



Electronic Nursing Documentation Interventions to Promote or Improve Patient Safety and/or Quality Care in an Acute Settings: Rapid Review



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Manuscript submitted: 09 September 2023, Manuscript revised: 18 October 2023, Accepted for publication: 27 November 2023

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Keywords

*care quality;
electronic health records;
electronic nursing
documentation;
health records;
patient safety;*

Abstract

Research has demonstrated that the implementation of electronic nursing documentation interventions can enhance the precision and comprehensiveness of records, thereby providing a significant benefit. Electronic documentation systems help to reduce errors resulting from factors such as indecipherable handwriting, incomplete or absent documentation, and transcription errors. In May 2022, comprehensive research was conducted in CINAHL, MEDLINE, Cochrane, and Web of Science to identify relevant literature for their study. The study focuses on the use of electronic health systems in nursing, specifically in the documentation of care plans, records, reports, and charts. Individuals utilizing any given database employ the tools at their disposal to conduct searches for document abstracts and titles. This rapid review comprised one cross-sectional, one randomized control trial, two quasi-experimental, one qualitative, and one cohort study. The US, Taiwan, and Jordan each held two tests. The six trials included a medical-surgical and telemetry hospital with 446 beds, an acute care hospital with 1037 beds, a medical-surgical unit, and an urgent care clinic. The results revealed that electronic nursing documentation has improved the quality of nursing. This is evidenced by a reduction in patient length of stay, an improvement in nursing direct care, a decrease in readmission rates, an enhancement of patient flow, an improvement in nursing workflow, and an increase in the quality and quantity of nursing interventions.

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1 Introduction

Care facilities are progressively adopting the use of electronic nursing documentation interventions to boost patient safety and treatment quality. (Alexander & McMullen, 2023). Healthcare providers may now record patient information in real-time and access it from any location because of the widespread deployment of electronic health records (EHRs), which has simplified the transition from paper-based documentation to electronic nursing documentation (Huang et al., 2020). Electronic nursing documentation interventions have been shown to increase record accuracy and completeness, which is a major advantage. Errors brought on by things like illegible handwriting, missing or incomplete documentation, and transcribing mistakes are mitigated by electronic documentation systems (Dickerson, 2023).

Nurses might benefit from decision support tools like alerts and reminders that are made possible through electronic documentation to assist them in making clinical decisions and lessen the likelihood of making mistakes (Mebrahtu et al., 2021). Care coordination and communication between medical professionals are two other areas where electronic nursing recording initiatives shine. Because of the accessibility of electronic records, healthcare practitioners can share patient data in real time between facilities and care settings. Potential safety hazards, including prescription errors or adverse events, can be more easily identified in electronic records, allowing for quicker intervention and better patient outcomes (Chen & Gong, 2022).

The implementation of electronic nursing documentation in hospital settings has demonstrated a positive impact on the quality of documentation, operational efficiency, error reduction, and enhancement of patient safety. Enhanced communication and collaboration among healthcare providers can potentially result in improved patient outcomes (Lei et al., 2023). Emergency departments have demonstrated a reduction in the duration required to document patient care, a factor that can prove to be crucial in emergency scenarios. Moreover, it facilitates the assurance that all essential data is documented and accessible to other healthcare professionals participating in the patient's treatment (Joseph et al., 2022).

Research has demonstrated that the implementation of electronic nursing documentation in Intensive Care Units (ICUs) can enhance the precision and comprehensiveness of documentation, ultimately resulting in improved patient outcomes. Furthermore, it has the potential to facilitate healthcare providers in closely monitoring patients and detecting potential complications at an earlier stage (Lee, 2022).

The implementation of electronic nursing documentation in long-term care facilities has demonstrated a positive impact on the quality of documentation, error reduction, and efficiency enhancement. Furthermore, it has the potential to facilitate closer patient monitoring by healthcare providers and enable early identification of potential issues, ultimately resulting in improved healthcare outcomes (McCarthy et al., 2019). This paper aims to discover the studies conducted to investigate electronic nursing documentation over the years from January 2018 and May 2022 and highlight the importance of them in introducing high-quality medical care.

2 Materials and Methods

During May 2022, researchers searched the databases CINAHL, MEDLINE, Cochrane, and Web of Science for papers that were relevant to their study. (nurse AND (document OR "care plan*" OR care plan* OR record OR report OR chart*) AND ("electronic" OR "ehealth"). Users of every database made use of the available tools in

order to search for abstracts and titles of documents. In order for this search to be carried out, the studies had to be written in English, they needed to contain original research (either interventional or observational), and they needed to have been published between January 2018 and May 2022.

One reviewer assessed the included studies after the full-text screening with JBI SUMARI critical analytic techniques. For qualitative, quasi-experimental, cohort, randomized control trials, and analytical cross-sectional investigations, the critical appraisal checklist (JBI evaluation tools) assessed study quality and validity. The six study articles were of high quality and validity.

Inclusion criteria

The inclusion criteria for the present study required that the primary research on electronic nursing documentation (interventional or observational) be published in English, with patient quality and/or safety of care as the outcomes of interest. Additionally, the studies were required to be conducted in acute settings, with patients of any age group, and published between January 2018 and May 2022.

Exclusion criteria

This rapid review excluded studies conducted in settings other than acute care, such as primary care, school health, mental health, palliative care, and public health. Additionally, publications that were not accessible in full text, unpublished studies, paper-based documentation only, other healthcare professionals' documentation, and studies that did not encompass specified outcomes related to patient safety/quality of care were also excluded.

One review extracted the research nation, setting/context, participant characteristics, outcomes measured, and findings summary for all articles. JBI SUMARI extracts data from eligible research. One qualitative, two quasi-experimental, one cohort, randomized control trials, and one analytical cross-sectional study were included. This study did not do a meta-analysis since the outcomes and results of the chosen studies were heterogeneous. Length of stay, readmission, medication errors, and data entry errors are outcomes.

This brief review included a search of CINAHL, Web of Science, Medline, and Cochrane, yielding a total of 2342 studies. The first step involved using EndNote to get rid of duplicates (n=111). Therefore, we chose to screen the titles and abstracts of 2231 studies. There were a total of 2121 studies screened out at this stage due to not meeting the inclusion criteria. Screening was performed on the full texts of the remaining 110 studies. Another 104 publications were discarded here because they didn't match the requirements for inclusion. Based on the inclusion criteria, six papers were selected for this review. After completing the JBI SUMARI checklist criteria for various study designs and doing a critical review of the selected six publications, it was found that all six studies were valid and of high quality. Articles that dealt with electronic nursing documentation outside of the acute environment, eligible interventions, or documentation by healthcare professionals other than nurses were not included in the analysis. (Figure 1).

3 Results and Discussions

One cross-sectional study, one randomized control trial, two quasi-experimental studies, one qualitative study, and one cohort study were included in this quick review. The United States, Taiwan, and Jordan each hosted two of the experiments. One hospital with 446 beds (medical-surgical and telemetry), one with 1037 beds (acute care), one with a medical-surgical unit, and one with an urgent care clinic were all included in the six trials. All studies were appropriate for the purpose of the review. In this review, we looked at the studies given below. Figure (1) is the flow chart for the papers included in the study. (Table 1)

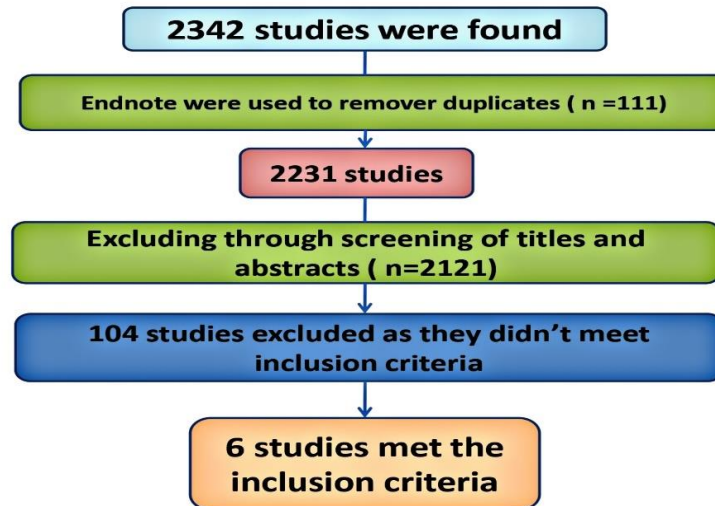


Figure 1. Flow Chart for the Included Studies

Table 1
Characteristics of included studies

Study	Type of the study	Country	Settings/Context	Participants characteristics	Groups	Outcomes measured	Description of main results
Schenk et al. (2018)	Randomized control trial	USA	Acute care settings, hospital (446-bed)	Nurses (n=581) froedical-Surgical and telemetry	Quality of nurse's intervention and caring efficacy before implementing of the electronic health record. Quality of nurse's intervention and caring efficacy after implementing of electronic health records	Quality and number of nursing interventions and nurse's care efficiency.	The number of nursing interventions increased from 65.6 interventions per hour to 80.3, reviewing patient charts/notes increased from 6.0% to 7.5% providing emotional support to patients/ families increased from 1.8% to 6.8% of the total time after implementing HER, P< 0.001
Tso Ying L, 2018	Quasi-Experimental study	Taiwan	Hospital (1037-bed)	Nurses (n= 100) who worked at the hospital for at least 3 months and 3 years of nursing experience	Patient safety and nursing efficiency before using a nursing information system. Patient safety and nursing efficiency after using a nursing information system.	Patient safety, nursing efficiency, and quality of care (Medication errors, blood sampling errors, specimen transportation, patient satisfaction, and nursing turnover)	The number of errors in drug administration was reduced (0.08% vs. 0.39%); reduced the number of errors in blood drawing (0vs.10) and transportation of specimens (0 vs.0.42%); reduction in nursing turnover (14.9%vvs.16%); patient vs. 3.34), P-value < 0.05.
Bauer et al. (2020)	Quasi-Experimental study	USA	Medical surgical unit	Vital signs records (n= 1933)	Quality of data entry and direct nurses' care time before implementing electronic health record Quality of data entry and direct nurses' care time after implementing the electronic health record.	Quality of care and nurses' Performance (quality of data entry, data transfer time, and direct care time)	Data errors decreased from approximately 20% to 0; data transfer times were reduced by 5 minutes to 2 hours per measurement event; nurses had more time for direct patient care; and job satisfaction improved after implementing electronic health records.

Pyron & Carter-Templeton (2019)	Cohort Study	USA	Urgent care settings	Patients charts (n= 50)	Patient flow and health care provider efficiency before implementing electronic health records. Patient flow and healthcare provider efficiency after implementing electronic health record	Length of stay, triage time, and healthcare provider efficiency.	The length of stay decreased from 109 minutes to 73 minutes, and door-to-triage time decreased from 96 minutes to 72 minutes which led to improved patient quality and safety care after using electronic medical records ($P < 0.001$)
Wani & Malhotra (2018)	Analytical Cross-Sectional study	USA	Acute care hospitals in California	(n=15000) medical records	Patient length of stay in hospital adopted partial -HER adopters-patient care. Patient length of stay in hospital adopted full HER Patient length of stay in the hospital adopted meaningful-HER assimilators.	Patient length of stay, and readmission rate.	Length of stay is reduced by 3% and reduction in readmission rate by about 6.5 % vs. 12.7% after the adoption of the full electronic health record, leading to improved quality and efficiency of patient outcome ($P < 0.001$)
Tubaishat (2019)	Qualitative Interpretive and critical research	Jordan	Patient safety and quality of care (before-after) implementing electronic health record	Patient safety	Data collected through interviewing nurses (n=17), analyzed thematically following Creswell's	Hospitals (n=10), which had used EHRs, size of the hospitals ranged from (67 beds) to (433 beds).	Electronic health records directly or indirectly improve patient safety by minimizing medication errors, improving the documentation of data, enhancing the completeness of data, enhancing the completeness of data, and improving the sustainability of data.

Interventions done in this study

This review encompasses six studies that center on enhancing patient safety and/or quality care in an acute setting through the implementation of electronic health records as an intervention. The evaluation focused on the utilization of electronic nursing documentation. All studies that were included in the analysis evaluated the efficacy of the intervention through the utilization of pre- and post-implementation designs. The efficacy of interventions in the studies that were incorporated was evaluated through the utilization of diverse tools and instruments. In a study conducted by [Bauer et al. \(2020\)](#), performance improvement analytics were employed to compare data entry through manual and electronic health records. Additionally, the study analyzed the effects on performance and quality resulting from post-intervention surveys administered to nurses.

The standard of nursing care, like all medical treatment, is crucial to the success of any healthcare system. Care, treatment, and outcomes for patients are maximized when they receive healthcare of the highest quality. ([Maphumulo & Bhengu, 2019](#)). When it comes to medical care, nurses are frequently the ones who patients interact with first. For the best potential health results, their treatment is essential in promoting, maintaining, and recovering patients' health.

Numerous indicators, such as patient-reported outcomes ([Gaertner et al., 2023](#)), clinical success rates ([Dai et al., 2023](#)), and adherence to best practices, ([Muthelo et al., 2023](#)), can be used to assess healthcare quality. The responsibility of nurses to ensure compliance with these standards is crucial. They collaborate closely with doctors and other medical staff to give patients the best treatment possible. Care coordination, medication administration, and patient progress monitoring are all common duties for nurses. ([Youn et al., 2022](#)).

Healthcare quality is important from a monetary standpoint as well (Nannini et al., 2022). Fewer hospital readmissions, lower healthcare expenditures, and better health outcomes are possible thanks to high-quality medical care (Park et al., 2022). Nurses play a crucial role in facilitating these results. They're crucial for smooth patient care management and on-time, effective treatment. Patients have a better chance of healing and returning to their regular lives when they receive high-quality care (Kruk et al., 2022).

It is becoming increasingly common practice to document nursing care via electronic nursing documentation, which may be accomplished in an increasing number of settings (Cerchione et al., 2023). It is obligatory to document patient treatment by making use of electronic health records, often known as EHRs, as opposed to the more traditional paper-based approaches (Bunce et al., 2022). Computerized systems that record, store, and manage information regarding patients' health in digital form are referred to as electronic health records, or EHRs for short (Akinyemi et al., 2022).

The utilization of electronic nursing documentation comes with a number of major benefits, one of the most notable of which is the possibility of enhancing the standard of medical treatment that is provided to patients (Vela et al., 2022). By using electronic health records, nurses are able to document patient care in a fast and accurate manner, including documentation of medications, vital signs, and other important information. (Subbe & Bramley, 2022). It is possible that care will be provided in a manner that is both more effectively coordinated and more effectively delivered as a result of the other members of the healthcare team having easy access to this information (Hathaliya et al., 2019).

In addition, electronic health records, often known as EHRs, can contribute to the reduction of errors and the improvement of patient safety by offering real-time decision assistance in the form of medication interaction alerts. This can be accomplished through the provision of information (Mehta, 2022). The ability of electronic nursing documentation to aid healthcare providers in being more productive and cost-effective is an additional significant advantage of this form of documentation (Avenida et al., 2022). The use of electronic nursing documentation comes with a number of benefits, this being one of them. The use of electronic documentation in nursing can assist in streamlining workflows, which can result in time and money savings (Lindsay & Lytle, 2022).

Additionally, electronic documentation can lessen the need for paper-based documentation, which is another benefit of using electronic documentation. Additionally, electronic health records are able to provide insightful data that may be utilized to increase the efficiency of care operations and cut down on waste. This may be accomplished through the utilization of the data (Eversberg & Lambrecht, 2023). Despite this, making the switch to electronic nursing documentation is not without its challenges. One of the most critical challenges that healthcare providers are currently confronted with is the mandated implementation of standardized processes and workflows across their organizations (Pettersson et al., 2022).

It is possible that the documentation processes that are produced as a result of the usage of electronic health records will not be standardized. This is due to the fact that EHRs can be adapted to meet the specific needs of a wide range of organizations. In order to circumvent this barrier, healthcare organizations will need to devise and put into action workflows and procedures that are standardized in order to electronically document nursing care. This will be necessary in order to overcome this impediment (Reisman, 2017).

A further challenge is the necessity of ongoing education and help for nurses and other professionals working in the healthcare industry. This is a demand that must be met. Due to the complexity of electronic health records (EHRs), it is essential that nurses receive adequate training in order to be able to use these systems correctly. This will ensure that the data is accurate as well as thorough. It is crucial to provide nurses with continual training and assistance in order to ensure that they are comfortable with the system and fully understand how to make the most of the capabilities it offers (Mandato & Kulhanek, 2022).

Electronic health records are crucial resources for enhancing the standard of medical treatment provided to patients. They make it simple for medical professionals to obtain patient health information, such as a patient's medical history, medication lists, allergies, and results from previous tests. This information is essential for arriving at correct diagnoses, developing effective treatment strategies, and providing high-quality care. Electronic health records are also helpful in reducing medical errors, which can have significant repercussions for patients (Guyer et al., 2022).

EHRs are vital for patient involvement. Patients have access to their electronic health records (EHRs), which enables them to play a more active part in managing their own medical care. They are able to access their medical histories, medication lists, and test results, as well as interact with their healthcare professionals

about any questions or concerns they may have regarding their care. This greater participation has the potential to lead to better outcomes for patients as well as enhanced patient satisfaction (Vercell et al., 2022).

Studies have shown that EHRs can increase patient safety by lowering the number of prescription errors that occur and boosting communication between different medical professionals. (Tanwar & Bhardwaj, 2022). EHRs have the potential to increase healthcare efficiency in a number of additional ways, including a reduction in the amount of time spent on documentation (Jhaveri et al., 2022), a reduction in the number of duplicate tests performed, and a simplification of clinical procedures (Pylypchuk & Johnson, 2022).

Additionally, EHRs have the ability to record and analyze enormous amounts of data, which enables medical professionals to recognize patterns and trends in patient health. This information can be put to use in the process of formulating population health policies, such as programs for the prevention of diseases and the promotion of good health (Cesare & Were, 2022).

One more significant advantage of EHRs is their capacity to simplify research as it allows researchers to gain access to a substantial amount of patient health information and can be utilized to collect data for research initiatives and clinical investigations. This knowledge can be put to use to make existing medical treatments more effective as well as to develop new medications and treatment methods (Nordo et al., 2019).

The study emphasizes the importance of evaluating the effectiveness of electronic nursing documentation interventions in improving the quality of care and patient safety. It highlights the need for evidence-based practices and the direct impact of electronic documentation on healthcare organizations, nurses, and managers. Patient safety and electronic records documentation are interconnected, with clear and accurate documentation being crucial for safe and high-quality nursing practice.

The author identified six studies that examined the effects of implementing electronic nursing documentation in acute settings. The findings indicate various positive outcomes, including reduced hospital stays, decreased readmission rates and errors, improved data transfer time, increased time for direct patient care, and higher patient satisfaction. Consequently, electronic nursing documentation proves beneficial for patient safety and high-quality care (Saraswasta & Hariyati, 2021; Haas et al., 2011; Ratnawati et al., 2021).

The text concludes by recommending healthcare organizations implement electronic nursing documentation across acute settings and emphasizing the need for support, training, policy development, and standardization. Nurses are encouraged to acquire skills in using electronic systems, understand the benefits and consequences of complete and incomplete documentation, and take accountability for utilizing electronic nursing documentation effectively. The outcomes of this rapid review are expected to assist nurses, policymakers, informatics nurses, project managers, health information managers, auditors, and quality improvement teams in facilitating the electronic documentation process, enhancing the quality of nursing documentation, and improving the overall quality of care and patient safety (Russo et al., 2016; Kaelber & Bates, 2007; Munyisia et al., 2011).

The rapid review exhibits notable strengths such as the implementation of well-defined eligibility criteria, utilization of a suitable tool for evaluating study quality, and execution of a systematic search strategy across four databases. In order to enhance transparency, mitigate the impact of random error and bias in the process of study selection, and minimize the variability in study selection with respect to outcomes, it is essential to establish and formulate inclusion and exclusion criteria in a clear and comprehensive manner prior to conducting database searches. The search result studies underwent a double-screening procedure by a reviewer.

The objective of rapid reviews is to expeditiously amalgamate evidence within a limited timeframe, due to temporal constraints. The process of conducting a meta-analysis necessitates meticulous selection of studies, extraction of data, and statistical analysis, which can be a laborious undertaking. The expeditious completion of rapid reviews is often prioritized, and the comprehensive procedure of performing a meta-analysis may not be viable within the designated time frame.

Meta-analysis presupposes homogeneity among the studies that are incorporated, implying that they should exhibit similarity with respect to research design, population, intervention, and outcome measures. However, the heterogeneity of studies can pose a challenge to the meta-analytic process. In the context of expedited evaluations, it is frequently necessary to encompass a more extensive spectrum of research methodologies, such as observational investigations or case studies, in order to promptly capture the existing body of evidence. The potential lack of homogeneity in the aforementioned studies could impede the

suitability of performing a meta-analysis (Campbell et al., 2000; Penfold & Zhang, 2013; Howes & Smith, 1995).

Meta-analyses are prone to publication bias, whereby studies exhibiting significant or positive outcomes are more inclined to be published and incorporated into the analysis. The time constraints associated with rapid reviews may result in a restricted ability to explore unpublished studies or perform a comprehensive search of the gray literature, thereby elevating the possibility of overlooking significant studies and introducing partiality into the meta-analysis (Munyisia et al., 2011; Putra et al., 2021; Zikos et al., 2014).

Limitations of the study

The scope of the review was limited to acute hospital settings and exclusively focused on the documentation practices of nurses. Additional healthcare professionals and settings may have furnished supplementary information regarding the efficacy of electronic documentation in enhancing the quality of care and/or ensuring patient safety. The scope of this review was restricted to publications in the English language and did not encompass any unpublished literature. Consequently, it is possible that other pertinent literature may have been excluded. Additionally, a reviewer was responsible for conducting the study, screening articles, and extracting data. The presence of a sole reviewer raises the likelihood of partiality or imprecision in the process of selection.

4 Conclusion

Electronic Health Records (EHRs) provide various advantages including enhanced patient care, heightened efficiency, improved care coordination, superior patient engagement, and decreased medical errors. The aforementioned advantages are attained by means of convenient retrieval and dissemination of patient data, streamlining managerial duties, and granting patients the ability to access their personal health records. Electronic Health Records (EHRs) have been found to enhance healthcare processes and foster effective communication among healthcare providers, leading to improved patient outcomes and a more optimized healthcare system.

Acknowledgments

I am grateful to two anonymous reviewers for their valuable comments on the earlier version of this paper.

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