

WIRED BUT WORN OUT: A SYSTEMATIC REVIEW OF ELECTRONIC HEALTH RECORD USABILITY AND ITS ASSOCIATION WITH NURSE BURNOUT

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Abstract

Background: Electronic Health Records (EHRs) have become an essential component of contemporary healthcare systems, supporting clinical documentation, communication, and care coordination. Despite their intended benefits, concerns have emerged regarding the usability of EHR systems and their impact on nurses' work experiences. Poorly designed interfaces, excessive documentation requirements, and workflow inefficiencies may contribute to increased occupational stress and burnout among nurses. **Objective:** This systematic review aimed to synthesize the existing evidence on the relationship between EHR usability and nurse burnout, with particular attention to usability-related factors that may influence nurses' psychological well-being, job satisfaction, and professional performance. **Methods:** A systematic search of PubMed, Scopus, Web of Science, CINAHL, and Embase was conducted to identify studies examining EHR usability and burnout among nurses. Eligible studies included quantitative, qualitative, and mixed-methods research published in English that evaluated nurses' experiences with EHR systems and reported burnout-related outcomes. Study selection, data extraction, and quality appraisal were performed according to established systematic review guidelines. Due to methodological heterogeneity across studies, findings were synthesized narratively. **Results:** The reviewed literature consistently demonstrated an association between poor EHR usability and higher levels of nurse burnout. Common usability concerns included cumbersome documentation processes, inefficient navigation, alert fatigue, system complexity, inadequate interoperability, and disruptions to clinical workflow. These challenges were frequently linked to emotional exhaustion, increased cognitive workload, reduced job satisfaction, and greater intention to leave the profession. Conversely, studies reported that user-centered system design, streamlined documentation processes, effective training, and organizational support were associated with more positive user experiences and lower burnout levels. **Conclusion:** EHR usability appears to be an important organizational and technological factor influencing nurse burnout. Improving system usability through user-centered design, workflow optimization, and ongoing evaluation may help reduce documentation burden and support nurse well-being. Future longitudinal and intervention-based studies are needed to clarify causal relationships and identify effective strategies for mitigating technology-related burnout in nursing practice.

Keywords: Electronic Health Records; EHR usability; nurse burnout; nursing informatics; documentation burden; workflow efficiency; occupational stress.

I. Introduction

The widespread adoption of Electronic Health Records (EHRs) has transformed healthcare delivery by improving the accessibility, storage, and exchange of patient information. EHR systems are intended to enhance clinical decision-making, support care coordination, reduce medical errors, and improve healthcare quality. Over the past decade, healthcare organizations worldwide have invested heavily in digital health technologies, making EHRs a central component of contemporary nursing practice. As the largest group of healthcare professionals, nurses interact extensively with EHR systems throughout their daily workflow, using them for documentation, medication administration, patient monitoring, communication, and care planning (Park et al., 2024).

Despite their potential benefits, EHR systems have also introduced new challenges for healthcare professionals. Many nurses report spending substantial portions of their workday interacting with electronic systems rather than engaging in direct patient care. Documentation requirements, repetitive data entry, navigation through multiple screens, and frequent electronic alerts can increase workload and contribute to workflow inefficiencies. When EHR systems are poorly designed or inadequately aligned with clinical workflows, nurses may experience frustration, cognitive overload, and reduced work efficiency (Alobayli et al., 2023).

Usability is a critical determinant of the effectiveness of health information technologies. According to human factors principles, usability refers to the extent to which a system can be used efficiently, effectively, and satisfactorily by intended users to accomplish specific tasks. In healthcare settings, EHR usability encompasses factors such as interface design, ease of navigation, information accessibility, system reliability, workflow integration, and user satisfaction. Poor usability has been associated with increased documentation time, workarounds, communication barriers, and patient safety concerns. A systematic review by Park et al. (2024) found that nurses frequently reported challenges related to EHR satisfaction, performance, and safety, highlighting the importance of designing systems that better support nursing workflows.

At the same time, nurse burnout has emerged as a major global healthcare concern. Burnout is characterized by emotional exhaustion, depersonalization, and a diminished sense of personal accomplishment resulting from chronic workplace stress. Nurses experience burnout at higher rates than many other healthcare professionals because of demanding workloads, staffing shortages, emotional labor, and increasing administrative responsibilities. Burnout has been linked to reduced job satisfaction, decreased quality of care, increased medical errors, absenteeism, and higher turnover rates, all of which can negatively affect healthcare organizations and patient outcomes.

Recent evidence suggests that technology-related stressors may contribute significantly to burnout among healthcare professionals. EHR-related burdens, including excessive documentation requirements, inefficient interfaces, alert fatigue, and after-hours electronic work, have been identified as important contributors to occupational stress. In their systematic review of EHR-related stress and burnout among hospital clinicians, Alobayli et al. (2023) reported that usability issues and time spent using EHRs were among the strongest predictors of burnout. Similarly, a

meta-analysis by Wu et al. (2024) identified EHR-related workload and poor system usability as key factors associated with burnout among healthcare professionals.

Although substantial research has examined EHR-related burnout among physicians, comparatively less attention has been directed toward nurses, despite their extensive interaction with electronic systems. Given the essential role of nurses in healthcare delivery and the growing concerns regarding workforce retention and well-being, understanding how EHR usability influences nurse burnout is increasingly important. Identifying usability factors that contribute to burnout may help healthcare organizations develop targeted interventions that improve both clinician well-being and patient care outcomes.

Therefore, this systematic review aims to synthesize the current evidence regarding the relationship between EHR usability and nurse burnout. Specifically, the review seeks to examine how usability-related challenges influence burnout among nurses and to identify potential strategies that may mitigate technology-related stress in clinical practice.

❖ Rationale and Hypothesis

Rationale

Electronic Health Records (EHRs) have become indispensable tools in modern healthcare, facilitating clinical documentation, communication, information sharing, and decision support. While EHR systems have contributed to improvements in healthcare quality and patient safety, concerns have emerged regarding their impact on healthcare professionals' workload and well-being. Nurses, who constitute the largest segment of the healthcare workforce, interact extensively with EHR systems throughout their daily practice. Consequently, the usability of these systems plays a critical role in shaping nurses' work experiences and overall job satisfaction.

Previous studies have identified several usability-related challenges associated with EHR use, including complex interfaces, excessive documentation requirements, inefficient navigation, alert fatigue, and poor integration with clinical workflows. These challenges may increase cognitive workload, reduce efficiency, and divert time away from direct patient care. As a result, nurses may experience frustration, stress, and decreased professional satisfaction, all of which are recognized contributors to burnout (Alobayli et al., 2023; Park et al., 2024).

Burnout among nurses has become a significant global concern due to its association with adverse outcomes for both healthcare professionals and patients. Emotional exhaustion, depersonalization, and reduced personal accomplishment can negatively affect job performance, patient safety, quality of care, and workforce retention. Although numerous organizational and individual factors contribute to burnout, growing evidence suggests that technology-related stressors, particularly those associated with EHR use, represent an increasingly important but potentially modifiable risk factor (Wu et al., 2024).

While several studies have examined EHR-related burnout among physicians and other healthcare professionals, evidence focusing specifically on nurses remains fragmented. Furthermore, the extent to which EHR usability influences nurse burnout has not been comprehensively synthesized. A systematic review is therefore warranted to consolidate the available evidence, identify common usability challenges, and evaluate their association with

burnout outcomes among nurses. Understanding these relationships may help healthcare organizations, policymakers, and system developers implement targeted strategies to improve EHR usability and support nurse well-being.

Hypothesis

This systematic review is guided by the following hypothesis:

Primary Hypothesis

Nurses who perceive Electronic Health Record systems as having poor usability are more likely to experience higher levels of burnout compared with nurses who report better EHR usability.

Secondary Hypotheses

1. Specific usability challenges, including excessive documentation burden, poor workflow integration, complex navigation, and alert fatigue, are positively associated with nurse burnout.
2. Improved EHR usability is associated with lower levels of emotional exhaustion, higher job satisfaction, and reduced intention to leave the profession.
3. Organizational interventions aimed at improving EHR usability, user training, and workflow optimization may contribute to reducing technology-related stress and burnout among nurses.

II. Literature Review

Electronic Health Records in Contemporary Nursing Practice

Electronic Health Records (EHRs) have become a cornerstone of modern healthcare systems, supporting the collection, storage, retrieval, and exchange of patient information across healthcare settings. The widespread adoption of EHRs has been driven by efforts to improve patient safety, enhance care coordination, reduce medical errors, and facilitate evidence-based clinical decision-making (Kruse et al., 2022). For nurses, EHRs are integrated into nearly every aspect of clinical practice, including patient assessment, care planning, medication administration, documentation, and interdisciplinary communication.

The increasing reliance on digital documentation has significantly altered nursing workflows. Although EHR systems offer advantages such as improved information accessibility and streamlined communication, nurses often spend substantial amounts of time interacting with electronic systems. Studies have shown that documentation-related tasks may consume a considerable portion of nurses' working hours, potentially reducing the time available for direct patient care and therapeutic interactions (Park et al., 2024).

Concept of EHR Usability

Usability is a fundamental characteristic of health information technologies and is commonly defined as the degree to which a system enables users to achieve their goals effectively, efficiently, and satisfactorily within a specific context of use (International Organization for Standardization [ISO], 2018). In healthcare environments, EHR usability encompasses multiple dimensions, including interface design, ease of navigation, information organization, system responsiveness, interoperability, and workflow compatibility.

High-usability systems enable healthcare professionals to document care efficiently, retrieve relevant information quickly, and complete clinical tasks with minimal cognitive effort. Conversely, poor usability may lead to increased documentation burden, workflow disruptions, information overload, and user frustration. A systematic review conducted by Park et al. (2024) reported that nurses frequently identified issues related to system complexity, inefficient navigation, and documentation inefficiencies as major usability concerns. These findings suggest that EHR usability remains a significant challenge despite ongoing technological advancements.

Nurse Burnout: Definition and Consequences

Burnout is recognized as a work-related syndrome resulting from chronic occupational stress that has not been successfully managed. According to the World Health Organization (WHO), burnout is characterized by emotional exhaustion, increased mental distance from one's job, and reduced professional efficacy (World Health Organization, 2019). Nursing professionals are particularly vulnerable to burnout because of demanding workloads, staffing shortages, emotional labor, shift work, and increasing administrative responsibilities.

The consequences of burnout extend beyond individual well-being. Burnout has been associated with decreased job satisfaction, increased absenteeism, reduced productivity, higher turnover rates, and compromised patient safety. Research has demonstrated that nurses experiencing burnout are more likely to report lower quality of care and increased intentions to leave their positions, contributing to workforce shortages and organizational instability (Dall'Ora et al., 2020).

Relationship Between EHR Use and Burnout

Growing evidence suggests that health information technologies may contribute to occupational stress and burnout among healthcare professionals. While EHRs were introduced to improve efficiency and patient care, their implementation has sometimes produced unintended consequences. Excessive documentation requirements, repetitive data entry, alert fatigue, and system inefficiencies have been identified as common sources of frustration among clinicians (Alobayli et al., 2023).

Several studies have found significant associations between poor EHR usability and burnout-related outcomes. Healthcare professionals who perceive EHR systems as difficult to use often report higher levels of emotional exhaustion, cognitive workload, and job dissatisfaction. In their systematic review, Alobayli et al. (2023) concluded that EHR-related stress was consistently associated with burnout across multiple healthcare disciplines. Similarly, a meta-analysis by Wu et al. (2024) found that clinicians experiencing greater EHR-related burden were significantly more likely to report symptoms of burnout.

EHR Usability Challenges Affecting Nurses

Nurses face several usability-related challenges that may increase stress and contribute to burnout. One of the most frequently reported issues is documentation burden. Modern EHR systems often require extensive data entry, repetitive documentation, and completion of numerous mandatory fields, increasing workload and reducing efficiency. These requirements may extend documentation activities beyond scheduled shifts, contributing to work-life imbalance and fatigue.

Another significant challenge is alert fatigue. EHR systems frequently generate numerous notifications, reminders, and warnings intended to enhance patient safety. However, excessive alerts may overwhelm users, interrupt clinical workflows, and diminish the effectiveness of critical warnings. Research suggests that alert fatigue contributes to cognitive overload and frustration among healthcare professionals (Kruse et al., 2022).

Poor interoperability between healthcare systems also creates inefficiencies. When EHR systems cannot seamlessly exchange information across departments or healthcare organizations, nurses may need to manually retrieve, verify, or duplicate information. Such inefficiencies increase administrative burden and may negatively affect both staff satisfaction and patient care quality.

Strategies to Improve EHR Usability and Reduce Burnout

Researchers have proposed several strategies to address EHR-related challenges and mitigate burnout among nurses. User-centered design approaches emphasize involving frontline clinicians throughout the development and implementation process to ensure systems align with real-world clinical workflows. Improved interface design, simplified navigation, and reduction of unnecessary documentation requirements may enhance usability and decrease cognitive burden.

Comprehensive training programs have also been identified as important factors in promoting effective EHR use. Adequate training enables nurses to develop confidence and proficiency in navigating electronic systems, reducing frustration and improving efficiency. In addition, healthcare organizations can support clinicians through workflow optimization initiatives, ongoing technical support, and regular usability evaluations aimed at identifying and addressing user concerns.

Knowledge Gap

Although the association between EHR use and clinician burnout has received increasing attention, much of the existing literature has focused primarily on physicians and other healthcare professionals. Evidence specifically examining nurses remains relatively dispersed across different healthcare settings and study designs. Furthermore, the specific usability factors most strongly associated with burnout among nurses have not been consistently identified. Given the central role of nurses in healthcare delivery and the growing concerns regarding workforce well-being, a comprehensive synthesis of the available evidence is needed. This systematic review seeks to address this gap by examining the relationship between EHR usability and nurse burnout and identifying factors that may inform future interventions and policy development.

III. Methods

Study Design

This systematic review was conducted to synthesize the available evidence regarding the association between Electronic Health Record (EHR) usability and nurse burnout. The review methodology followed the principles outlined in the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA 2020) statement to ensure transparency, rigor, and reproducibility throughout the review process (Page et al., 2021).

Review Question

The review was guided by the following research question:

"What is the association between Electronic Health Record usability and burnout among nurses in healthcare settings?"

The review sought to identify usability-related factors associated with burnout and examine the extent to which EHR usability influences nurses' psychological well-being, job satisfaction, and work-related outcomes.

Eligibility Criteria

The inclusion and exclusion criteria were developed using the Population, Exposure, Comparison, Outcome, and Study Design (PECOS) framework.

Inclusion Criteria

Studies were included if they met the following criteria:

- Participants were registered nurses, licensed practical nurses, nurse practitioners, or nursing staff working in healthcare settings.
- Studies evaluated Electronic Health Record usability, user experience, or technology-related workload.
- Studies assessed burnout or burnout-related outcomes, including emotional exhaustion, depersonalization, job satisfaction, occupational stress, or intention to leave.
- Quantitative, qualitative, and mixed-methods studies were eligible.
- Articles published in peer-reviewed journals.
- Studies published in English.
- Studies published between January 2014 and December 2025.

Exclusion Criteria

Studies were excluded if they:

- Focused exclusively on physicians or other healthcare professionals without separate nursing data.
- Examined health information technologies other than EHRs.
- Did not evaluate burnout or related psychological outcomes.
- Were conference abstracts, editorials, commentaries, letters, dissertations, or review articles.
- Were not published in English.

Information Sources

A comprehensive literature search was conducted using the following electronic databases:

- PubMed/MEDLINE
- Scopus
- Web of Science
- CINAHL Complete
- Embase

Additionally, reference lists of eligible studies were manually searched to identify potentially relevant articles that were not captured during the database search.

Search Strategy

The search strategy combined Medical Subject Headings (MeSH) terms and free-text keywords related to EHR usability and nurse burnout. Search terms were adapted for each database according to indexing requirements.

The primary search string included combinations of the following terms:

- “Electronic Health Record” OR “Electronic Medical Record” OR “EHR” OR “EMR”
- “Usability” OR “User Experience” OR “System Design” OR “Human Factors”
- “Nurse” OR “Nursing Staff” OR “Registered Nurse”
- “Burnout” OR “Occupational Stress” OR “Emotional Exhaustion” OR “Job Satisfaction”

An example PubMed search strategy was:

("Electronic Health Records"[Mesh] OR "electronic health record*" OR HER OR EMR) AND (usability OR "user experience" OR "human factors" OR "system design") AND (nurse* OR "nursing staff") AND (burnout OR "occupational stress" OR "emotional exhaustion" OR "job satisfaction")

Study Selection

All retrieved citations were imported into a reference management software program, and duplicate records were removed. Titles and abstracts were screened against the eligibility criteria. Full-text articles of potentially relevant studies were subsequently assessed for inclusion.

The study selection process was conducted independently by two reviewers. Any disagreements regarding study eligibility were resolved through discussion and consensus. The selection process was documented using a PRISMA 2020 flow diagram.

Data Extraction

Data extraction was performed using a standardized data collection form developed specifically for this review. The following information was extracted from each included study:

- Author(s) and year of publication
- Country of study
- Study design
- Healthcare setting
- Sample size and participant characteristics
- EHR system characteristics
- Measures of EHR usability
- Measures of burnout or related outcomes
- Key findings regarding the association between EHR usability and burnout

To ensure accuracy and consistency, extracted data were independently verified by a second reviewer.

Quality Assessment

The methodological quality of included studies was evaluated using appropriate critical appraisal tools according to study design.

- The **Joanna Briggs Institute (JBI) Critical Appraisal Checklists** were used for cross-sectional, cohort, and qualitative studies (Munn et al., 2020).

- Mixed-methods studies were assessed using the **Mixed Methods Appraisal Tool (MMAT)** (Hong et al., 2018).

Each study was assessed for methodological rigor, risk of bias, validity of measurements, and adequacy of statistical analyses. Quality assessment results were incorporated into the interpretation of findings.

Data Synthesis

Due to anticipated heterogeneity in study designs, healthcare settings, usability measures, and burnout assessment tools, a narrative synthesis approach was employed. Findings were organized according to key themes related to EHR usability and burnout.

The synthesis focused on:

1. Common EHR usability challenges reported by nurses.
2. Associations between usability factors and burnout dimensions.
3. Organizational and technological factors influencing nurse well-being.
4. Strategies proposed to improve EHR usability and reduce burnout.

Where sufficient homogeneity existed among studies, quantitative findings were summarized descriptively. However, a formal meta-analysis was not planned because of expected variation in study methodologies and outcome measures.

Ethical Considerations

As this study involved the analysis of previously published literature and did not include human participants, ethical approval and informed consent were not required. The review was conducted in accordance with accepted principles of research integrity and ethical scholarly practice.

IV. Results

Study Selection

The initial database search identified 1,248 records from PubMed, Scopus, Web of Science, CINAHL, and Embase. After removing 312 duplicate records, 936 studies remained for title and abstract screening. Following the screening process, 128 articles were selected for full-text review. Of these, 32 studies met the inclusion criteria and were included in the final systematic review. The most common reasons for exclusion were the absence of nursing-specific data, failure to assess burnout outcomes, and insufficient evaluation of EHR usability.

The study selection process followed the PRISMA 2020 guidelines and is summarized in the PRISMA flow diagram (Figure 1).

Characteristics of Included Studies

The 32 included studies were published between 2014 and 2025 and represented a diverse range of healthcare settings and geographical locations. Most studies were conducted in North America and Europe, while several originated from Asia and Australia. Sample sizes ranged from 45 to 6,750 participants, with a cumulative sample exceeding 24,000 nurses.

Cross-sectional studies represented the majority of included research, although qualitative, mixed-methods, and cohort studies were also identified. Most studies investigated the relationship

between EHR usability, documentation burden, workflow efficiency, and burnout-related outcomes among nurses.

Table 1. Characteristics of Included Studies

Characteristic	Frequency (n=32)	Percentage (%)
Cross-sectional studies	21	65.6
Qualitative studies	5	15.6
Mixed-methods studies	4	12.5
Cohort studies	2	6.3
Hospital settings	24	75.0
Primary care settings	4	12.5
Long-term care facilities	3	9.4
Community healthcare settings	1	3.1
North America	18	56.3
Europe	7	21.9
Asia	5	15.6
Australia	2	6.2

Table 1 summarizes the general characteristics of the studies included in the review. Most investigations employed cross-sectional designs and were conducted in hospital settings, reflecting the widespread use of EHR systems in acute care environments. North America accounted for the largest proportion of studies, highlighting the substantial adoption of digital health technologies within the region. The diversity of study settings and methodologies provided a comprehensive understanding of EHR usability and burnout across various nursing contexts.

EHR Usability Factors Associated with Burnout

Several recurring usability challenges were identified across the reviewed studies. Documentation burden was the most frequently reported concern, followed by inefficient navigation, alert fatigue, poor interoperability, and workflow disruptions. These usability issues were consistently associated with higher levels of stress and burnout among nurses.

Table 2. Major EHR Usability Factors Associated with Nurse Burnout

EHR Usability Factor	Studies Reporting Factor (n)	Percentage (%)
Documentation burden	27	84.4
Inefficient navigation	24	75.0
Alert fatigue	22	68.8
Workflow disruption	20	62.5
Poor interoperability	18	56.3
System complexity	17	53.1
Repetitive data entry	15	46.9
Inadequate training	12	37.5

Table 2 presents the most commonly reported EHR usability challenges identified in the included studies. Documentation burden emerged as the predominant issue, reported by more than four-fifths of studies. Nurses frequently described spending excessive amounts of time completing electronic documentation, reducing opportunities for direct patient care. Alert fatigue and inefficient navigation were also commonly cited, contributing to cognitive overload and frustration. Collectively, these usability barriers were associated with increased workload, reduced efficiency, and heightened burnout risk.

Association Between EHR Usability and Burnout Outcomes

Across the included studies, poor EHR usability was consistently linked to adverse occupational outcomes. Emotional exhaustion was the most frequently reported burnout dimension, followed by job dissatisfaction, cognitive overload, and turnover intention.

Table 3. Burnout Outcomes Associated with Poor EHR Usability

Burnout Outcome	Studies Reporting Outcome (n)	Percentage (%)
Emotional exhaustion	26	81.3
Job dissatisfaction	23	71.9
Cognitive workload/stress	22	68.8
Turnover intention	18	56.3
Reduced professional accomplishment	16	50.0
Depersonalization	14	43.8
Work-life imbalance	12	37.5
Reduced patient-care time	11	34.4

Table 3 demonstrates the principal burnout outcomes associated with poor EHR usability. Emotional exhaustion was the most frequently reported consequence, indicating that usability challenges substantially contribute to psychological strain among nurses. Many studies also reported increased job dissatisfaction and cognitive workload, suggesting that poorly designed EHR systems negatively affect both emotional well-being and workplace engagement. More than half of the studies identified turnover intention as a significant outcome, emphasizing the potential impact of EHR-related stress on workforce retention.

Quality Assessment

Quality appraisal revealed that most studies demonstrated moderate to high methodological quality. Common strengths included the use of validated burnout instruments, large sample sizes, and comprehensive assessments of EHR usability. However, several studies relied on cross-sectional designs, limiting the ability to establish causal relationships. Additionally, some studies used self-reported measures, which may have introduced reporting bias.

Narrative Synthesis of Findings

The findings consistently demonstrated a significant association between EHR usability and nurse burnout. Nurses working with systems perceived as difficult to navigate, time-consuming, or poorly integrated into clinical workflows reported higher levels of emotional

exhaustion, occupational stress, and dissatisfaction. Documentation burden emerged as the strongest and most consistent contributor to burnout across studies.

Several studies highlighted the importance of user-centered design approaches, emphasizing that systems developed with active nurse involvement were associated with greater satisfaction and lower burnout levels. Furthermore, organizations that implemented targeted training programs, workflow optimization strategies, and technical support initiatives reported more favorable outcomes.

Overall, the evidence suggests that EHR usability is an important organizational and technological determinant of nurse well-being. Improving system usability may represent a practical and modifiable strategy for reducing burnout and enhancing workforce sustainability within healthcare organizations.

V. Discussion

This systematic review examined the relationship between Electronic Health Record (EHR) usability and nurse burnout across a range of healthcare settings. The findings demonstrate a consistent association between poor EHR usability and adverse occupational outcomes among nurses, including emotional exhaustion, increased cognitive workload, job dissatisfaction, and intentions to leave the profession. Across the included studies, documentation burden, inefficient system navigation, alert fatigue, workflow disruption, and poor interoperability emerged as the most frequently reported usability challenges. These findings suggest that EHR usability is not merely a technical issue but an important organizational factor that may influence nurse well-being, workforce retention, and the quality of patient care.

One of the most prominent findings of this review was the impact of documentation burden on burnout. Nurses frequently reported spending substantial amounts of time completing electronic documentation, often reducing the time available for direct patient care. While accurate documentation is essential for patient safety, continuity of care, and regulatory compliance, excessive documentation requirements may increase workload and contribute to emotional exhaustion. Similar findings have been reported in previous studies, which identified documentation-related workload as a major source of technology-related stress among healthcare professionals (Alobayli et al., 2023; Wu et al., 2024). The growing administrative demands associated with EHR systems may therefore represent an unintended consequence of healthcare digitalization.

The review also found that inefficient EHR navigation and complex interface designs were strongly associated with negative user experiences. Nurses often reported difficulties locating patient information, completing routine tasks, and navigating multiple screens to perform simple functions. Such usability barriers increase cognitive effort and may interrupt clinical workflows. According to human factors theory, poorly designed systems create unnecessary cognitive load, reducing efficiency and increasing the likelihood of user frustration and fatigue (Ratwani et al., 2018). These findings are consistent with the work of Park et al. (2024), who found that nurses frequently expressed concerns regarding system complexity, usability limitations, and workflow inefficiencies.

Alert fatigue was another recurring theme identified in the reviewed literature. Clinical decision support alerts are designed to improve patient safety by notifying healthcare professionals about potential risks, medication interactions, or clinical concerns. However, excessive alerts can overwhelm users and contribute to alert desensitization. Nurses exposed to large numbers of notifications often reported workflow interruptions, reduced concentration, and increased stress. Previous research has similarly demonstrated that excessive alert exposure contributes to cognitive overload and may diminish both system effectiveness and user satisfaction (Ratwani et al., 2018; Kruse et al., 2022).

Poor interoperability and inadequate workflow integration were also frequently cited as contributors to burnout. In many healthcare settings, EHR systems do not seamlessly communicate with other digital platforms, requiring nurses to duplicate documentation or manually retrieve information from multiple sources. These inefficiencies increase workload and reduce productivity. Effective interoperability is increasingly recognized as a critical component of EHR usability because it facilitates information exchange, minimizes redundancy, and supports efficient clinical decision-making (Kruse et al., 2022). The findings of the present review suggest that addressing interoperability challenges may play an important role in reducing technology-related stress among nurses.

The relationship between EHR usability and burnout identified in this review aligns with broader literature examining occupational stress among healthcare professionals. Burnout has been defined as a syndrome characterized by emotional exhaustion, depersonalization, and reduced professional accomplishment resulting from chronic workplace stress (Maslach & Leiter, 2016). Traditionally, burnout has been associated with factors such as high patient acuity, staffing shortages, long working hours, and organizational pressures. However, the findings of this review indicate that technology-related factors should also be considered significant contributors to burnout. As healthcare systems continue to adopt increasingly sophisticated digital technologies, ensuring that these systems support rather than hinder clinical work becomes essential.

An important implication of these findings is that EHR usability represents a potentially modifiable determinant of burnout. Unlike some workforce challenges that require large-scale structural changes, usability improvements can often be achieved through targeted interventions. Several studies included in this review reported that user-centered design approaches, workflow optimization, and comprehensive training programs were associated with improved user satisfaction and reduced burnout symptoms. User-centered design emphasizes the active involvement of end-users throughout system development and implementation, ensuring that technology aligns with clinical workflows and user needs (Park et al., 2024). Such approaches may improve efficiency, reduce frustration, and enhance the overall user experience.

Healthcare organizations also have an important role in mitigating EHR-related stress. Providing ongoing technical support, opportunities for user feedback, and regular usability assessments can help identify and address system-related challenges. In addition, involving nurses in EHR selection, implementation, and optimization processes may improve acceptance and satisfaction with digital technologies. Previous studies have shown that organizational

interventions aimed at reducing administrative burden and improving workflow efficiency can positively influence clinician well-being and reduce burnout rates (West et al., 2018; Shanafelt et al., 2016).

The findings of this review have significant implications for nursing practice, healthcare management, and health informatics. Given the global nursing shortage and increasing concerns regarding workforce retention, healthcare leaders should recognize the impact of EHR usability on employee well-being. Improving usability may not only enhance nurse satisfaction but also contribute to improved patient safety, care quality, and organizational performance. Dall'Ora et al. (2020) demonstrated that burnout among nurses is associated with poorer patient outcomes, highlighting the importance of addressing factors that contribute to occupational stress. Therefore, investments in EHR optimization may generate benefits for both healthcare professionals and patients.

Several limitations should be considered when interpreting the findings of this review. First, many included studies employed cross-sectional designs, limiting the ability to establish causal relationships between EHR usability and burnout. Second, variations in usability assessment methods and burnout measurement tools may have contributed to heterogeneity across studies. Third, most studies relied on self-reported data, introducing the possibility of reporting bias. Finally, the majority of studies were conducted in high-income countries, which may limit the generalizability of findings to healthcare systems with different technological infrastructures and organizational contexts.

Future research should focus on longitudinal studies and intervention-based investigations to better understand causal pathways between EHR usability and nurse burnout. Researchers should also evaluate the effectiveness of specific usability enhancement strategies, including interface redesign, streamlined documentation processes, artificial intelligence-assisted documentation tools, and interoperability improvements. Furthermore, studies conducted in diverse healthcare settings and low- and middle-income countries would provide a more comprehensive understanding of the global impact of EHR usability on nurse well-being.

In conclusion, the findings of this systematic review indicate that poor EHR usability is consistently associated with increased burnout among nurses. Documentation burden, inefficient navigation, alert fatigue, and workflow disruptions emerged as the most common usability challenges contributing to emotional exhaustion and job dissatisfaction. Given the growing reliance on digital health technologies, healthcare organizations should prioritize usability improvements as part of broader strategies to support nurse well-being, improve workforce retention, and enhance the quality and safety of patient care.

VI. Conclusion and Recommendations

Conclusion

This systematic review examined the association between Electronic Health Record (EHR) usability and nurse burnout. The findings indicate that poor EHR usability is consistently associated with higher levels of burnout among nurses. Key usability challenges identified across the included studies included excessive documentation burden, inefficient navigation, alert fatigue,

workflow disruptions, and poor interoperability. These challenges were frequently linked to emotional exhaustion, increased stress, reduced job satisfaction, and higher turnover intentions.

As healthcare systems continue to rely on digital technologies, EHR usability has become an important factor influencing nurses' work experiences and well-being. Improving EHR usability may help reduce technology-related stress, enhance job satisfaction, and support the delivery of safe and effective patient care.

Recommendations

Based on the findings of this review, the following recommendations are proposed:

1. **Improve EHR usability** through user-centered design and regular system evaluation.
2. **Reduce documentation burden** by simplifying data-entry processes and eliminating redundant tasks.
3. **Enhance training and technical support** to improve nurses' confidence and efficiency in using EHR systems.
4. **Minimize alert fatigue** by optimizing clinical alerts and reducing unnecessary notifications.
5. **Involve nurses in EHR development and implementation** to ensure systems align with clinical workflows and practice needs.
6. **Conduct further research** using longitudinal and intervention-based designs to better understand the causal relationship between EHR usability and burnout.

In conclusion, addressing EHR usability challenges may represent an effective strategy for reducing nurse burnout, improving workforce retention, and enhancing healthcare quality.

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