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Workload, Motivation, and Nursing Compliance with Electronic Documentation: A Cross-Sectional Study in Indonesia

Carga de Trabajo, Motivación y Cumplimiento de Documentación Electrónica de Enfermería: Estudio Transversal en Indonesia

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ABSTRACT:

Background: The global adoption of electronic medical records (EMR) has changed the way nursing is documented. It aims to improve patient safety and clinical efficiency. However, complying with these standards remains a challenge in countries like Indonesia.
Objective: To examine the relationship between workload and job motivation, as well as nurses' compliance with electronic documentation in a provincial teaching hospital.
Material and methods: A quantitative cross-sectional study was conducted with 90 inpatient nurses. Workload was measured using the NASA-TLX, motivation via Maslow's hierarchy of needs, and documentation compliance through a retrospective audit. Data was analyzed using chi-square tests and binary logistic regression ($p < 0.05$).
Results: Most nurses experienced high workload levels. A significant association was found between workload and compliance ($p = 0.001$). Low motivation significantly increased the risk of non-compliance (OR = 0.040; 95% CI 0.008-0.207), identifying it as the determining factor for compliance.
Conclusion: The adherence of nursing staff to electronic documentation depends more on the workload than on personal motivation. It is essential to improve workload management and adapt the design of the EMR to nursing workflows to enhance the quality of documentation.

Keyword: Electronic Health Records; Nursing Informatics; Nursing Records; Workload; Patient Safety; Indonesia.

RESUMEN:
Introducción: La adopción global de registros médicos electrónicos (RME) ha cambiado la forma en que se documenta la Enfermería. Busca mejorar la seguridad del paciente y la eficiencia clínica. Sin embargo, cumplir con estas normas sigue siendo un reto en países como Indonesia.
Objetivo: Examinar la relación entre la carga de trabajo y la motivación laboral, así como el cumplimiento de las enfermeras en la documentación electrónica en un hospital docente provincial.
Material y método: Estudio cuantitativo transversal con 90 enfermeras de hospitalización. La carga de trabajo se midió con el NASA-TLX, la motivación con la jerarquía de Maslow, y el cumplimiento mediante auditoría retrospectiva. Se usaron pruebas de chi-cuadrado y regresión logística binaria ($p < 0,05$).
Resultados: La mayoría de las enfermeras reportó niveles altos de carga de trabajo. Se encontró una relación significativa entre la carga de trabajo y el cumplimiento ($p = 0,001$). La baja motivación aumentó significativamente el riesgo de incumplimiento (OR = 0,040; IC 95% 0,008-0,207) y se identificó como el factor principal del cumplimiento.
Conclusión: La adherencia del personal de Enfermería a la documentación electrónica depende más de la carga de trabajo que de la motivación personal. Es esencial mejorar la gestión de la carga de trabajo y adaptar el diseño de la RME a los flujos de trabajo de Enfermería para mejorar la calidad de la documentación.

Palabras clave: Registros Médicos Electrónicos; Informática de Enfermería; Registros de Enfermería; Carga de Trabajo; Seguridad del Paciente; Indonesia.

INTRODUCTION

The digital transformation of healthcare systems has accelerated the global adoption of electronic medical records (EMR), aiming to improve service effectiveness and enhance patient safety. The implementation of electronic nursing documentation has been shown to contribute to patient safety by enabling more accurate patient identification, improving interprofessional communication, and supporting risk screening for falls and infections, which ultimately reduces the incidence of injury and healthcare-associated infections during hospitalization[1,2]. Digital systems improve the quality of nursing documentation. This is because they are more comprehensive and accurate than paper records. Moreover, the use of these systems increases nurses' work efficiency, reduces documentation errors, and allows them to dedicate more time to direct patient care[3–5]. Electronic nursing documentation further supports continuity of care thru greater accessibility to information and coordination among healthcare professionals and facilitates essential audit and evaluation processes to maintain the quality and sustainability of nursing services[6,7]. Therefore, electronic nursing documentation is currently a strategic component of the digital transformation of health services due to its fundamental role in improving patient safety, the quality of documentation, nursing efficiency, and continuity of care.

From a global perspective, technological development has placed digital records at the center of the daily activities of healthcare personnel. Since nurses are the category that interacts the most with Electronic Medical Records, their contribution and role are critical in preserving the accuracy and reliability of the recorded clinical data[8,9]. In addition to compensating for or preventing potential incidents related to patient care, the quality of nursing documentation has been key in determining the continuity of care, accountability in care, and the overall performance of the health information system[10]. Therefore, a true modernization of the healthcare system is directly impossible without these electronic records genuinely helping and supporting nurses.

However, studies on the implementation of electronic nursing documentation worldwide have consistently been problematic in reporting the effectiveness and compliance of nursing staff with the recording of care provided. Nursing staff members often must face

challenges with technical issues of electronic medical records, such as system failures, interface complexity, and navigation, which can ultimately affect timeliness, not to mention the accuracy, of record-keeping and compliance with documentation standards in reporting[11,12]. The lack of training in the system and the limited understanding that results in completing documentation beyond the direct interaction of nursing staff with the patient have highlighted the need for more accessible systems and continuous hands-on training for the use of electronic records. Unlike initial training, technology training is designed to improve electronic documentation skills and is expected to be more effective in preparing users to use the record[12,13]. Finally, irregular, and limited documentation by nursing staff will compromise the quality of care and increase the risk of clinical errors, which can also hinder the evaluation of nursing outcomes[14,15]. Therefore, the successful adoption of electronic nursing records may not only depend on the availability of technology but also on the system itself, the conditions of practicality, and the competence of implementation.

As healthcare information system solutions become increasingly complex, electronic nursing documentation is increasingly conceived as a sociotechnical process, involving interactions between technology, human resources, and organizational units. Literature has been written mentioning the inadequacy of coherence between system design and clinical work processes, which can increase administrative burden while reducing user satisfaction and documentation compliance[16,17]. The sociotechnical approach establishes that the success of the EHR will depend on the capacity of technological development in combination with organizational readiness, managerial support, and the integration of nursing care practices.

The workload of nursing staff has therefore been consistently identified as one of the most influential factors for the compliance with electronic documentation. The high ratio of RNs per patient, along with administrative tasks, increases the workload, causing stress and burnout[18,19]. Additionally, RNs generally have little time to complete their clinical and administrative tasks, which reduces opportunities for proper documentation[20,21]. High patient-to-nurse ratios, limited working time, and the demands of direct patient care can reduce the time available for optimal documentation. This situation becomes more complex during the early implementation of electronic systems, as nurses are required to adapt to new technologies, system interfaces, and digital work procedures that are not yet fully familiar.

In addition to organizational factors, work motivation has been recognized as an important determinant of nurses' professional behaviour related to documentation compliance. Intrinsic motivation has been shown to contribute to work engagement, job satisfaction, and professional commitment among nurses[22–25]. Various strategies, including supportive work environments, recognition and reward systems, and opportunities for professional development, have been associated with improved nurse motivation[26–28]. However, growing evidence suggests that the influence of individual motivation becomes limited when structural and organizational barriers particularly excessive workload and suboptimal system design dominate daily clinical practice.

To date, research on electronic nursing documentation has been largely dominated by studies conducted in high-income countries, while empirical evidence from middle-income countries, including Indonesia, remains limited. Differences in healthcare systems, workforce readiness, and levels of technological maturity may result in substantially different EMR implementation dynamics[8]. Provincial teaching hospitals

that are in the early stages of EMR adoption represent an important context for understanding real-world challenges in electronic nursing documentation.

Based on these conditions, this study aimed to analyze the relationship between workload and work motivation with nurses' compliance in electronic nursing documentation in inpatient units of a provincial teaching hospital in Indonesia. The findings are expected to contribute to the advancement of nursing informatics practice, improvement of nursing workload management, and development of strategic policies to support the successful and sustainable digital transformation of healthcare services.

MATERIAL AND METHODS

Research Design

This study employed a quantitative observational analytic design using a cross-sectional approach. The design was selected to examine the relationships between workload, work motivation, and nurses' compliance with electronic nursing documentation by measuring all variables simultaneously within a real-world clinical context.

Study Setting and Period

The study was conducted in the inpatient units of a provincial teaching hospital in Indonesia that had fully implemented an Electronic Medical Record (EMR) system. As a referral and clinical education center, the hospital manages patients with high care complexity. Data collection was carried out in 2025, following the full operational implementation of the EMR system in nursing services.

Population and Sample

The study population comprised all staff nurses working in inpatient units. A simple random sampling technique was applied to minimize selection bias and ensure that each eligible nurse had an equal probability of selection. A total of 90 nurses met the inclusion criteria and participated in the study. The sample size of 90 respondents was justified and calculated using the *Slovin* formula with a 5% margin of error, representing a robust proportion of the total eligible inpatient nursing population at the study site.

Inclusion and Exclusion Criteria

Inclusion criteria included nurses who were actively working in inpatient units, directly involved in electronic nursing documentation, had a minimum of six months of work experience, and provided informed consent. Nurses on extended leave, academic assignment, non-clinical rotation, or those not directly involved in patient care were excluded.

Study Variables

The independent variables were workload and work motivation, while the dependent variable was nurses' compliance with electronic nursing documentation.

Research Instruments

1. Workload

Workload was measured using the National Aeronautics and Space Administration Task Load Index (NASA-TLX), which evaluates six workload dimensions: mental demand, physical demand, temporal demand, performance, effort, and frustration level. According to various nursing studies, this measurement tool stands out for its ability to simultaneously assess physical and cognitive workload.

2. Work Motivation

Work motivation was measured using a tool developed based on Maslow's theory. The dimensions examined were physiological, safety, affiliation, esteem, and self-actualization. The instrument used a Likert-type response format developed to measure intrinsic and extrinsic factors in the clinical environment. A high total score indicates a high level of motivation.

3. Documentation Compliance

Compliance in documentation was measured using a checklist. The evaluated indicators are standardized in relation to the national regulations issued by the Indonesian Ministry of Health; these assess the comprehensiveness, accuracy, and timeliness of clinical information based on the literature.

Finally, to validate the content, the instruments were reviewed by experts, including university academics and clinical managers with experience in nursing administration specialized in nursing informatics. Construct validity was evaluated thru the correspondence between the dimensions of the instrument and its categories. Reliability tests demonstrated acceptable internal consistency, with Cronbach's alpha coefficients exceeding 0.70 for all instruments.

Data Collection Procedures

The data collection in this study was structured in two stages. In the first, participants completed a self-administered questionnaire designed to assess workload and work motivation. In the second, compliance with nursing documentation was evaluated thru a retrospective audit. This procedure involved reviewing the records corresponding to the previous 30 days and the participation of five randomly selected healthcare professionals. To ensure inter-rater reliability and data uniformity, two trained clinical supervisors independently verified the results. Additionally, to mitigate information bias and avoid the Hawthorne effect, the staff were not informed about the evaluation dates, and the analysis was conducted exclusively on already completed routine notes, rather than direct observations.

Bias Control

To mitigate selection bias, recruitment was carried out using simple random sampling, which ensured that all eligible staff had an equal probability of participation. To control information bias, validated metric tools were employed, specifically the NASA-TLX and

an observation protocol aligned with the current national nursing regulations. Additionally, the evaluation team received prior and standardized training to ensure rigor and homogeneity in data collection.

Data Analysis

The statistical processing of the collected information was carried out using IBM SPSS Statistics software (version 29). Descriptive statistics summarized respondent characteristics and variable distributions. For analytical purposes, the continuous scores of workloads and motivation were categorized based on established instrument cut-offs and median distributions prior to the binary logistic regression. Bivariate analysis using the chi-square test examined associations between independent and dependent variables. Binary logistic regression analysis was conducted to identify the independent contribution of workload and motivation to documentation compliance. Statistical significance was set at $p < 0.05$.

Ethical Considerations

Ethical approval was obtained from the Health Research Ethics Committee of the Faculty of Medicine and Health Sciences, Universitas Sultan Ageng Tirtayasa (No. 53/UN43.20/KEPK/2025; March 10, 2025). All participants provided written informed consent, and confidentiality of personal data was ensured.

Reporting Standards

This study was reported in accordance with the STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) guidelines for cross-sectional studies.

RESULTS

Respondent Characteristics

A total of 90 nurses working in inpatient units participated in this study. Most respondents were female and within the productive age range. Most nurses held diploma or bachelor's degrees in nursing and had more than five years of clinical experience, indicating adequate professional exposure to the implementation of electronic nursing documentation.

Table 1. Demographic characteristics of the respondents

Variable	n	%
Age		
24-31	**45**	**50.0**
32-39	36	40.0
40-50	9	10.0
Total	90	100.0
Gender		
Male	37	41.1
Female	**53**	**58.9**
Total	90	100.0
Last Education		
Diploma in nursing	**49**	**54.4**
Professional nursing education	41	45.6
Total	90	100.0
Work Experience		
<5 years	32	35.6
≥5 years	**58**	**64.4**
Total	90	100.0

Distribution of Workload, Motivation, and Documentation Compliance

The analysis revealed that the majority of nurses experienced **high to very high workload levels,** indicating a substantial workload burden across inpatient units. Most respondents reported moderate to high work motivation. However, nurses' compliance with electronic nursing documentation varied, with a proportion of participants not fully meeting the established documentation completeness standards. Despite relatively high reported motivation levels, documentation compliance remained suboptimal, with nearly one-quarter of nurses failing to meet documentation standards.

Table 2. Distribution of Workload, Motivation, and Documentation Compliance

Variable	Category	n	%
Workload	Low	0	0
	Medium	2	2.2
	Quite High	24	26.7
	High	**49**	**54.4**
	Very High	15	16.7
Total		90	100.0
Motivation	Poor	24	26.7
	Good	**66**	**73.3**
Total		90	100.0
Documentation Compliance	**Poor**	**69**	**76.7**
	Good	21	23.3
Total		90	100.0

Association Between Workload, Motivation, and Documentation Compliance

Bivariate analysis demonstrated a statistically significant association between workload and nurses' compliance with electronic nursing documentation ($p < 0.05$). Nurses experiencing higher workload levels tended to exhibit lower documentation compliance. In contrast, work motivation did not show a statistically significant association with documentation compliance ($p > 0.05$).

Binary Logistic Regression Analysis

Binary logistic regression analysis was conducted to assess the simultaneous effects of workload and work motivation on nurses' compliance with electronic nursing documentation. The results indicated that workload was a significant predictor of documentation compliance, whereas work motivation did not demonstrate an independent statistically significant effect.

Table 3. Results of Binary Logistic Regression Analysis

Independent Variable	B	SE	Wald	Sig. (p)	Exp(B)
Workload level	-3.228	0.645	25.021	0.000	0.040
Motivation level	0.273	0.715	0.146	0.702	1.314
Constant	3.468	1.454	5.690	0.017	32.085

DISCUSSION

This study aimed to analyze the relationship between workload and job motivation with the compliance of electronic nursing documentation by nursing staff in inpatient units of provincial university hospitals in Indonesia. The results showed that the workload had a significant relationship and a predictive effect on documentation compliance, while job motivation did not show a statistically significant relationship. These results indicate that compliance with electronic nursing documentation is more strongly influenced by structural and organizational factors than by individual characteristics, as also reported in previous studies[19,20,29]. This scenario shows how compliance with documentation regulations results from a complex interaction between the work environment and the healthcare model.

The workload of nursing staff hinders the improvement of electronic documentation. In the hospital, nursing staff must divide their time between caring for patients, constantly monitoring, and fulfilling administrative tasks in electronic systems. This often causes delays or incomplete documentation. This situation aligns with previous research indicating that excessive workload is associated with delays in documentation and lower quality of it[30–32]. As work pressure increases, nursing staff find it more difficult to consistently meet documentation requirements. Although the workload remains a significant obstacle, it should be emphasized that the goal of electronic nursing documentation is to improve patient safety and the overall quality of care. Reducing obstacles to documentation is not only an administrative goal but also a clinical necessity in efforts to ensure patient safety.

These results can be understood considering the workload theory, which posits that when there is an imbalance between job demands and an individual's capacity, there is a decrease in performance and an increase in the likelihood of making errors. In nursing practice, the high nurse-to-patient ratio and the considerably greater complexity of care limit the time available for documentation activities, leading to it being considered a secondary priority compared to direct patient care[18,21]. This theoretical framework explains why the increase in workload is associated with lower compliance in nursing documentation, even in healthcare settings that have implemented electronic medical records.

In addition to the physical implications, the workload also affects the cognitive and emotional capacity of nursing staff. Excessive task demands cause mental fatigue, decreased concentration, and lower accuracy in data recording in nursing documentation. Previous studies have shown that a high workload is associated with documentation that is not completed in real-time and with inaccurate recording of the patient's status[33]. This scenario paves the way for an increase in clinical errors and diminishes the value of electronic nursing documentation. Therefore, the workload should be considered a systemic issue with direct consequences on the quality of nursing care.

The very low odds ratio (OR = 0.040) reflects a strong inverse relationship, meaning that moderate increases in workload substantially reduce the likelihood of nurses complying with electronic nursing documentation. This finding should be taken with caution, as it may also reflect the relative homogeneity of high workload levels across different study settings and the limited sample size. However, the direction and strength of the relationship are consistent with workload theory and past empirical results. This reaffirms that workload is a determining factor for the completion of documentation.

Apart from workload, the variables of job motivation did not have a significant independent relationship with the completion of documentation. Although the majority of nurses expressed a good level of motivation, it was not enough to overcome the time constraints, workload pressure, and system complexity encountered in daily nursing practice. The findings of this study align with previous research suggesting that motivation and job satisfaction do not always improve the quality of nursing documentation[22,34]. These results show that compliance with nursing documentation cannot be considered an indicator of individual attitudes or commitment, even in a context of job motivation.

The JD-R paradigm (Job Demands-Resources) states that motivation improves performance, but this effect wanes when job demands greatly outweigh available resources. In these circumstances, structural constraints become more significant determinants of behaviour, and both internal and extrinsic motivations are unable to sustain optimal performance[35,36]. Accordingly, the present findings reinforce the understanding that efforts to enhance motivation without concurrent improvements in workload management and system design are likely to produce limited effects on documentation compliance.

Collectively, the findings strengthen the view that compliance with electronic nursing documentation is the result of complex interactions among individuals, organizational structures, and technological systems[37,38]. When organizational factors dominate clinical practice, the influence of individual factors becomes relatively constrained. Therefore, strategies aimed at improving documentation compliance should prioritize system-level interventions and managerial policies that support sustainable digital nursing practice.

From a nursing informatics perspective, the success of electronic documentation is largely determined by alignment among technology design, human resource readiness, and clinical workflow integration. User-friendly EMR systems, effective integration with standardized terminologies, and responsive technical support have been shown to enhance documentation quality and user satisfaction[8,10,39]. Furthermore, nurses' informatics competencies and active involvement of nursing leadership in technology-

related decision-making play critical roles in improving system acceptance[40,41]. Alignment between technological systems and clinical practice is therefore essential to ensure that EMR implementation does not inadvertently increase administrative burden.

Within the context of provincial teaching hospitals in Indonesia, EMR implementation presents additional complexity due to high case variability, referral service demands, and the dynamic nature of clinical education processes. Research in middle-income countries reveals that the lack of resources and organizational preparedness are major obstacles to achieving successful digital transformation in healthcare. This study provides further evidence on how the effectiveness of EHRs largely depends on management support, nursing workforce planning according to workload, and the optimized design of the documentation system. These elements are necessary to ensure sustainable electronic nursing documentation practices that improve the quality of care.

The challenges of EHRs also affect other healthcare professionals. An effective implementation must consider the interconnected workloads of doctors and specialized nurses who share the same digital ecosystem. A brief comparison with neighboring developing countries in Southeast Asia, such as Malaysia and the Philippines, reveals a similar trajectory: initial EMR adoption often temporarily exacerbates workload and causes resistance across interprofessional teams before efficiency gains are realized. This highlights a shared regional challenge where technological implementation outpaces human resource readiness.

This study has several limitations that should be considered when interpreting the findings. The cross-sectional design precludes causal inference between workload, work motivation, and compliance with electronic nursing documentation. In addition, the single site setting, and relatively small sample size may limit the generalizability of the results to other healthcare contexts with different organizational structures, resource availability, and stages of digital maturity. Although retrospective documentation audits were conducted to reduce observation bias, the possibility of residual Hawthorne effects cannot be entirely excluded.

Future studies employing longitudinal or mixed methods designs across multiple institutions are recommended to provide a more comprehensive understanding of causal mechanisms and contextual factors influencing compliance with electronic nursing documentation.

The findings of this study have important strategic implications for policymakers and hospital management in Indonesia, particularly in supporting the national health digital transformation agenda. Strengthening nursing workforce management, ensuring proportional nurse–patient ratios, and optimizing documentation system design are essential measures to ensure that EMR implementation contributes meaningfully to sustainable improvements in nursing care quality and patient safety.

These results show that compliance with documentation does not only depend on the individual motivation of the nurses. It is also closely linked to workload management and organizational preparedness. For nursing management, this highlights the importance of managing staffing levels, especially in hospital units with complex cases. This is necessary to ensure that nurses have enough time to complete electronic documentation.

In the development of EHR systems in Indonesia, these findings highlight the need to adjust the system design to the actual workflows of nursing. Electronic documentation systems that do not integrate well with clinical processes increase administrative burden and reduce documentation compliance. Therefore, the participation of nurses in the design, evaluation, and continuous improvement of EHR systems is essential to enhance the usability and acceptance of the system.

Another implication relates to strengthening the computer skills of nursing staff. Training programs must go beyond the technical functioning of the system and include understanding changes in digital workflow, time management strategies, and the integration of documentation with clinical reasoning processes. Additionally, strengthening nursing leadership in IT decision-making is key to promoting system adoption and maintaining electronic documentation practices.

This study, in more general terms, supports the need for a national policy that links nursing staff management with digital transformation in healthcare. This connection is essential to ensure that the implementation of EMR in Indonesian healthcare centers is not limited to regulatory compliance but truly contributes to improving the quality of nursing care and patient safety.

Highlight

1. The workload is a key factor in the compliance of electronic nursing documentation by nursing staff. The workload is a key factor in the compliance with electronic nursing documentation by nursing staff.
2. A high clinical workload decreases the likelihood of completing documentation according to established standards. A high clinical workload decreases the likelihood of completing documentation according to established standards.
3. Job motivation does not have an independent relationship with documentation compliance. Work motivation does not have an independent relationship with compliance with documentation.
4. Organizational and structural factors have a greater impact than individual characteristics on the increase in compliance with electronic nursing documentation. Organizational and structural factors have a greater impact than individual characteristics on the increase in compliance with electronic nursing documentation.
5. Improving workload management is essential for the sustainable implementation of EHR in Indonesian hospitals. Improving workload management is essential for the sustainable implementation of EHR in Indonesian hospitals.

CONCLUSION

In conclusion, this study shows that the workload of nursing staff is a key factor in the accuracy of electronic documentation. On the contrary, motivation did not show a statistically significant relationship with compliance in electronic documentation. These findings confirm that compliance with electronic nursing documentation is influenced predominantly by structural and organizational factors rather than individual characteristics.

Within the context of a provincial teaching hospital in Indonesia, high workload was shown to limit nurses' capacity to complete documentation in a comprehensive, accurate, and timely manner, even when nurses reported adequate levels of work motivation. This condition reflects the practical challenges of electronic medical record implementation within healthcare systems of middle-income countries that are undergoing digital transformation.

This study contributes to the advancement of nursing informatics in Indonesia by demonstrating that successful implementation of electronic nursing documentation cannot rely solely on technological readiness. Instead, it requires strong organizational support through effective workload management, alignment of clinical workflows, and strengthening of nurses' informatics competencies. Without such a systemic approach, EMR adoption risks increasing administrative burden and limiting the effectiveness of digital nursing practice.

REFERENCES

1. Saraswasta IWG, Hariyati RrTS. A systematic review of the implementation of electronic nursing documentation toward patient safety. Enferm Clin. 2021 Apr;31: S205–9.
2. Montoya-Garrido MJ, Rodríguez-Suárez CA, Mateos-López N, Santiago-Díaz YT, González-de la Torre H. Shift-to-Shift Information Transfer: Phenomenological Study of Nurses' Experiences. JMIR Nurs. 2025 Nov 28;8: e81703–e81703.
3. McCarthy B, Fitzgerald S, O'Shea M, Condon C, Hartnett-Collins G, Clancy M, et al. Electronic nursing documentation interventions to promote or improve patient safety and quality care: A systematic review. J Nurs Manag. 2019 Apr;27(3):491–501.
4. Bail K, Merrick E, Bridge C, Redley B. Documenting patient risk and nursing interventions: record audit. Australian Journal of Advanced Nursing. 2021 Feb 4;38(1).
5. Suganda T, Hariyati RTS. Perbandingan kualitas dokumentasi keperawatan berbasis elektronik dan berbasis kertas: Study literature. Holistik Jurnal Kesehatan. 2020 Apr 22;14(1):17–28.
6. Mykkänen Minna, Miettinen Merja, Saranto Kaija. Standardized Nursing Documentation Supports Evidence-Based Nursing Management. In 2016.
7. Instefjord MH, Aasekjær K, Espehaug B, Graverholt B. Assessment of quality in psychiatric nursing documentation – a clinical audit. BMC Nurs. 2014 Dec 17;13(1):32.
8. Strudwick G, Tajirian T, Kemp J, Coombe N, Haider U, Kaur S, et al. Utilizing an Informatics Engagement Strategy as an Approach to Sustain and Retain the Nursing Workforce. Can J Nurs Leadersh. 2023 Jan 31;35(4):42–54.
9. Suganda T, Handiyani H, Rachmi SF, Masyati E, Rahman LOA. An Analysis of Head Nurses' Nursing Informatics Competencies and Nurses' Attitudes towards Patient Safety in Hospitals. Dunia keperawatan: Jurnal Keperawatan dan Kesehatan. 2023 Mar 30;11(2):213–26.
10. Taneva DI, Gyurova-Kancheva VT, Kirkova-Bogdanova AG, Paskaleva DA, Zlatanova YT. Electronic Nursing Records: Importance for Nursing and Benefits of Implementation in Health Information Systems—A Scoping Review. Nurs Rep. 2024 Nov 18;14(4):3585–605.

11. De Groot K, Sneep EB, Paans W, Francke AL. Patient participation in electronic nursing documentation: an interview study among community nurses. BMC Nurs. 2021 Dec 1;20(1):72.
12. Buchner VK, Ewers A. Erfahrungen von diplomierten Pflegekräften mit der elektronischen Sturzdokumentation: Eine qualitative Studie. Prävention und Gesundheitsförderung. 2025 Jul 25.
13. Whalen K, Grella P, Snydeman C, Dwyer AM, Yager P. Nursing Attitudes and Practices in Code Documentation Employing a New Electronic Health Record. Appl Clin Inform. 2021 May 23;12(03):589–96.
14. Stemmer R, Bassi E, Ezra S, Harvey C, Jojo N, Meyer G, et al. A systematic review: Unfinished nursing care and the impact on the nurse outcomes of job satisfaction, burnout, intention-to-leave and turnover. J Adv Nurs. 2022 Aug 9;78(8):2290–303.
15. Kazmi W, Ushna Khan Durrani, Zara Rathod, Aya Abdelhamid Elshalakany. Enhancing The Quality of Emergency Admission Clerking in Neurosurgery: A Comparative Study of Traditional Methods Versus A Surgical Clerking Proforma. Journal of Ayub Medical College Abbottabad. 2024 Nov 25;36(4).
16. Jones NT, Seckman C. Facilitating Adoption of an Electronic Documentation System. CIN: Computers, Informatics, Nursing. 2018 May;36(5):225–31.
17. Meißner A, Schnepp W. Staff experiences within the implementation of computer-based nursing records in residential aged care facilities: a systematic review and synthesis of qualitative research. BMC Med Inform Decis Mak. 2014 Dec 20;14(1):54.
18. Falk A. Nurse staffing levels in critical care: The impact of patient characteristics. Nurs Crit Care. 2023 Mar 27;28(2):281–7.
19. Chen YC, Wu HC, Ho JJ, Cheng NY, Guo YL, Shiao JSC. Exploring the Association Between Patient–Nurse Ratio and Nurses' Occupational Stressors: A Cross-Sectional Study. J Nurs Manag. 2025 Jan 24;2025(1).
20. Lee RY, Thate J, Withall J, Yen PY, Cato K, Rossetti SC. Relationship between Additional Required Nursing Documentation and Patient Outcomes: A Scoping Review. Appl Clin Inform. 2025 May 19;16(03):628–39.
21. Hendy, Ginting CN, Nasution SW. Analysis of the relationship between characteristics and workload of nurses with documentation of nursing care at the inpatient installation of Royal Prima Hospital. In 2023. p. 040009.
22. Mulyana H, Poddar S, Hassan HC. The Relationship Between Nurses Work Motivation and Compliance in Conducting Documentation of Observations According to the EWS Escalation at the Awal Bros Hospital. Malaysian Journal of Medicine and Health Sciences. 2021;27–30.
23. Nyarmi, Wahyuni ED, Ni'mah L. The Affecting Factors of Nurses' Compliance in Nursing Documentation. International Journal of Psychosocial Rehabilitation. 2020 Feb 13;24(02):4098–105.
24. Zeng D, Takada N, Hara Y, Sugiyama S, Ito Y, Nihei Y, et al. Impact of Intrinsic and Extrinsic Motivation on Work Engagement: A Cross-Sectional Study of Nurses Working in Long-Term Care Facilities. Int J Environ Res Public Health. 2022 Jan 24;19(3):1284.
25. Swakowska K, Olejniczak D, Poniatowski ŁA, Staniszewska A. The relationship between employee motivation and professional burnout among nurses in Germany: an analytical study. Int J Occup Med Environ Health. 2025 Dec 17;38(6):586–95.
26. Ahlstedt C, Eriksson Lindvall C, Holmström IK, Muntlin Athlin Å. What makes registered nurses remain in work? An ethnographic study. Int J Nurs Stud. 2019 Jan; 89:32–8.

27. Kantek F, Yildirim N, Kavla İ. Nurses' perceptions of motivational factors: a case study in a Turkish university hospital. J Nurs Manag. 2015 Jul;23(5):674–81.
28. Soomro A, Ramendran SPR C, Kumar a R, Haji Mohamed IMoona. Psychological Contract Elements and Nurses' Psychological Wellbeing in Private Hospitals, Klang Valley, Malaysia. The Malaysian Journal of Nursing. 2025;17(02):55–67.
29. Scheithauer S, Batzer B, Dangel M, Passweg J, Widmer A. Workload even affects hand hygiene in a highly trained and well-staffed setting: a prospective 365/7/24 observational study. Journal of Hospital Infection. 2017 Sep;97(1):11–6.
30. Bhadauria RS, Selvarajb BNX, Chouhan DS, Kumawat AK, Begum F, David JB. Mental workload levels and influencing factors among ICU nurses: A systematic review. Multidisciplinary Reviews. 2025 May 12;8(11):2025348.
31. Fikri Z, Bellarifanda A, Sunardi S, Ibad MR, Mu'jizah K. The relationship between mental workload and nurse stress levels in hospitals. Healthc Low Resour Settings. 2023 Dec 14.
32. Lestari IB, Jingga NA, A. Wahyudiono YD. The Relationship Between Physical And Mental Workload With Fatigue On Nurses. The Indonesian Journal of Occupational Safety and Health. 2023 Mar 31;12(1):10–8.
33. Yulia Purnawati, Tri Martiana, Rachmat Hargono, Firman Suryadi Rahman. The Analysis of Workload and Safety Communication Against Burnout Syndrome in Inpatient Nurses. Indian Journal of Forensic Medicine & Toxicology. 2020 Jul 24;14(3):2244–8.
34. Gusar I, Lazinica A, Klarin M. Work motivation, job satisfaction, and nursing record-keeping: do they differ in surgery and internal disease departments? Central European Journal of Nursing and Midwifery. 2020 Dec 4;11(4):163–70.
35. Pindek S, Howard DJ, Krajcevska A, Spector PE. Organizational constraints and performance: an indirect effects model. Journal of Managerial Psychology. 2019 Mar 11;34(2):79–95.
36. Khalaf MA, Salem TSM. The moderating effect of structural barriers on TQM-performance relationship in Egyptian service organizations. International Journal of Quality and Service Sciences. 2018 Nov 19;10(4):349–65.
37. Halldorsdottir S, Einarsdottir EJ, Edvardsson IR. Effects of cutbacks on motivating factors among nurses in primary health care. Scand J Caring Sci. 2018 Mar 24;32(1):397–406.
38. Ramadhani M, Muis M, Thamrin Y, Naiem MF, Indar I, Wahiduddin W. Factors that Affecting Female Nurse Performance with Work Stress as an Intervening Variable in the Hospital of Dr. Tadjuddin Chalid Makassar. Open Access Maced J Med Sci. 2021 Sep 11;9(E):835–42.
39. Rojas CL, Seckman CA. The Informatics Nurse Specialist Role in Electronic Health Record Usability Evaluation. CIN: Computers, Informatics, Nursing. 2014 May;32(5):214–20.
40. Hariyati RTS, Hamid AY, Eryando T, Hasibuan ZA. Usability and satisfaction of using electronic nursing documentation, lesson-learned from new system implementation at a hospital in Indonesia. Int J Healthc Manag. 2020 Jan 2;13(1):45–52.
41. Akhu-Zaheya L, Etoom M. The Relationship between Intensive Care Unit's Nurses' Informatics Competency and Quality of Patients' Electronic Health Record's Documentation. Jordan Journal of Nursing Research. 2024;3(2).