Indonesian Journal of Global Health Research
Volume 8 Number 3, June 2026
e-ISSN 2715-1972; p-ISSN 2714-9749
http://jurnal.globalhealthsciencegroup.com/index.php/IJGHR

GLOBAL TRENDS IN ELECTRONIC MEDICAL RECORDS EDUCATION AND TRAINING IN NURSING AND HEALTH CARE : A BIBLIOMETRIC ANALYSIS

Rossa Hasbella[1], Lisa Musharyanti[2]*
[1]Master of Nursing, Universitas Muhammadiyah Yogyakarta, Jl. Ring Road Selatan, Geblagan, Tamantirto, Kec. Kasihan, Kabupaten Bantul, Daerah Istimewa Yogyakarta 55184, Indonesia
[2]School of Nursing, Universitas Muhammadiyah Yogyakarta, Jl. Ring Road Selatan, Geblagan, Tamantirto, Kec. Kasihan, Kabupaten Bantul, Daerah Istimewa Yogyakarta 55184, Indonesia
*lisa.musharyanti@umy.ac.id

ABSTRACT
Electronic medical records are becoming a crucial part of contemporary clinical practice due to the digital revolution in healthcare. The performance of healthcare workers, particularly nurses, significantly influences the successful implementation of electronic medical records, making electronic medical records education and training a strategic aspect of the healthcare system. This study aims to analyze global trends, publication patterns, international collaborations, and key research themes related to electronic medical records education and training in nursing and healthcare. This study was conducted using bibliometric analysis using the Scopus database. A literature search was conducted on December 19, 2025, using the keywords electronic medical records and training. The selection process was based on inclusion criteria. A total of 2,472 articles from 2015 to 2025 were analyzed using Bibliometrics and VOSviewer to examine publication trends, contributing countries, citations, network visualization, and the evolution of research themes. The analysis results show that publications related to electronic medical records education and training continue to increase, with the largest contribution coming from the United States. This study demonstrates that education and training are rapidly growing and multidimensional research fields in nursing and healthcare. This study provides a scientific foundation for policy development and further research in technology-based nursing education.

Keywords: electronic medical records; health informatics; healthcare training

How to cite (in APA style)
Hasbella, R., & Musharyanti, L. (2026). Global Trends in Electronic Medical Records Education and Training in Nursing and Health Care: A Bibliometric Analysis. *Indonesian Journal of Global Health Research*, *8*(3), 1109–1118. https://doi.org/10.37287/ijghr.v8i3.1414.

INTRODUCTION

Electronic medical records are becoming a crucial component of modern clinical practice due to the rapid digital improvements in healthcare systems. In order to facilitate clinical documentation, patient safety, and professional collaboration, electronic medical records are an essential component of contemporary healthcare. Real-time patient information access, quick and precise recording, and a decrease in patient errors are all made possible by these solutions. However, user proficiency is just as important to the efficacy of electronic medical records as technology. The effectiveness of implementing electronic medical records is largely dependent on the education and training of healthcare workers (Samadbeik et al., 2020).

Effective implementation of this technology depends on nursing and other healthcare professionals receiving instruction and training on electronic medical records. The quality of nursing documentation, clinical work efficiency, and the use of electronic medical records can all be hampered by a lack of formal education, according to earlier research. An integrated study of electronic medical record education and training in nurses revealed a shift from traditional classroom-based learning to a blended learning method, which includes simulation, peer coaching, and e-learning as part of a bigger training approach (Ting et al., 2021).

According to empirical research, structured, practice-focused EMR education programs can enhance new nurses' proficiency in critical EMR tasks like clinical procedures, administrative documentation, and patient transfers. Given that many nurses use computerized tools extensively to plan and record patient care, these abilities are essential. The findings imply that clinical onboarding programs and nursing curricula should include efficient EMR training (Ju & Jeong, 2025). However, there hasn't yet been a thorough examination of how EMR/EHR training and education trends have changed over the previous ten years in the scholarly literature. Few studies have employed a bibliometric method to identify publication patterns, collaborations, productive institutions, and authors, despite the fact that many have looked at the use of EMR in nursing curricula or simulation education.

A common method for evaluating research trends is the bibliometric approach itself. For instance, a bibliometric examination of nursing EHRs from 2000 to 2020 revealed significant research hotspots in the literature as well as year-over-year growth. This approach makes it possible to find thematic patterns and connections between writers or nations that increase our understanding of a certain subject (Luan et al., 2023).

Thus, this bibliometric study aims to fill the research gap by describing the global trends in electronic medical records education and training in nursing and healthcare professions from 2015 to 2025. The results of this analysis include publications, international collaborations, the most frequently occurring keywords, and the most influential journals on this topic. It is hoped that the results will help educators, researchers, and healthcare education policymakers design and evaluate digital learning strategies that are more relevant to the contemporary clinical world.

METHOD

The first step in this study's bibliometric technique with descriptive analysis is gathering data on scientific publications from the Scopus database. The keywords "training," "electronic medical record," and "electronic health record" were combined to conduct a literature search on December 19, 2025, with a data collection limit of 2015-2025. 4596 journal articles were found in the first search results. Subsequently, a screening procedure was carried out to remove publications that did not correspond with the research objectives based on limited articles, limited English, and limited subject areas (medicine, nursing, and health professions). 2,472 journal articles were determined to satisfy the inclusion criteria and be appropriate for additional analysis once all screening phases were finished. The chosen publication data were then categorized according to a variety of important factors, such as the year of publication, the place of origin of the author, the quantity of citations, and the keywords employed.

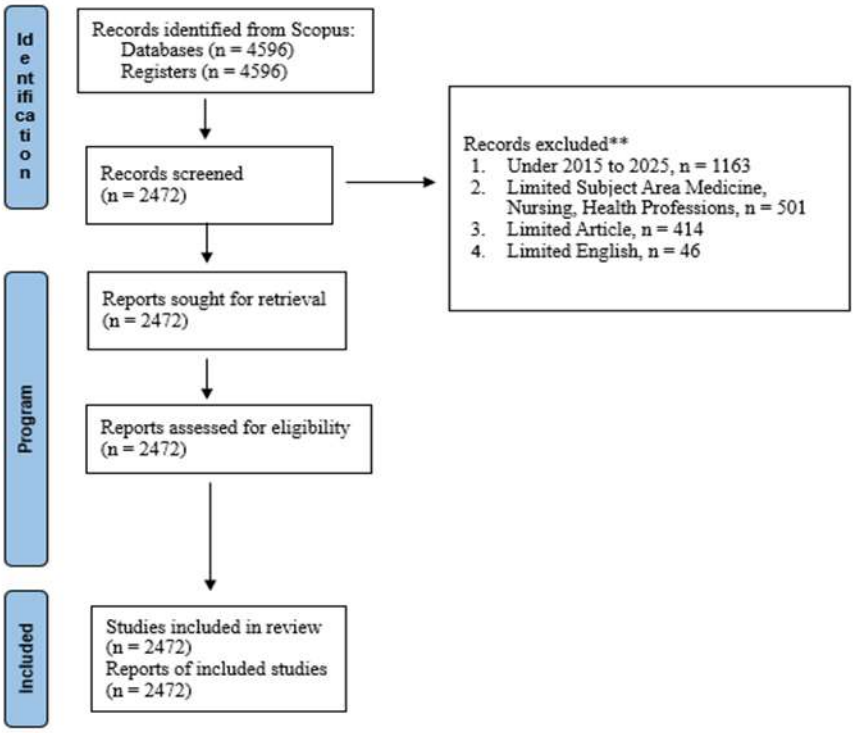

Chart 1: PRISMA Article Selection Flowchart for Bibliometric Analysis

RESULT

The findings of a bibliometric analysis carried out to assess trends and patterns in the literature pertaining to the digital transformation of health, namely Electronic Medical Records Education and Training, for the years 2015 to 2025 are presented in this section. Based on data classification, which includes the distribution of journal publication years, author countries of origin, amount of citations, and keywords used, the analysis's findings will be explained. The number of articles published in each year is shown in the figure below.

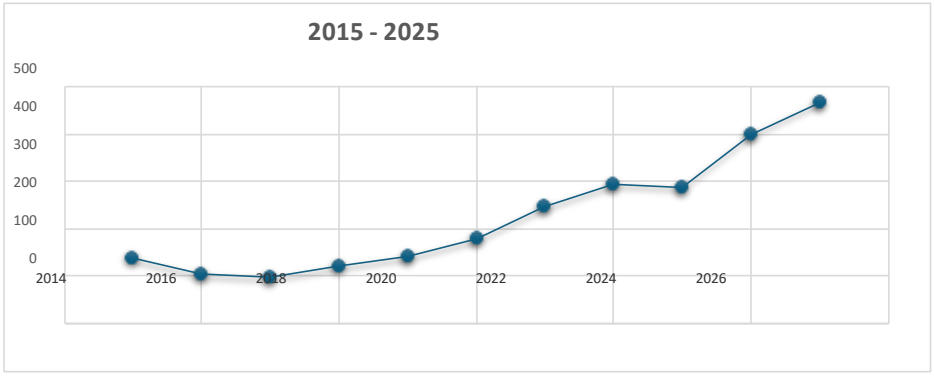

Chart 2: Annual number of papers published

The graph above demonstrates that, with 79 articles each, 2015 and 2025 had the most publications pertaining to training and education in electronic medical records. To ascertain the distribution of the most frequently published papers within a nation, a Scopus study was also carried out. This map illustrates how articles are distributed using a map chart.

Figure 1: Trends in the Publication of Electronic Medical Records by Nation

The United States had the most articles (1,208) about electronic medical records training, followed by China (521 articles), Canada (125 articles), the United Kingdom (115), Australia (113), South Korea (65 articles), the Netherlands (44), Brazil and India (43 articles), and Taiwan (42 articles), according to Figure 1.

Mapping studies on training for electronic medical records

Figure 2: VOSviewer's Network Visualization Results

There are nine clusters when using cluster-based creation:

Table 1.
Theme-based cluster mapping

Cluster	Keywords	Cluster Theme	Theme Description
1	digital health, e-health, ehealth, electronic medical record, exercise, healthcare, intervention, medical records, mhealth, patient safety, prevention, self-management, technology, telehealth, telemedicine, usability	Using Digital Health Technology to Manage and Safeguard Patients	The use of digital health technology (e-health, mHealth, telemedicine, EMR) is given top priority in this cluster as a means of enhancing patient safety, preventing illness, promoting self-management, and simplifying the health care system.
2	consultation, evaluation, evidence-based practice, facilitators, general practice, implementation, information systems, information technology, medical	Health Information System Implementation in Evidence-Based Primary Care Practice	The implementation procedures, evaluations, and components that underpin the evidence-based use of IT in primary care and general practice are highlighted in this area.

	informatics, patient portal, primary care, primary health care, screening		
3	education, health care, health information technology, health informatics, health services research, healthcare quality, informatics, medical education, patient care, public health, training	Enhancing Service Quality through Health Informatics Education and Capacity Building	By enhancing health informatics capabilities across several service sectors, this group represents the role of education, training, and research in the field of health services to improve the quality of services.
4	communication, communication skills, efficiency, ehr, emr, patient satisfaction, safety	Electronic Medical Records Systems' Impact on Patient Satisfaction, Efficiency, and Communication	This theme focuses on how EHR/EMR affects patient satisfaction, safety, clinician interactions, and healthcare productivity.
5	clinical informatics, electronic health records, nurses, nursing education, nursing informatics, population health, simulation training	Simulation and Nursing Informatics to Enhance Clinical Proficiency	n order to improve nurses' abilities and their influence on public health, this cluster highlights the significance of clinical information and nursing science, which includes nursing education and simulation practice.
6	burnout, electronic health record, electronic medical record, health information system, information extraction	Electronic Medical Record Systems' Effects on Burnout and Workload in Healthcare	This cluster looks at how weariness, workload, and trouble accessing clinical information are related to the usage of HER/EMR and health information systems.
7	data mining, electronic medical record, hospital information system, nursing, predictive modeling	Predictive modeling and data analytics based on electronic medical records	The utilization of data from EMR and hospital information systems for data mining, predictive modeling, and clinical decision-making—which encompasses nursing practice—is given priority in this cluster.
8	documentation, medical record, privacy, simulation	Simulation, Data Privacy, and Medical Documentation in Health Information Systems	This subject emphasizes the value of patient data protection, health records, and the use of simulation as a teaching tool and to improve archiving abilities.
9	data quality, qulity indicators	Health Information Systems' Data Quality and Quality Indicators	The quality of medical record data and the application of quality indicators as a foundation for performance evaluation and raising the standard of healthcare services are the main topics of this cluster.

The aforementioned visualization demonstrates that the number of nudists will increase with the frequency of this occurrence. Primary care, electronic health records, and electronic medical records are the most prevalent, according to the data above.

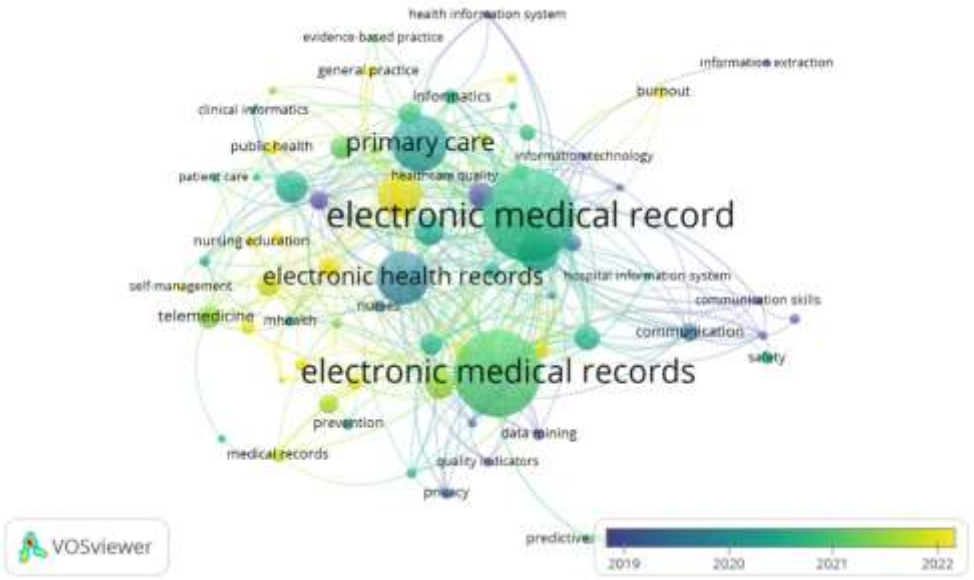

Figure 3: VOSviewer Overlay Visualization Results

Hospital information system, communication skills, privacy, and data mining were the most commonly used terms at the start of the study in 2019, according to the VOSviewer overlay visualization. Electronic medical records, primary care, informatics, nurses, and public health were the most used keywords in 2020–2021. Telemedicine, mHealth, self-management, burnout, healthcare quality, and evidence-based practice were among the keywords that surfaced in 2021–2022.

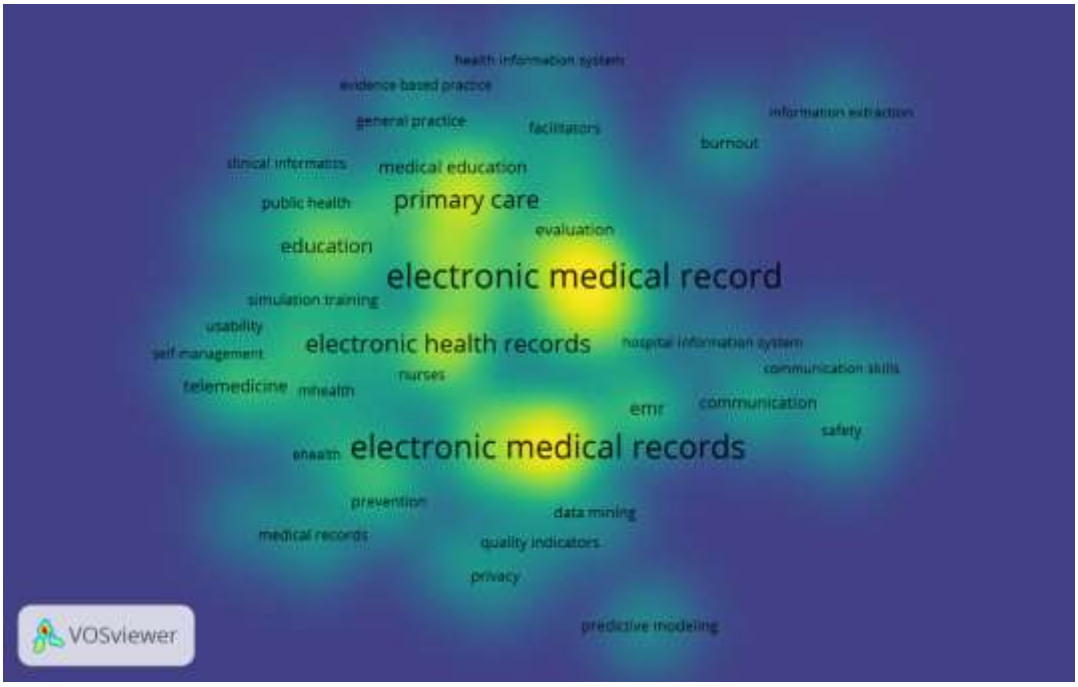

Figure 4: Density Visualization Outcomes Using Vosviewer

Electronic medical records, electronic health records, primary care, and education are the most often used keywords, according to density visualization using Vosviewer.

Table 2: Articles about electronic medical records with the most citations

No	Title	Author/Year	Source Journal	Citation	Quartile
1	Supporting information retrieval from electronic health records: A report of University of Michigan's nine-year experience in developing and using the Electronic Medical Record Search Engine (EMERSE)	(Hanauer et al., 2015)	Journal of Biomedical Informatics	366	Q1
2	Impact of Electronic Medical Record Use on the Patient-Doctor Relationship and Communication: A Systematic Review	(Alkureishi et al., 2015)	Journal of General Internal Medicine	187	Q1
3	Cognitive workload changes for nurses transitioning from a legacy system with paper documentation to a commercial electronic health record	(Colligan et al., 2015)	International Journal of Medical Informatics	173	Q1
4	Adoption of e-health technology by physicians: a scoping review	(Grood., 2016)	Journal of Multidisciplinary Healthcare	112	Q1
5	Success criteria for electronic medical record implementations in low-resource settings: a systematic review	(Fritz et al., 2015)	Journal of the American Medical Informatics Association	102	Q1
6	Seven years after Meaningful Use: Physicians' and nurses' experiences with electronic health records	(Cheryl et al., 2019)	Health Care Management Review	81	Q1
7	The effects of organizational contextual factors on physicians' attitude toward adoption of Electronic Medical Records	(Abdekhoda et al., 2015)	Journal of Biomedical Informatics	81	Q1
8	Novel electronic health record (EHR) education intervention in large healthcare organization improves quality, efficiency, time, and impact on burnout	(Robinson & Kersey., 2018)	Medicine United States	75	Q3
9	Comprehensive Evaluation of Electronic Medical Record System Use and User Satisfaction at Five Low-Resource Setting Hospitals in Ethiopia	(Tilahun & Fritz, 2015)	JMIR Medical Informatics	71	Q1

10	Ensuring electronic medical record simulation through better training, modeling, and evaluation	(Zhang et al., 2019)	Journal of the American Medical Informatics Association	60	Q1

2472 papers about education and training for electronic medical records were found in the search results; table 1 shows the most cited articles. Zhang et al., 2019; Hanauer et al., 2015; Alkureishi et al., 2015; Cheryl et al., 2019; Grood, 2016; Fritz et al., 2015; Tilahun & Fritz, 2015; Robinson & Kersey, 2018; Abdekhoda et al., 2015; Colligan et al., 2015). The Journal of Biomedical Informatics published the most cited article, "Supporting information retrieval from electronic health records: A report of the University of Michigan's nine-year experience in developing and using the Electronic Medical Record Search Engine (EMERSE)," with 366 references. Between 60 and 187 references were cited in ten other papers.

DISCUSSION

Research on electronic medical records education and training in nursing and healthcare has steadily increased between 2015 and 2025, according to bibliometric data. EMR issues are still significant, as evidenced by the relatively high number of publications at the start of the period (2015) and the continuing growth at the conclusion (2025). This increase in recent years can be linked to the increasing digital transformation of healthcare services. This is especially true in the wake of the COVID-19 pandemic, which required extensive training and instruction to improve healthcare personnel' digital competency (Ting et al., 2021).

High-income nations have superior research capacities, technological infrastructure, and policies that support the adoption and education of electronic medical records, as evidenced by the United States' geographic contribution as the nation with the greatest number of publications. This result is consistent with research by Cheryl et al. (2019), which highlights how national policies, including meaningful use, can promote the usage and study of electronic medical records. On the other hand, even while poor nations are starting to show up in research, their contributions are still quite small, suggesting that there are differences in the advancement of training and education for electronic medical records around the globe Fritz et al. (2015) and Tilahun & Fritz (2015) also show this in the context of ecosystems with restricted resources.

Research on electronic medical records education and training is multifaceted and interdisciplinary, as shown by keyword co-occurrence analysis and visual network analysis. The generated clusters show a high correlation between clinical practice (patient safety, primary care, nursing), education and training (education, coaching, simulation), and digital health technology (e-health, mHealth, telemedicine). This illustrates a paradigm change in the teaching of electronic medical records, moving away from a strictly technical approach and toward a more comprehensive one that incorporates patient safety, clinical work efficiency, and service quality (Zhang et al., 2019).

The results of the overlay visualization demonstrate how study themes have changed from an early emphasis on hospital information systems, privacy, and communication skills to more intricate problems like burnout, self-control, evidence-based practice, and the quality of healthcare. These findings bolster the argument that training and education in electronic medical records affects not only technical abilities but also cognitive workload, employee well-being, and service quality. Research by Colligan et al. (2015) and Robinson & Kersey (2018), which shown that proper electronic medical record training can lessen nurses' cognitive load and lower their risk of injury, supports these conclusions.

Information retrieval, doctor-patient communication, nurse workload, and the effective implementation of electronic medical records were among the strategic subjects covered by the

highest-cited publications in this analysis, which were mostly from Q1 journals. The significant number of citations to Hanauer et al., (2015) publication indicates that the success of the system depends on healthcare professionals' capacity to efficiently access and use information from electronic medical records. Because nurses are the system's main users, practice-oriented, user-needs-based electronic medical record training is becoming more and more crucial.

Overall, our bibliometric results show that training and education for electronic medical records has become a strategic study area that includes organizational, pedagogical, technological, and service quality elements. Nonetheless, there are still a lot of untapped research potential, especially when it comes to creating relevant, sustainable, and contextual electronic medical records training models that are suited to the requirements of developing nations. Additionally, formal nursing curricula must to include computerized medical records.

CONCLUSION

Research on electronic medical records education and training in nursing and healthcare showed steady increase and increasingly sophisticated diversification of themes between 2015 and 2025, according to this bibliometric study. Publications are dominated by the United States and other wealthy nations, while contributions from developing nations are still scarce. Nonetheless, research frequently focuses on environments with limited resources.

This study's main objectives include training, education, simulation, and the use of electronic medical records. Issues like burnout, patient safety, evidence-based practice, and care quality have received more attention recently. Highly referenced studies state that user education and training, especially for nurses, is critical to the success of implementing electronic medical records.

As a result, the results of this study offer educators, researchers, and policymakers a solid scientific foundation for creating better organized, flexible, and long-lasting electronic medical record teaching and training programs. The significance of a bibliometric approach as a strategic instrument for determining research orientations and bolstering evidence-based decision-making in the advancement of nursing education in the age of digital transformation is also highlighted by this study.

REFERENCES

Abdekhoda, M., Ahmadi, M., Gohari, M., & Noruzi, A. (2015). The effects of organizational contextual factors on physicians ' attitude toward adoption of Electronic Medical Records. Journal of Biomedical Informatics, 53, 174–179. https://doi.org/10.1016/j.jbi.2014.10.008

Alkureishi, M. A., Lee, W. W., Lyons, M., Press, V. G., Imam, S., Nkansah-amankra, A., Werner, D., & Arora, V. M. (2015). Impact of Electronic Medical Record Use on the Patient – Doctor Relationship and Communication : A Systematic Review. 548–560. https://doi.org/10.1007/s11606-015-3582-1

Cheryl, R., Tracy, P., Jessica, M., & Michelle, F.P. (2019). Seven years after meaningful use: physicians' and nurses' experiences with electronic health records. Health Care Management Review, 44(1), 30-40

Colligan, L., Potts, H.W.W., Finn, C.T., & Sinkin, R.A. (2015). Cognitive workload changes for nurses transitioning from a legacy system with paper documentation to a commercial electronic health record, 84(7), 469-476, https://doi.org/10.1016/j.ijmedinf.2015.03.003

Fritz, F., Tilahun, B., & Dugas, M. (2015). Success criteria for electronic medical record implementations in low-resource settings: a systematic review, Journal of the American Medical Informatics Association, 22(2), 479-488, https://doi.org/10.1093/jamia/ocu038

Grood, C. De. (2016). Adoption of e-health technology by physicians : a scoping review. 335–344.

Hanauer, D. A., Mei, Q., Law, J., Khanna, R., & Zheng, K. (2015). Supporting information retrieval from electronic health records: A report of University of Michigan's nine-year experience in

developing and using the Electronic Medical Record Search Engine (EMERSE). Journal of Biomedical Informatics, 55, 290–300. https://doi.org/10.1016/j.jbi.2015.05.003

Ju, J., & Jeong, H. (2025). Effect of a Practice-Oriented Electronic Medical Record Education Program for New Nurses. 1–11.

Luan, Z., Zhang, Z., Gao, Y., Du, S., & Wu, N. (2023). Electronic health records in nursing from to : A bibliometric analysis. 11(3).

Robinson, K. E., & Kersey, J. A. (2018). Novel electronic health record (EHR) education intervention in large healthcare organization improves quality, efficiency, time, and impact on burnout. Medicine, 1–5.

Tilahun, B., & Fritz, F. (2015). Comprehensive Evaluation of Electronic Medical Record System Use and User Satisfaction at Five Low-Resource Setting Hospitals in Ethiopia Corresponding Author : 3. https://doi.org/10.2196/medinform.4106

Ting, J., Garnett, A., & Donelle, L. (2021). Nurse Education in Practice Nursing education and training on electronic health record systems : An integrative review. Nurse Education in Practice, 55(October 2020), 103168. https://doi.org/10.1016/j.nepr.2021.103168

Zhang, Z., Yan, C., Mesa, D. A., Sun, J., & Malin, B. A. (2019). Ensuring electronic medical record simulation through better training, modeling, and evaluation. 27(October), 99–108. https://doi.org/10.1093/jamia/ocz161