

Original Articles: Quantitative Research

AN ANALYSIS OF THE ASSOCIATION BETWEEN THE USE OF ELECTRONIC NURSING DOCUMENTATION AND THE QUALITY OF EFFECTIVE COMMUNICATION AMONG NURSES IN HOSPITAL SETTINGS

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Abstract

Background: All healthcare services, including hospitals, are required to implement electronic documentation. The purpose is to facilitate access and support clinical decision-making related to patients. Challenges arise when nurses perform electronic documentation, as they may become overly focused on documentation tasks and fail to engage in effective communication with other nurses.

Objective: This study aimed to explain the relationship between the use of electronic documentation and the quality of effective communication among nurses.

Methods: This study employed a cross-sectional research design. The population consisted of all nurses in inpatient ward who used electronic documentation at Hospital X in Surabaya. The sample size was 122 respondents who participated within one week of data collection. The sampling technique used was total sampling. The independent variable was the use of electronic documentation, while the dependent variable was effective communication among nurses.

Results: The results showed that the majority of respondents were demonstrated good acceptance of electronic documentation use (117; 95.9%) and had good effective communication skills (100; 82%). Cross-tabulation analysis also showed that 98 respondents had both good acceptance of electronic documentation and good effective communication skills. The analysis indicated a significant relationship between the acceptance of electronic documentation use and effective communication skills ($p = 0.012$; $p < \alpha$) with a correlation coefficient of $r = 0.226$. The r value indicates a positive relationship between the two variables.

Conclusion: The correlation coefficient indicates a positive association, suggesting that higher acceptance of electronic documentation is associated with better effective communication among nurses.

INTRODUCTION

Nursing practice is inseparable from the responsibility of maintaining proper documentation. Nurses are accountable for documenting the entire nursing care process, beginning with patient

assessment and continuing through nursing diagnosis, intervention, and evaluation until the patient is discharged. In recent years, nursing documentation has transitioned into information systems, commonly referred to as electronic documentation. The adoption of electronic documentation provides several advantages for nurses, including reduced time required for documentation, faster and easier access to patient data, and improved readability compared with paper-based documentation (Wulandari & Handiyani, 2019). Electronic documentation also offers advantages in terms of a more structured and systematic documentation process. However, some studies have reported that paper-based documentation may still be superior in terms of the quantity and quality of documented content compared with electronic documentation. Previous research comparing electronic and paper-based documentation has indicated that the quality of nursing documentation remains suboptimal, partly due to nurses' limited knowledge and skills in implementing the nursing process (Akhu-Zaheya et al., 2018). Nursing documentation also functions as a communication tool among nurses. During shift handovers, effective communication between nurses is essential to ensure patient safety and maintain the quality of healthcare services. Ineffective communication among nurses or other healthcare professionals has been identified as one of the major contributors to problems occurring in healthcare delivery (Suardana et al., 2018). The increasing adoption of electronic nursing documentation systems in hospitals has transformed clinical workflows, yet its impact on the quality of effective communication among nurses remains unclear. Therefore, it is essential to investigate whether the use of electronic documentation is associated with the quality of effective communication among nurses in hospital settings.

Currently, all healthcare services, including hospitals, are required to implement electronic documentation systems to facilitate access to patient information and support clinical decision-making. However, the successful implementation of electronic documentation depends on the availability of adequate infrastructure and resources. Challenges may arise when nurses are required to document the nursing process electronically while adequate facilities are unavailable or when nurses lack sufficient knowledge and skills in using the system (Agustina et al., 2024). Consequently, nurses may need additional time to learn and complete electronic documentation, which may affect the quality of communication among nurses. Several previous studies have examined the implementation of electronic nursing documentation and its impact on nursing care quality and communication among nurses. Evidence suggests that electronic documentation systems play an important role in improving the overall quality of nursing services.

A study on the methods of electronic documentation in improving the quality of nursing care reported that information technology-based documentation systems help nurses meet documentation standards, improve the quality of documentation, facilitate clinical decision-making, and provide easily accessible information (Sulastri & Sari, 2018). In addition, electronic documentation can minimize the risk of loss or damage to patient records, enhance communication and information exchange, and improve coordination among nurses and other healthcare professionals. The system also allows documentation to be audited more efficiently, improves data accuracy, enables monitoring of patient

health progress, and may reduce healthcare costs, ultimately contributing to improved quality of nursing care. Other finding is electronic nursing documentation can influence nurse communication both positively and negatively. One of the key factors affecting the use of technology in communication is system quality. Furthermore, nursing managers play a crucial role in ensuring the successful implementation of electronic documentation systems as a communication tool in healthcare settings (Saraswasta & Hariyati, 2020). However, several challenges were identified, including technical issues, workload, and concerns related to data security. Overall, the review concluded that electronic documentation has strong potential to improve the quality of patient care, facilitate communication among nurses, simplify data retrieval, reduce errors, increase efficiency, and support performance measurement and supervision of nursing staff (Agustina et al., 2020). Additionally, a study evaluating the usability and satisfaction of electronic nursing documentation systems in Indonesia reported that the Nursing Management Information System (NMIS) helped nurses validate nursing practices and facilitated communication among healthcare teams (Hariyati et al., 2020). The use of electronic patient records was also found to reduce the risk of miscommunication during care delivery.

Previous studies indicate that electronic nursing documentation has substantial potential to improve documentation quality, communication, and coordination in nursing practice. However, the impact of electronic documentation on effective communication among nurses remains inconsistent and may depend on several contextual factors, including system quality, infrastructure, and user acceptance. Therefore, further research is needed to examine the relationship between the use of electronic documentation and effective communication among nurses. It is important to further investigate whether there is a relationship between the use of electronic documentation and the quality of effective communication among nurses. This study aims to examine the relationship between the use of electronic documentation and effective communication among nurses.

METHODS

Study Design

This study is a cross-sectional study. Cross-sectional is defined as a type of observational study that analyses variable data collected at a single point in time across a predetermined sample population. This study that investigates the correlation between two variables. The dependent variable in this study is the quality of communication between nurses. The independent variable in this study is the use of electronic documentation.

Settings and Participants

The population in this study was all nurses in the inpatient wards of private hospitals in Surabaya City that implement digital documentation. The sample size for this study was 122 nurses who agreed to complete a questionnaire administered via Google Forms. Data collection took place in December 2025. This study used total sampling because we already have the nurse's list.

Instruments and Data Collection

Data collection was conducted at the hospital, specifically in a room that uses electronic documentation. First, the researcher submitted an ethical review of the research to be conducted. Then, the researcher requested permission to conduct the research at the hospital. After obtaining permission from the hospital management, the researcher requested to distribute the research questionnaire using Google Forms. In Google Form, the researcher explained the purpose, benefits, procedures, and risks of the proposed research and then asked for the consent of potential respondents. After the respondents agreed, the researcher could complete the research questionnaires.

The measurement of the use of electronic nursing documentation in this study was carried out using a structured questionnaire developed based on the Technology Acceptance Model (TAM), which includes the main constructs of perceived usefulness, perceived ease of use, attitude toward use, and behavioral intention to use. The instrument consisted of 20 items measured using a 5-point Likert scale ranging from strongly disagree to strongly agree, aimed at assessing nurses' perceptions toward the use of electronic documentation systems. More specifically, the perceived usefulness construct was assessed through items reflecting the extent to which electronic documentation enhances nurses' performance, productivity, effectiveness, and overall benefits in documenting nursing care. The perceived ease of use construct included aspects such as ease of use, ease of learning, clarity of system interaction, and ease of accessing patient information. The attitude toward use construct evaluated nurses' positive attitudes toward electronic documentation, including perceptions that the system is beneficial and provides a favorable user experience. Finally, the behavioral intention to use construct measured nurses' intention to continuously use electronic documentation in the future, across all patients, and for various types of nursing documentation

Meanwhile, the quality of effective communication among nurses was assessed using a questionnaire adapted from the SERVQUAL approach, covering dimensions of reliability, responsiveness, assurance, empathy, and tangibles to capture the effectiveness of communication in clinical practice. After the data was collected, the researcher scored and conducted statistical tests.

Data Analysis

The analysis was conducted in three stages: data collection, editing, and scoring. Data collection was conducted using a questionnaire, data editing was conducted by examining the collected data, and scoring was conducted by assigning a score to each research variable. The questionnaire was previously tested for validity and reliability. The validity test used Pearson's Correlation, and all statement items were valid. The reliability test used the Cronbach's Alpha method, with the results of the electronic documentation questionnaire being 0.975 and the effective communication questionnaire being 0.95. The collected data were tested using Spearman's rank.

Ethical Consideration

Researchers undergo research ethics testing to obtain ethical clearance with number 0121/WM12/KEPK/DSN/T/2025. Other ethical aspects of research include: (1) Informed Consent. The

consent form is given to prospective subjects who are willing, but the researcher has previously explained the purpose, objectives, benefits, and technical implementation of the research. (2) Anonymity. The researcher deliberately does not include the subject's name on the data collection sheet to maintain confidentiality. (3) Confidentiality. The researcher guarantees the confidentiality of information obtained from the subject. Only certain data will be included in the research results. (4) Freedom. The researcher gives the subject the freedom to decide whether or not they are willing to become a research respondent.

RESULTS

The sample size in this study consisted of 122 nurses working in inpatient ward at a private hospital in Surabaya City who has used electronic documentation.

Table 1. Distribution of Respondents' Characteristics

Criteria	Frequency		Sig.
	n	%	
Gender			
Female	111	91	
Male	11	9	
Education			
Ners	71	58,2	0,500
Diploma	51	41,8	
Room type			
Inpatient	62	50,8	
Others	31	25,4	
Intensive Care	16	13,1	
IGD	13	10,7	
Age			
< 40 years old	117	95,9	0,830
≥ 40 years old	5	4,1	
Duration of work			
0-5 years	82	67,2	
5-10 years	29	23,8	0,864
>10 years	11	9	

Sources: Primary Data Questionnaire

Based on Table 1, the majority of respondents were female, totalling 111 (91%) nurses. Most respondents held a professional nursing degree (Ners), accounting for 71 (58.2%). The largest proportion worked in inpatient wards (62 respondents; 50.8%). The majority were aged < 40 years (117 respondents; 95.9%) and had 0–5 years of work experience (82 respondents; 67.2%).

The results of logistic regression analysis showed p-values for educational level (0.500), age (0.830), and length of employment (0.864) in relation to the use of electronic documentation. These findings indicate that educational level, age, and length of employment did not significantly influence the use of electronic documentation. Therefore, there were no differences in acceptance of electronic documentation usage based on length of employment, gender, or educational level.

Table 2. Correlation Between the Use of Electronic Documentation and Effective Communication Skills Among Nurses

Use of electronic documentation	Effective communication			Correlation
	Enough	Good	Total	
Enough	3	2	5	p= 0,012 (p < α) r= 0,226
	1,8%	2,3%	4,1%	
Good	19	98	117	
	16,2%	79,7%	95,9%	
Total	22	100	122	
	18%	82%	100%	

Sources: Primary Data Questionnaire

Based on Table 2, the majority of respondents demonstrated good acceptance of electronic documentation use, totalling 117 (95.9%) nurses. Additionally, 100 respondents (82%) had good effective communication skills. The cross-tabulation results showed that 98 respondents had both good acceptance of electronic documentation and good effective communication skills. Statistical analysis indicated a significant relationship between acceptance of electronic documentation use and effective communication skills ($p = 0.012$; $p < \alpha$), with a correlation coefficient of $r = 0.226$. The positive correlation coefficient ($r = 0.226$) indicates a positive relationship between the two variables. This suggests that better acceptance of electronic documentation use is associated with better effective communication skills among nurses.

DISCUSSION

The Acceptance in Use of Electronic Documentation

The findings of this study indicate that the majority of nurses (95,9%) respondents demonstrated a high level of acceptance toward the use of electronic documentation in clinical practice. This result

aligns with existing literature suggesting that nurses generally perceive electronic documentation systems as beneficial and supportive in their workflow. For instance, previous studies have shown that nurses tend to view electronic health record systems as useful tools that enhance clinical documentation efficiency and ease of use, which in turn positively influences their acceptance of such technology in practice settings (Alhur, 2023). Acceptance of electronic documentation among nurses has been widely investigated through technology acceptance frameworks, such as the Technology Acceptance Model (TAM). Research conducted in Saudi Arabia reported that perceived usefulness and perceived ease of use were significantly associated with nurses' willingness to adopt electronic medical records, suggesting that positive perceptions about system functionality foster favourable attitudes toward electronic documentation (Alhur, 2023). Likewise, studies conducted in Indonesian hospital settings have documented that a substantial proportion of nurses exhibit positive perceptions toward computer-based nursing documentation systems, often citing improved accessibility, efficiency, and accuracy as key benefits (Rusnita, 2025).

In addition to general acceptance, the role of nurses' education level and work experience may contribute nuance to understanding technology acceptance. Although the current study did not find statistically significant differences based on educational level or length of work, these characteristics have been discussed in the literature as potential modulators of acceptance. For example, studies suggest that nurses with higher educational attainment may possess greater familiarity and confidence in using digital systems due to increased exposure to informatics concepts during their training. Integration of electronic health records into nursing curricula has been shown to improve students' comfort and competencies with these systems, which may carry into professional practice and influence acceptance (Williams et al., 2021). Similarly, work experience may play a dual role in shaping acceptance of electronic documentation. Nurses with longer tenure in clinical practice may exhibit higher acceptance due to accumulated exposure to diverse clinical information systems, leading to increased adaptability and digital literacy (Alboliteeh, 2022). Regarding work experience, the absence of a significant association in this study might reflect a balance of opposing influences. On one hand, nurses with longer professional experience may be more accustomed to traditional paper-based documentation and initially resist technological change (Fricilia et al., 2025).

The age profile of the sample predominantly nurses under 40 years may have contributed to the overall positive acceptance observed. Younger nurses are often more familiar with technology, demonstrating higher digital literacy and adaptability to new systems. Studies in similar contexts report that younger healthcare professionals tend to express more favourable attitudes toward health information technologies, likely due to greater exposure to digital tools in both education and personal life (Fricilia et al., 2025). Other factor is gender. Contemporary evidence suggests that male and female nurses exhibit similar attitudes toward electronic health records when other factors such as training, system usability, and institutional support are comparable. Gender differences in technology acceptance

are diminishing in professional clinical environments, and in many studies gender has not been identified as a significant predictor of EHR acceptance (Corbett, 2025).

The Quality of Effective Communication among Nurses

The results of this study showed that the majority of nurses demonstrated in good effective communication skills in their clinical practice. Effective communication among nurses is a core competency that facilitates cooperation, improves teamwork, enhances patient safety, and supports positive service outcomes in healthcare environments. Effective communication enables nurses to exchange information accurately, express ideas clearly, and build trust with clients and family, all of which are essential to quality nursing practice (Noviyanti et al., 2021). A substantial body of research underscores that effective communication satisfaction contributes significantly to a positive patient safety culture and collaborative work environment. In a study conducted in Indonesian hospitals, higher communication satisfaction among nurses was significantly associated with stronger safety culture, reinforcing the importance of communication in quality care delivery (Noviyanti et al., 2021). Research from Peru also found that effective communication was consistently rated at high levels among nurses and was a fundamental factor in promoting collaborative behaviour and supportive relationships in healthcare teams (Meneses-la-riva et al., 2025).

Several demographic and professional factors may contribute to the high levels of communication effectiveness observed in this study. First about gender, may influence communication styles and perceptions among nurses. Research examining communication self-efficacy among nurses found that female nurses reported higher average communication confidence scores compared to male nurses, which may reflect differences in socialization and communication style preferences among gender (Mehralian et al., 2023). Second, Education level is another potential contributor to communication effectiveness. Nurses with higher educational attainment typically receive more training in critical thinking and patient interaction skills, which can translate into improved communication performance in complex clinical situations. Research on communication satisfaction identified that education level may influence certain communication dimensions, although results vary across (Suharjo et al., 2026). Moreover, workplace environment and unit type (e.g., inpatient vs. outpatient) can shape communication demands and practices, with fast-paced or high-acuity settings often requiring more rapid and precise communication exchanges. Work experience has also been shown to shape communication effectiveness, with nurses who have longer clinical experience often demonstrating greater confidence and competence in interactions with patients and peers (Kindie & Mitiku, 2024).

The Correlation between Acceptance of the Use of Electronic Documentation and the Quality of Effective Communication between Nurses

Based on the research results, there were 98 (79.7%) respondents who had good acceptance of the use of electronic documentation and good effective communication skills. The cross tabulation showed that there was a relationship between acceptance of the use of electronic documentation and effective communication skills, namely $p = 0.012$ ($p < \alpha$) with an r value = 0.226. The r value indicates that the two variables have a positive relationship. The results of this study are supported by the results of previous studies that stated EHRs have improved communication by ensuring accurate, real-time data exchange, reducing errors, and enhancing collaboration (Alqahtani et al., 2022). Electronic documentation systems are designed not only to record patient data but also to facilitate continuity of care and communication accuracy. Well-implemented electronic documentation enhances information accessibility, reduces miscommunication, and supports clinical decision-making (Robertson et al., 2022). Furthermore, positive acceptance among nurses is critical for successful implementation and sustainability of electronic documentation systems in healthcare institutions. When nurses accept and effectively utilize these systems, the quality of nursing documentation may improve, which can enhance communication within the care team, support patient safety, and contribute to better overall health service delivery (Handayani & Hariyati, 2023). The findings of this study demonstrated a statistically significant relationship between the use of electronic nursing documentation and the quality of effective communication among nurses ($p < 0.05$); however, the correlation coefficient ($r = 0.226$) indicates a weak positive association. This suggests that although increased acceptance and use of electronic documentation are associated with improvements in communication quality, the magnitude of this contribution is relatively small. Therefore, electronic documentation should not be considered a primary determinant of effective communication, but rather one of several contributing factors.

The weak correlation observed in this study may be explained by the multifactorial nature of communication in clinical settings, which is influenced not only by technological systems but also by interpersonal skills, organizational culture, workload, leadership, and team dynamics. In this context, electronic documentation systems may facilitate information accessibility and continuity of care, but they do not fully address the interpersonal and behavioural components required for effective communication among nurses.

Using Electronic documentation made data for reporting is available faster and can be analyzed immediately, facilitating communication so that treatment decisions are also made faster (Kristiana et al., 2023). From a practical perspective, improving nurses' acceptance of electronic documentation could serve as a strategic intervention to enhance effective communication. Hospital management should focus on system optimization, user-centered design, and ongoing professional development.

IMPLICATION AND LIMITATION

This study provides empirical evidence that the use of electronic documentation is positively associated with effective communication among nurses. These findings have several important implications. For hospital management should strengthen the implementation of electronic documentation systems by ensuring adequate training, technical support, and system usability. Improving nurses' acceptance of electronic documentation may indirectly enhance interprofessional and intraprofessional communication quality. These findings contribute to the growing body of knowledge regarding health information systems in nursing practice, particularly in understanding how technological acceptance may influence communication dynamics in clinical settings.

This study has several limitations that should be considered when interpreting the findings. First, although a statistically significant relationship was identified, the correlation coefficient ($r = 0.22$) indicates a weak association, suggesting that the use of electronic documentation explains only a small proportion of the variance in effective communication among nurses. Therefore, the findings should be interpreted with caution, as other unmeasured factors may play a more substantial role in influencing communication quality. Second, this study was conducted in a single hospital setting using a non-random (accidental) sampling technique, which may limit the generalizability of the results to other healthcare institutions with different organizational cultures, technological infrastructures, or workforce characteristics. Third, the data were collected using self-reported questionnaires, which are subject to potential biases such as social desirability bias and response bias. Respondents may have overestimated their acceptance of electronic documentation or the quality of their communication practices. Finally, this study measured perceived communication quality rather than actual communication behavior. The absence of objective assessments, such as direct observation or audit of communication practices, limits the ability to fully capture the real effectiveness of nurse communication in clinical settings.

CONCLUSION

The results of the study indicated that the majority of respondents demonstrated good acceptance of electronic documentation use, amount 117 (95.9%) nurses. Furthermore, 100 respondents (82%) exhibited effective communication skills in the good category. Acceptance of electronic documentation use was significantly associated with effective communication skills. The relationship between the two variables was positive, indicating that higher acceptance of electronic documentation use was associated with better effective communication skills.

AUTHOR CONTRIBUTION

Made Indra Ayu Astarini : Developed the study concept and methodology, performed formal analysis, validated data and results, and prepared the original draft.

Ira Ayu Maryuti : Conducted the investigation and data curation, managed resources, reviewed and edited the manuscript.

Kristina Pae : Supervised the research progress, validated data and results, designed visualizations, and provided final approval of the manuscript.

ORCHID

Made Indra Ayu Astarini : None.

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Kristina Pae : None.

CONFLICT OF INTEREST

There is no conflict of interest in this research.

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Table Captions

Table 1. Distribution of Respondents' Characteristics.

Table 2. Correlation Between the Use of Electronic Documentation and Effective Communication Skills Among Nurses.