (Ausserhofer, Favez, Simon, & Zuniga, 2021; Whalen et al., 2021; Hariyati, Hamid, &; Hasibuan, 2020; Mansuri, 2022).

Positive perceptions can facilitate the application of technology, and negative perceptions become a reference in determining change management strategies during adoption and implementation. Perceptions should be further evaluated from the perspective of technology acceptance (Alanazi et al., 2020). The higher the benefits nurses feel, the higher the nurse's attitude to use EHR in documenting nursing care (Sugiharto & Adi, 2022).

Nurses' views significantly impact the effective adoption of EHR systems in nursing documentation. Favorable views on EHR usability and utility might enhance nurses' acceptance and readiness to regularly utilize electronic documentation in clinical settings. On the other hand, unfavorable views regarding system complexity, workload, or insufficient technical skills can hinder successful implementation. Consequently, healthcare organizations must prioritize not only technological advancements but also user preparedness, ongoing training, and technical assistance to bolster nurses' confidence and adoption of EHR systems.

Leadership and organizational support

Leadership and organizational support affect the effectiveness of EHR use in nursing documentation (Hariyati, Hamid., & Hasibuan, 2020). Organizations should invest in providing education or training-related information systems for nurses. This involves professionals in EHR system design or information technology development (Vehko et al., 2019).

Success in the implementation process is influenced by strong leadership support. The role of leadership and its governance influence the development of EHR related to decision-making. The leadership governance component consists of several elements: leadership support, implementation strategy, management support, and EHR accountability. Leadership and organizational support impact the planning policy process based on input and complaints from users in the field (Pratama, M.H., & Darnoto, 2017).

These results indicate that leadership and organizational backing are essential elements in the effective implementation of EHR. Proper training, managerial backing, and the engagement of healthcare workers in system creation could enhance nurses' preparedness and promote the efficient utilization of EHR systems in nursing documentation.

Availability of infrastructure facilities

The availability of adequate infrastructure can support the smoothness and completeness of nurses in conducting nursing documentation so that the purpose of using electronic nursing documentation can be realized (Wardani, G.I., Tri, K., Suhendar, 2022). This is in line with the research of Demsash et al. (2023) that the availability of documentation tools is a significant factor. Stakeholders should provide additional training and motivate professionals to use electronic systems for electronic-based nursing documentation practice.

These results show that sufficient infrastructure is crucial for successful EHR implementation in nursing documentation. Insufficient resources and technical assistance might obstruct nurses from effectively utilizing electronic documentation systems in their clinical work.

Design of nursing documentation in EHR

EHR systems should be designed to reduce documentation time so that nurses can improve/spend more time on patient care (Karp et al., 2019). Healthcare organizations can better support nurses' use of EHRs by involving nurses in the EHR procurement process. Nurse involvement aims to provide input regarding expectations and content standards, ensure that the proper technical infrastructure is in place to support adequate system performance, and that EHR implementation can support increased use (Strudwick et al., 2018). A more familiar electronic health record design should be developed. The poor design of electronic health records and the various ways in which software developers have integrated standard terminology may explain why such terminology has less impact on the extent to which nursing staff feel supported by the use of electronic health records (Groot, Anke, De Veer, Paans, Anneke, 2020).

An intuitive EHR design is crucial for enhancing nurses' efficiency and acceptance of electronic documentation. Engaging nurses in the development of systems can aid in guaranteeing that EHR systems fulfill clinical requirements and enhance efficient nursing documentation methods.

Training on EHR

This study shows that EHR training can improve knowledge of EHR and satisfaction with perceived EHR workload control (Diangi et al., 2019). Rapid technological advances put nurses on a continuous learning path. Digital competence consists of information technology skills and the ability to meet complex demands using psychosocial resources, including skills and attitudes in certain circumstances (Vehko et al., 2019). Education, electronic health record systems used, experience using electronic health record systems, adequacy of training, higher level of technical functionality, ease of use, benefits of the system, and competence correlate to the use of EHR (Kinnunen et al., 2019). Training and professional competence are crucial to implementing digital services (Nadav et al., 2022).

These results show that training and digital skills are crucial for effective EHR implementation. Sufficient training can enhance nurses' understanding, self-assurance, and capability to efficiently utilize electronic documentation systems in clinical settings.

2. Impact of using EHR

Clinically relevant EHRs are beneficial in nursing practice, i.e., improving clinical practice and improving the quality of patient care.

Quality of nursing documentation

The advantage of computer-based documentation is that nurses' work is more effective, efficient, and optimal in nursing care. Accuracy, real-time, and paperless facilitate the audit of nursing personnel. In addition, nursing care is more integrated, improves the quality of service, and expands nursing access. Computer-based nursing care documentation can improve the quality of nursing care provided to clients (Tarigan & Handiyani, 2019).

These findings indicate that nursing documentation based on EHR may enhance the quality of nursing care by providing more precise, integrated, and timely documentation methods. Electronic documentation systems enhance efficiency in data entry and enable easier access to information for healthcare professionals. Consequently, nurses might have increased time to concentrate on direct patient care, leading to improved service quality and continuity of care.

Nurse satisfaction

The use of technology in documenting nursing care is expected to create improvements in the efficiency and quality of nursing services. Therefore, nurses' satisfaction with technology must also be evaluated for improvement as a basis for developing better information systems. Nurse satisfaction with using electronic documentation systems can help hospital management build information systems in nursing care, decision-making, and policies related to information system investment (Riyani et al., 2022). Nurses will be helped by using electronic health records in nursing activities during care (Groot et al., 2020).

These results suggest that implementing EHR can enhance nurses' satisfaction by promoting efficiency, accessibility to patient data, and simplifying documentation in nursing care. Greater satisfaction with electronic documentation systems may also enhance the acceptance of health information technology and aid in creating more efficient nursing information systems within healthcare services.

Effectiveness of the use of computerized documentation

EHR use led to an 18.5% reduction in time, a time savings of 1.5 to 6.5 minutes per patient reassessment (Lindsay, M.R., & Lytle, 2022). EHR greatly supports the efficiency of the work of nurses and doctors. The complete available data in the system makes it easier for nurses to see patient data from one room to another just by accessing patient medical record data. EHR can also reduce nurses' documentation time (Yustina, Zamzami., & Zendrato, 2020).

Baumann, Baker., and Elshaug (2018) state that early adjustments to EHR increase documentation time, but if nurses are already knowledgeable about the system, it can subsequently improve workflow. An electronic nursing documentation system is a good system if implemented. It is more efficient, reduces nurse time in writing, and makes nurses more caring for patients (Takaredas. Y, Q., & Hariyati. R, 2022). Nurses find it easier to find the patient data needed, read the writing, and more economical because they don't need much paper, don't write much, and can connect to several parts easily (Dhamar, E.N., & Rahayu, 2020).

Implementing EHR could enhance both the efficiency and effectiveness of nursing documentation by decreasing the time spent on documentation and enabling quicker access to patient data. While the adaptation process might initially raise the workload, nurses who are acquainted with the system generally enjoy enhanced workflow and improved coordination in patient care. Moreover, electronic documentation systems can facilitate more precise, efficient, and paperless documentation methods in healthcare services.

Limitation

This literature review has several limitations. The review was conducted using four databases, namely Google Scholar, PubMed, ScienceDirect, and ResearchGate, with articles published between 2019 and 2022. Only full-text articles in English were included, while review articles and conference proceedings were excluded. In addition, several articles could not be retrieved during the selection process, which may have limited the comprehensiveness of the findings.

The included studies also varied in study design, sample size, instruments, and outcomes, resulting in heterogeneity among studies. Therefore, the findings should be interpreted cautiously, particularly regarding causal relationships between EHR implementation and nursing outcomes. Most included studies used observational and cross-sectional designs, indicating that EHR implementation may be associated with improvements in nursing documentation quality, nurse satisfaction, efficiency, and patient safety, rather than establishing direct causal effects. Nevertheless, the selected studies were reviewed based on methodological appropriateness and relevance to the review topic to support the credibility of the synthesized findings.

CONCLUSION

The success of using EHR-based nursing documentation is determined by several factors, including nurse perception, leadership and organizational support, availability of infrastructure, familiarity with EHR design, and training to improve nurses' competence in using EHR. The use of HER enhances the quality of nursing care because it is more integrated, nurses feel satisfied because it is helped, and there is time efficiency in documenting nursing care.

BIBLIOGRAPHY

Agarta, A., & Febriani, N. (2019). Kepuasan perawat mendokumentasikan asuhan keperawatan dengan metode electronic health record di rumah sakit. *Jurnal Ilmiah Ilmu Keperawatan Indonesia*, *19*(2), 594–600. https://doi.org/https://doi.org/10.33221/jiiki.v9i02.221

Ausserhofer, D., Favez, L., Simon, M., & Franziska, Z. (2021). *Electronic Health Record Use in Swiss Nursing Homes and Its Association With Implicit Rationing of Nursing Care Documentation : Multicenter Cross-sectional Survey Study Corresponding Author :* *9*(3), 1–14. https://doi.org/10.2196/22974

Ausserhofer, D., Favez, L., Simon, M., & Zuniga, F. (2021). *Electronic Health Record Use in Swiss Nursing Homes and Its Association With Implicit Rationing of Nursing Care Documentation : Multicenter Cross-sectional Survey Study*. *March*. https://doi.org/10.2196/22974

Baumann, L.A., Baker, J., & Elshaug, A. . (2018). The impact of electronic health record systems on clinical documentation times: A systematic review. *Health Policy*, *122*(8), 827–836. https://doi.org/https://doi.org/10.1016/j.healthpol.2018.05.014

Demsash, A. W., Kassie, S. Y., Dubale, A. T., Chereka, A. A., Ngusie, H. S., Hunde, M. K., Emanu, M. D., Shibabaw, A. A., & Walle, A. D. (2023). Health professionals' routine practice documentation and its associated factors in a resource-limited setting : a cross-sectional study. *BMJ Health & Care Informatics*, *30*(1), 1–7. https://doi.org/10.1136/bmjhci-2022-100699

Dhamar, E.N., & Rahayu, H. . (2020). Pengalaman perawat dalam penggunaan rekam medis elektronik di rumah sakit Panti Rini Yogyakarta. *Jurnal Keperawatan I CARE*, *1*(2), 171–180.

Diangi, Y. T., Stevens, L. A., Felsher, B. H., Pageler, N. M., & Lee, T. C. (2019). Electronic health record (EHR) training program identifies a new tool to quantify the EHR time burden and improves providers' perceived control over their workload in the EHR. *JAMIA*, *2*(March), 222–230. https://doi.org/10.1093/jamiaopen/ooz003

Groot, K.D., Anke J.E. De Veer, A.J.E., Paans, W., Anneke, L., & F. (2020). Use of electronic health records and standardized terminologies: A nationwide survey of nursing staff experiences. *International Journal of Nursing Studies*, *104*. https://doi.org/https://doi.org/10.1016/j.ijnurstu.2020.103523

Hariyati, R. T.S., & Winata, I. M. N. . (2021). Nurse satisfaction level using electronic nursing documentation. *Enfermeria Clinica*, *2*, S109–S112. https://doi.org/https://doi.org/10.1016/j.enfcli.2020.12.002

Hariyati, R.T.S., Hamid, A.Y., & Hasibuan, Z. . (2020). Usability and satisfaction of using electronic nursing documentation, lesson learned from new system implementation at a hospital in Indonesia. *International Journal of Healthcare Management*, *13*(1), 45–52. https://doi.org/https://doi.org/10.1080/20479700.2018.1504387

Kaipio, J., Kuusisto, A., Hyppönen, H., Heponiemi, T., & Lääveri, T. (2020). International Journal of Medical Informatics Physicians' and nurses' experiences on EHR usability : Comparison between the professional groups by employment sector and system brand. *International Journal of Medical Informatics*, *134*(June 2019), 104018. https://doi.org/10.1016/j.ijmedinf.2019.104018

Karp, E. L., Freeman, R., Simpson, K. N., & Simpson, A. N. (2019). *Changes in Efficiency and Quality of Nursing Electronic Health Record Documentation After Implementation of an Admission Patient History Essential Data Set*. *May*, 260–265. https://doi.org/10.1097/CIN.0000000000000516

Kinnunen. (2019). Factors Related to Health Informatics Competencies for Nurses—Results of a National Electronic Health Record Survey. *Computers, Informatics, Nursing*, *37*(8), 420–429. https://doi.org/10.1097/CIN.0000000000000511

Lindsay, M.R., & Lytle, K. (2022). Implementing Best Practices to Redesign Workflow and Optimize Nursing Documentation in the Electronic Health Record. *Applied Clinical Information*, *13*(3), 711–719. https://doi.org/10.1055/a-1868-6431

Mansuri, F. (2022). Effectiveness and evaluation of electronic nursing documentation programme in terms of nurses' perception and quality of nursing documentation in selected hospital of Rajasthan. *International Journal of Recent Advances in Multidisciplinary Research*, *9*(10), pp.8024-8031. https://www.researchgate.net/publication/367127585%0D

Pratama, M.H., & Darnoto, S. (2017). Analisis strategi pengembangan rekam medis electronic di instalasi rawat jalan RSUD kota Jogyakarta. *JMIKI*, *5*(1), 34–45.

Riyani, E., Tutik, R., & Hariyati, S. (2022). Literature review: Kepuasan perawat dalam pendokumentasian asuhan keperawatan menggunakan sistem informasi di rumah sakit. *Jurnal Keperawatan Muhammadiyah*, *7*(2).

Sugiharto., A. F., & Adi, M. S. (2022). Jurnal Ilmu Kesehatan Masyarakat. *Jurnal Ilmu Kesehatan Masyarakat*, *11*(2), 186–196.

Takaredas. Y, Q., & Hariyati. R, S. (2022). Manfaat penggunaan dokumentasi asuhan keperawatan berbasis elektronik di puskesmas. *Journal Cakrawala Ilmiah*, *1*(5), 1081–1090.

Tarigan, R., & Handiyani, H. (2019). *Manfaat Implementasi Dokumentasi Asuhan Keperawatan Berbasis Komputerisasi Dalam Meningkatkan Mutu Asuhan Keperawatan*. *08*(2), 110–116.

Vehko, T., Hyppönen, H., Puttonen, S., Kujala, S., Ketola, E., & Tuukkanen, J. (2019). *Experienced time pressure and stress : electronic health records usability and information technology competence play a role*. 1–9.

Wardani, G.I., Tri, K., Suhendar, S. (2022). Kompetensi Perawat, Sarana Prasarana terhadap Dokumentasi Keperawatan Elektronik, Dampaknya pada Patient Safety. *Jurnal Keperawatan*, Vol 4 (3), 567–574.

Whalen, K., Grella, P., Snydeman, C., Dwyer, A., & Yager, P. (2021). Nursing Attitudes and Practices in Code Documentation Employing a New Electronic Health Record. *Applied Clinical Information*, *12*(3), 589–596. https://doi.org/10.1055/s-0041-1731340.

Yustina. A., Zamzami.E, M., & Z. . (2020). Pengaruh penerapan Electronic Health Record (EHR) terhadap perkembangan kognitif perawat: literatur review. *Indonesian Academia Health Sciences Journal*, *I*(I), 13–16.