



Explanation of Different Reporting Strategies by Nurses: A Qualitative Content Analysis

Mostafa Roshanzadeh¹ , Ali Taj^{2*} 

¹Shahrekord University of Medical Sciences, Shahrekord, Iran

²Iranian Research Center on Healthy Aging, Sabzevar University of Medical Sciences, Sabzevar, Iran

*Corresponding Author: Ali Taj, Email: alitaj58@yahoo.com

Abstract

Introduction: One of the major concerns of nurses in all countries of the world is nursing documentation. Persistent gaps in nursing documentation, such as incomplete or falsified reports, threaten patient safety and professional accountability, highlighting an urgent need for effective strategies to ensure accurate and ethical reporting. Considering that the documentation of the medical file is an important legal and professional need for nurses, this study was carried out to explain the different reporting methods.

Method: The design of this study is qualitative, which uses the conventional content analysis approach. The participants in this study were clinical nurses working at one of the medical sciences universities who had at least one year of clinical work experience. In-depth, face-to-face semi-structured interviews and open-ended questions were used to collect data, along with observations of nurses' report writing performance. Interviews with the participants were conducted during 9 months (May 2023 to December 2023). Twenty-three face-to-face interviews were conducted. The average interview time was 45 minutes.

Results: The analysis of the interviews revealed that the nurses employed two methods: positive strategies (regular and principled recording, legality in reporting, and ethical recording) and negative strategies (hiding reality, defensive recording, and fake reporting without action).

Conclusion: Nurses should act based on the job description and related laws and regulations. If nurses pay attention to the reports according to the existing principles and standards, registration errors will be avoided, and they can prevent the evasion of the law and the use of negative strategies that cause a decrease in the quality of care and harm to patients.

Keywords: Nursing, Documentation, Nursing records

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Introduction

One of the major concerns of nurses in all countries of the world is nursing documentation. Currently, much attention is being paid to improving the quality of nursing documentation in all health care sectors around the world (1).

Clinical nursing documentation is essential to enable nurses to continually reflect on their choice of interventions for patients and the effects of these interventions. It is therefore vital to the quality and continuity of care (2). Accurate and comprehensive documentation of nursing care is a valuable resource for data coding, health services research, evidence, and justification for funding and resource management, and is often used to evaluate professional nursing practice as part of quality assurance mechanisms such as performance reviews, audits, accreditation processes, regulatory inspections, and critical event reviews (3). All documentation must be professionally recorded by a nurse about the provision of care. These documents may include written or electronic

health records, audio or video tapes, images, observation charts, checklists, and any other types of documentation related to patient care (4).

Nursing documentation, when clear, accessible, and accurate, is an essential element of high-quality, safe, and evidence-based care (5). Studies have shown that poor documentation can lead to longer hospital stays, poor communication between medical teams, increased patient mortality, increased medical malpractice risk, impaired clinical care decisions, incorrect treatment decisions, and poor patient care. Evidence from the United States shows that documentation errors are responsible for 100,000 deaths and 1.3 million injuries annually, and that medical errors cost approximately \$20 billion annually (6).

Despite numerous studies in the field of nursing documentation, a review of the available evidence shows that most previous research has focused on the accuracy, completeness, and compliance of documentation with legal or hospital standards, and has paid less attention to the mental, ethical, and organizational decision-



making processes of nurses during recording. Most of the past studies have been quantitative and descriptive and have been limited to assessing the quality of forms or the amount of information recorded, while a deep understanding of nurses' individual strategies in the face of workload, time constraints, ethical conflicts, and organizational requirements has been less explored. In addition, in most previous studies, the influence of interpersonal and environmental factors such as head nurses' attitudes, clinical unit culture, or managerial support in shaping recording patterns has been neglected. On the other hand, in the existing literature, the voices of nurses as key actors in the recording process are less heard, and the strategies they creatively and situationally employ to maintain a balance between clinical reality and administrative requirements are not properly documented. Therefore, the main gap in research is the lack of a qualitative study that can reveal the hidden, value-based, and situational dimensions of nursing recording strategies from the perspective of nurses' lived experience and present a more realistic picture of this phenomenon in the clinical context. The use of a qualitative method is necessary and appropriate for conducting this research for several reasons. For example, 1. The exploratory nature of the topic: Nursing recording strategies may be written in official sources or guidelines, but what nurses do in practice is often shaped by experience, creativity, environmental constraints, and clinical circumstances. 2. Deep understanding of context: Nursing record keeping is influenced by organizational culture, regulations, department type, workload, available resources, and even relationships between staff. 3. Discovering meanings and motivations: It is not enough to simply know "what is being done"; you need to understand why nurses choose that strategy. 4. Theory or model generation: Qualitative findings can lead to the development of a new conceptual model or classification for nursing recording strategies, which can then be tested in quantitative studies. This study was conducted to explain different reporting methods to reveal their dimensions and characteristics qualitatively.

Methods

Design

The design of this study is qualitative and uses the conventional content analysis approach. Given that the question of the present research is about the methods of recording nursing care and the experiences of clinical nurses in this area, qualitative content analysis was used.

Participants

The participants in this study were 23 clinical nurses working at one of the medical sciences universities who had at least one year of clinical work experience. The participants were selected by purposive sampling, taking into account the inclusion criteria (ability to express experiences, experience in writing case reports). Unwillingness to continue participating in the research

was one of the exclusion criteria. Sampling continued until data saturation was reached. To achieve maximum diversity in the sample, the participants were selected to ensure maximum diversity in age and gender, field of study, work experience, employment status, and organizational position.

Data Collection

Interviews with the participants were conducted during 9 months (May 2023 to December 2023). Twenty-three face-to-face interviews were conducted. The average interview time was 45 minutes. In-depth, face-to-face semi-structured interviews and open-ended questions were used to collect data, along with observations of nurses' report writing performance. The location and time of the interviews were chosen by the participants, and efforts were made to conduct them in a quiet, noise-free place during their free time. Twenty-three interviews were conducted. Sample interview questions included: Please describe a day at work. Please explain how you report the case? How do you write reports in different work situations? What impact and results has this way of writing reports had on your work? Please share your experience in this area. Exploratory questions were also used, such as Please explain more, What does this mean? To clarify ambiguities, two additional interviews were conducted with previous participants. Graneheim and Lundman's qualitative content analysis was used for data analysis (7). The analysis began immediately after the verbatim transcription of the interviews. The researcher first read the transcripts several times to become immersed in the data and gain a sense of the whole. Then, sentences or paragraphs that contained distinct meanings or messages were identified as meaning units. Next, these meaning units were condensed, preserving their essential meaning while shortening the text to make the data more manageable. Each condensed unit was then coded, with codes serving as concise conceptual labels that captured the essence of the participants' statements. Codes that were similar in content or meaning were grouped to form subcategories. These subcategories represented specific dimensions or aspects of the phenomenon being explored. Through an iterative process of comparison, reflection, and refinement, subcategories with conceptual similarities were combined into broader categories, which described the main domains or structural features of the phenomenon. Finally, the researcher interpreted the latent content by identifying an overarching theme that linked the categories together and represented the underlying meaning running through the entire dataset. The theme reflects the researcher's interpretive understanding of how participants experienced and made sense of the phenomenon. Throughout the process, the researcher maintained reflexivity, continuously revisiting the raw data to ensure consistency between the categories and participants' actual words, thereby enhancing the credibility and trustworthiness of the analysis.

Ethical Considerations

First, the interviews collected by the researcher were transcribed, and the interview text was read several times to gain a comprehensive understanding of the content of the text. Then, the semantic units of the interview text were identified, and initial coding was carried out. The primary codes were compared and classified on the basis of their similarities, differences, and content.

Analysis

All interviews were conducted and analyzed by the researcher under the supervision of the research team. After the initial coding phase, a summary of the preliminary codes and categories was shared with several participants to confirm whether the interpretations accurately reflected their lived experiences. Their feedback led to minor revisions in wording, merging of overlapping codes, and clarification of boundaries between subcategories. Furthermore, two experts in qualitative research and nursing independently reviewed the coding framework and analytic process. Their comments helped refine the conceptual clarity, logical consistency, and overall coherence of the coding structure. These validation steps ensured that the final codes more authentically represented participants' perspectives while minimizing researcher bias, thereby enhancing the credibility and dependability of the overall analysis.

MAXQDA version 2020 software was used for data management. The ethical principles of free will, independence, and confidentiality of participants were respected. Written informed consent was obtained from all participants.

Rigor

Lincoln and Guba's criteria were used to increase the accuracy of the study (8). After coding, the interview text was returned to the participants to ensure that the researcher and the participant had the same understanding. The researcher's constant mental engagement with the collected data and the process of analysis and coding indicated immersion in the data. The process of coding and data analysis was supervised by experts in the research team with sufficient experience in qualitative research and education. In order to increase fittingness, the researcher tried to document all stages of the research, including collection, analysis, and formation of subclasses and classes, in a way that could be verified by others. The accurate and organized recording of the data and its interpretation, and the consensus and agreement between the members of the research team in the process of interpretation and coding, showed the reliability of this study.

Results

The characteristics of the participants are shown in Table 1.

The analysis of the interviews revealed that the nurses employed two methods: positive strategies (regular and

Table 1. Demographic characteristics of the participants

No	variable	Dimension variable	Number	Percentage (%)
1	Age (years)	<25	5	21.73
		26-35	10	43.47
		36-45	4	17.39
		>45	3	13.04
2	Gender	Male	7	30.43
		Female	17	73.91
3	Education	Bachelor's	19	82.60
		Master's	4	17.39
4	Shift type	Fixed	5	21.73
		In circulation	18	78.26

principled recording, legality in reporting, and ethical recording) and negative strategies (hiding reality, defensive recording, and fake reporting without action). The categories, subcategories, and primary codes of the study are shown in Table 2.

Positive Strategies

Regular and Principled Registration

Nurses try to record accurately, timely, and completely according to the rules, standards, and model for report writing announced by the hospital authorities.

"After the visit, in order not to forget anything, I first Kardex the orders. Then, I write the report step by step, according to the Kardex and the pattern of the section". (P11)

"When the patient was first admitted, I wrote a detailed report of his decubitus ulcer. A few days later, the patient's son complained to us that he had an ulcer on your ward. Based on my report, the court dismissed this complaint". (P3)

Legality in Reporting

Increased awareness of people's rights and numerous complaints from medical records have led nurses to consider compliance with legal requirements in care records as an important priority.

"Today the doctor visited the sick patient at 11:30, but wrote 9:30 in the file. I wrote the exact time of the visit in my report to avoid any legal problems". (P15)

"The patient had to be intubated in the medical ward. The doctor did not agree. Because of the serious condition of the patient, I did it, as it is part of the nurse's role and professional competence." (P19).

"I always try to follow the unit's structure when I write my reports — from vital signs to medications. This way, the next nurse knows exactly what happened and nothing is missed". (P13)

Ethical Recording

As one of the components of the healthcare system that plays a key role in patient care, nurses are constantly exposed to ethical decisions. One of the examples of ethics is the reports recorded in the medical record.

Table 2. Codes, sub-concepts, and research concepts

Concepts	Sub concepts	Primary codes
Positive strategies	Regular and principled recording	1. Adhere to complete documentation as legal evidence. 2. Be meticulous in recording to avoid potential legal consequences. 3. Adhere to organizational guidelines and standards in recording. 4. Record reports based on the template and according to Kardex (P11*3, P3, P5, P7, P10, PO2,12).
	Legality in reporting	1. Maintain order and sequence in reporting. 2. Ensure content is comprehensive for the next shift. 3. Use a consistent template or format to accurately convey information. 4. Register actions in accordance with the description of organizational duties (P19*2, P20, P15, P4, P18)
	Ethical recording	1. Transparency and honesty in recording errors or shortcomings. 2. Reflection of humane and caring behaviors in the record. 3. Viewing the record as part of the nurse's ethical responsibility. 4. Recording the truth in troublesome and contradictory orders (P23, P9)
	Hiding the reality	1. Omitting or ignoring errors to avoid blame. 2. Concealing information to avoid administrative consequences. 3. Self-censoring in recording to reduce psychological or occupational stress 4. Hiding mistakes due to fear of job position (P4*2, P8*3, P14, P16, P19*2, P21)
Negative strategies	Defensive recording	1. Focus on recording personal actions rather than patient-centered care. 2. Recording to please a supervisor or manager. 3. Using recording to justify or defend individual performance. 4. Not recording personal assumptions (P1, P15)
	Fake reporting without action	1. Formal recording of actions not taken to complete the file. 2. Insertion of information without matching it to clinical reality. 3. Creation of reports to give the appearance of order and efficiency. 4. Unreal recording of resuscitation in end-stage patients (P3, P6, P11*2, P15, P18*2, PO14)

“About a month ago, I mistakenly injected the patient with more insulin than prescribed. The patient became hypoglycemic. I could not tell anyone, but I immediately informed the doctor and, following the instructions, the patient recovered. I recorded all these events in the file” (P23)

“The patient’s blood sugar was 45. I injected glucose according to the doctor’s order, and it was 95. The doctor said not to record 45, but I wrote it down because the patient’s record was complete”. (P9)

Negative Strategies

Hiding the truth: Nurses sometimes find themselves in a situation where telling the truth on the record will cause problems for them or their colleagues, as well as for the attending physician. In these cases, they prefer to escape reality, either by making the report look normal or by writing it in a way that exonerates them.

“A patient was poisoned with organophosphorus. Atropine was prescribed. A colleague accidentally injected heparin. The patient started bleeding. They told the doctor about it, but they didn’t write anything in the file”. (P8)

Defensive Recording

Some nurses write reports in such a way as to evade the law, so as not to be questioned and to have job security. These strategies are sometimes negative.

“I injected the patient with ceftriaxone, but he had an allergic reaction and became ill. I called code 99, and the patient was resuscitated and fortunately recovered. But I wrote in the report that the patient suddenly became bradycardic and had apnea. I did not mention the

essence of the matter. (P17)

Fake Reporting Without Action

Sometimes, for reasons such as workload, lack of facilities, or to avoid legal problems, reports are not genuine, and this can damage the reputation of the nursing profession as well as harm the patient.

“We had an elderly end-stage patient who had a cardiac arrest. We didn’t resuscitate him, but we gave him a full resuscitation report so that there would be no problem. (P18)

Field note: *“The ward was very busy. A patient was transferred from A&E to the ward. The nurse did not take the basic vital signs but recorded them on the chart.* (PO14)

Discussion

In the present study, nurses used different strategies to record care. Writing reports according to principles, standards, and patterns was one of the best strategies used by nurses. According to the study by Bayisa, nursing reports should be accurate, complete, and timely, and any kind of error in recording cases or deleting them is problematic. Recording ambiguous and incomprehensible cases, recording at an inappropriate time, inappropriate correction, and recording personal conclusions are among the cases that have damaged nursing reports and are also problematic from a legal point of view. The comprehensive nursing report is a factor in the removal of accusations and the acquittal of nurses, and its inadequacy can be considered as a factor in the confirmation of fault (9). The surveys carried out show that incomplete reports have always led to nurses

being accused in legal proceedings because, from a legal point of view, the performance of the medical team can be proved by recording, and a fully recorded report is accepted (10). The use of positive strategies reflects nurses' professional conscience and their moral understanding of documentation as an essential component of ethical care. Through this lens, documentation transcends being a bureaucratic task and becomes a moral act that preserves patient dignity and professional integrity. Similar results were reported by Cooper et al. (2021), who described accurate documentation as a reflection of nurses' professional identity (3).

Regarding law-abiding as another positive strategy of nurses in registration, Modi states that the familiarity of the country's nursing community with modern science and its strict implementation, along with familiarity with the description of tasks defined in each group based on the instructions of the Ministry and also the laws proposed in the country's judicial system, while creating a strong support for active and effective presence at the bedside of patients, can provide a performance free from negligence and error (11). Asadi et al. also reported that in recent years, despite the extensive efforts of medical professionals and healthcare personnel, and the progress of facilities, patient complaints have increased widely, which, in the near future, the issue may cause a significant stagnation in the field of health-medical services (12).

Ensuring and promoting human health, as the main goal of the nursing profession, can be reached using the modern scientific principles of medical ethics, and therefore, nurses try to achieve this goal by applying ethics. Waller says, recording the facts not only shows the honesty and truthfulness of the nurse, but it can also reduce the patient's suffering, and cause the patient's satisfaction, trust, and positive emotional reaction to the errors (13). Honesty in recording the facts leads to the prevention of harm to the patient and improves the treatment results; in addition, it reduces the financial costs of the organization and helps in identifying the problems of the organization.

Despite the positive strategies for reporting, unfortunately, some nurses sometimes hide the truth for various reasons. TOL found that lack of a system to record errors (84%), fear of legal problems (80%), time taken (73%), and inadequate system support by staff (68%) were the most common reasons for reporting and concealing errors (14).

Negligence in care means that if the nurse records the truth of the incident, her professional position will be damaged, especially the more experienced nurses are afraid of damaging their credibility and dignity, so they try to report the truth as it was not, and make them look completely normal. Rodziewicz found that writing nursing reports in a way that puts personal interests first can have legal, ethical, and professional consequences, such as failing to recognize avoidable harm to patients and failing to meet fiduciary duties. It may undermine trust between staff and patients and, more generally, jeopardize the position and reputation of the nursing profession (15).

False recording without action was another negative strategy used by nurses. Personal and organizational barriers and limitations, such as a lack of facilities and manpower, are effective factors in the use of this strategy. Some considered a lack of interest in performing the procedure as a reason for fake registration. This problem was more common among nurses with more experience. This may be due to a sense of work independence or fatigue from repetitive and routine tasks. Hamdhan reported that after a complete review of nursing and care documentation, they found that less than half of the care provided was recorded; in fact, only 40% of observed nursing activities are recorded in nursing notes. It has also been found that when nurses' workloads are higher, they are less likely to record care due to time constraints (16). Falsifying nursing reports represents not only a clear violation of professional ethical standards but also carries significant legal and patient safety implications. Such actions can lead to criminal charges, including fraud and document falsification, potentially resulting in suspension or revocation of a nurse's professional license. From a patient safety perspective, falsified reports may result in inaccurate assessments, delays in clinical interventions, and ultimately serious patient harm. Professionally, such misconduct undermines public trust in the healthcare system, which can contribute to occupational burnout, decreased quality of nursing care, and ethical distress among staff. Therefore, it is essential to emphasize ethical training, continuous supervision, and transparent reporting systems within clinical environments to prevent such violations and promote patient safety.

The analysis suggests that nurses' choice of strategy often emerges from a dynamic balance between moral integrity and contextual constraints. In supportive environments characterized by managerial trust, sufficient staffing, and open communication, positive strategies are more prevalent. In contrast, under conditions of high stress, staff shortages, and punitive supervision, defensive and ethically compromised documentation becomes more common. Overall, the findings highlight that improving the quality of nursing documentation requires more than technical training. It demands strengthening ethical awareness, fostering psychological safety, and ensuring organizational support, so that nurses can experience documentation as an authentic expression of their professional identity rather than a bureaucratic obligation.

Conclusion

In order to register nursing care in clinical departments, nurses should act on the basis of the job description and related laws and regulations, so that they don't have to worry about responding to the law and defending their credibility in court. Also, if nurses pay attention to the reports according to the existing principles and standards, registration errors will be avoided, and they can prevent the evasion of the law and the use of negative strategies that cause a decrease in the quality of care and harm to patients.

There were also limitations in this study. Data are collected from only a few specific hospitals or treatment centers and may not be reflective of physicians in other regions or with different organizational cultures. Due to the qualitative nature, the number of participants was small, and their selection was purposive, so the results are not statistically significant. Work pressure, fatigue, or critical hospital conditions could have affected the quality and depth of nurses' responses. Some nurses may have concealed their actual strategies or expressed them in an idealized manner due to career considerations or fear of negative evaluation. Qualitative content analysis naturally involves interpretation, and the researcher's views and assumptions may influence the coding and categorization of data, although attempts have been made to reduce this effect through peer review and participant validation. The research team remained aware of their own assumptions and professional experiences throughout the study, reflecting on how these might influence data interpretation. Regular peer discussions and expert consultations were used to review coding and theme development, helping to reduce bias. Reflexive notes were kept during data collection and analysis to document key decisions and insights. These steps ensured that the findings authentically represented participants' perspectives while maintaining rigor and transparency. As guidelines change or recording systems (paper or electronic) are updated, some findings may be less valid in the future.

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Authors' Contribution

Conceptualization: Mostafa Roshanzadeh and Ali Taj.

Data curation: Mostafa Roshanzadeh and Ali Taj.

Formal analysis: Mostafa Roshanzadeh and Ali Taj.

Investigation: Mostafa Roshanzadeh and Ali Taj.

Methodology: Mostafa Roshanzadeh and Ali Taj.

Project administration: Ali Taj

Resources: Ali Taj

Software: Mostafa Roshanzadeh and Ali Taj.

Supervision: Ali Taj

Validation: Mostafa Roshanzadeh and Ali Taj

Visualization: Mostafa Roshanzadeh and Ali Taj

Writing—original draft: Mostafa Roshanzadeh and Ali Taj

Competing Interests

There was no conflict of interest between the authors.

Ethical Approval

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References

1. Laukvik LB, Lyngstad M, Rotegård AK, Fossum M. Utilizing nursing standards in electronic health records: a descriptive qualitative study. *Int J Med Inform* 2024;184:105350. doi:10.1016/j.ijmedinf.2024.105350
2. Cooper AL, Albrecht MA, Kelly S, Eccles SP, Brown JA. A pre-post interventional study to reduce time spent on clinical documentation by nurses and midwives. *J Adv Nurs* 2024;80(4):1452-63. doi:10.1111/jan.15931
3. Cooper AL, Brown JA, Eccles SP, Cooper N, Albrecht MA. Is nursing and midwifery clinical documentation a burden? An empirical study of perception versus reality. *J Clin Nurs* 2021;30(11-12):1645-52. doi:10.1111/jocn.15718
4. Benedict J. Improving the accuracy of code status documentation in home care. *Home Healthc Now* 2024;42(2):84-9. doi:10.1097/nhh.0000000000001239
5. Weaver MS, Anderson B, Cole A, Lyon ME. Documentation of advance directives and code status in electronic medical records to honor goals of care. *J Palliat Care* 2020;35(4):217-20. doi:10.1177/0825859719860129
6. Jin H, Yao J, Xiao Z, Qu Q, Fu Q. Effects of nursing workload on medication administration errors: a quantitative study. *Work* 2023;74(1):247-54. doi:10.3233/wor-211392
7. Graneheim UH, Lundman B. Qualitative content analysis in nursing research: concepts, procedures and measures to achieve trustworthiness. *Nurse Educ Today* 2004;24(2):105-12. doi:10.1016/j.nedt.2003.10.001
8. Roshanzadeh M, Taj A, Davoodvand S, Mohammadi S. Consequences of exposure of operating room students to clinical learning challenges. *J Med Educ Dev* 2024;16(52):37-44. doi:10.32592/jmed.2023.16.52.37
9. Bayisa G, Gonfaa L, Badasa K, Dugasa N, Abebe M, Deressa H, et al. Improving medical record completeness at Wallaga University Referral Hospital: a multidimensional quality improvement project. *BMJ Open Qual* 2024;13(1):e002665. doi:10.1136/bmjopen-2023-002665
10. Kautzner S, Heckel M, Ostgathe C, Schneider M, Bausewein C, Schildmann E, et al. Documentation of sedation in palliative care: a scoping review of requirements, recommendations, and templates. *J Palliat Med* 2023;26(9):1277-84. doi:10.1089/jpm.2022.0476
11. Modi N, Ashby D, Battersby C, Brocklehurst P, Chivers Z, Costeloe K, et al. Developing routinely recorded clinical data from electronic patient records as a national resource to improve neonatal health care: the medicines for neonates research programme. *Programme Grants Appl Res* 2019;7(6):1-396. doi:10.3310/pgfar07060
12. Asadi M, Ahmadi F, Mohammadi E, Vaismoradi M. A grounded theory of the implementation of medical orders by clinical nurses. *BMC Nurs* 2024;23(1):113. doi:10.1186/s12912-024-01775-6
13. Waller A, Turon H, Bryant J, Shepherd J, Hobden B, Sanson-Fisher R. Nurses perspectives on healthcare errors in oncology care: a cross-sectional study. *Eur J Oncol Nurs* 2020;45:101741. doi:10.1016/j.ejon.2020.101741
14. Kim MK, Roupheal C, McMichael J, Welch N, Dasarathy S. Challenges in and opportunities for electronic health record-based data analysis and interpretation. *Gut Liver* 2024;18(2):201-8. doi:10.5009/gnl230272
15. Rodziewicz TL, Houseman B, Vaqar S, Hipskind JE. Medical error reduction and prevention. In: *StatPearls*. Treasure Island, FL: StatPearls Publishing; 2026.
16. Hamdhana D, Kaneko H, Victorino JN, Inoue S. Improved evaluation metrics for sentence suggestions in nursing and elderly care record applications. *Healthcare (Basel)* 2024;12(3):367. doi:10.3390/healthcare12030367