INNOVATION IN DIGITAL NURSING DAILY REPORTING THROUGH THE USE OF SPREADSHEETS TO IMPROVE THE QUALITY OF DOCUMENTATION IN INPATIENTS AT PATI ISLAMIC HOSPITAL

Moh. Ady Luthfi[1], Feri Catur Yuliani[2], Yeni Rusyani[3], Akbar Amin Abdullah[4].

Universitas Safin Pati, Indonesia

E-mail: adyluthfi22@gmail.com, yulianiferi55@gmail.com, yeni_rusyani@usp.ac.id, akbarindah45@gmail.com.

Abstract

Accurate and efficient nursing documentation is crucial for improving the quality of care and patient safety. However, the predominant manual recording practices in the inpatient wards of Pati Islamic Hospital, particularly the Utsman bin Affan ward, create various challenges, such as delayed reporting, recording errors, and limited access to information. This project is to develop and implement a spreadsheet-based digital daily nursing reporting system to improve the quality of documentation. A simple technology development project approach with stages: needs analysis, spreadsheet template design, system implementation, and effectiveness evaluation through observation of filling time and evaluation questionnaires. This spreadsheet-based digital reporting system is able to reduce recording time, increase data accuracy, and receive positive feedback from users, with 92.9% of nurses stating their willingness to use it on an ongoing basis. Digital reporting using spreadsheets has proven to be a practical and effective solution in improving the efficiency and quality of nursing documentation, especially in healthcare facilities with limited technological infrastructure.

Keywords: *digital reporting, nursing documentation, spreadsheets, efficiency, quality of service.*

INTRODUCTION

Nursing documentation is a crucial part of nursing care, serving as a tool for communication, coordination, and legal proof of service. However, daily reporting is often done manually using paper forms, which are prone to data loss, delays in recording, and illegible handwriting. This disrupts the continuity of care and the accuracy of patient information, especially in wards like Utsman bin Affan, which require close monitoring. Manual record-keeping methods create several challenges, such as typos, delayed access to information, and a high administrative burden for nurses. Consequently, work efficiency declines as nurses' time is divided between record-keeping and patient care. Furthermore, medical personnel also struggle to obtain up-to-date information quickly, impacting team coordination in patient care. As technology advances, the use of digital media such as spreadsheets has become a practical solution for documentation systems. Spreadsheets like Google Sheets or Excel offer real-time recording, cloud access, automatic validation, and instant collaboration. Besides being flexible, these systems don't require special devices or applications, making them easily applicable in hospitals, especially those with limited resources.This digital reporting innovation was developed on a limited basis in the Utsman bin Affan RSI Pati room, using spreadsheets as the primary medium. System evaluation focused on data entry speed, data accuracy, and nurse user satisfaction. The study did not include advanced integrations such as dashboards or SIMRS, to ensure the solution remains simple and appropriate for users in the field. The primary goal of this project is to create a digital reporting system that simplifies record-keeping and speeds up information access for nurses and doctors. The system is designed to be user-friendly, minimize input errors, and support faster clinical decision-making. As such, it is expected to be a valuable tool in improving the quality of care in inpatient settings. Expected benefits include reducing the administrative burden on nurses, increasing the speed of access to medical information by doctors, and streamlining data management by hospital management. Overall, this project offers a simple yet effective model for technological innovation that other hospitals can adopt to improve the quality of nursing documentation and patient safety.

LITERATURE REVIEW

Previous research has shown that the use of digital reporting systems in nursing has a positive impact on documentation quality and work efficiency. Wandira et al. (2021) stated that electronic medical records (EMR) have a legal basis and are a valid form of documentation. Rahmawati et al. (2023) found that digital media such as Microsoft Excel can improve the readability and accuracy of information, while Hermawan et al. (2024) noted that EMR can reduce the need for physical documents and reduce the workload of medical records staff. The implementation of a digital reporting system aligns with the global trend of healthcare digitalization. Wiradinata and Annisa (2024) emphasize the importance of technological innovation that is easily accessible and adapted to conditions in developing countries. Putri (2023) adds that a simple and user-friendly system design significantly contributes to its acceptance by nurses, who are the primary users.

Electronic nursing documentation not only improves record-keeping quality but also speeds up work processes and reduces errors. Chand and Sarin (2019) stated that digital systems produce better documentation quality than manual methods. Similar findings were revealed by Shafiee et al. (2022) and Abd-Elmohsen et al. (2024), who demonstrated increased efficiency and decreased nurse burnout with digital systems. Furthermore, Kahouei et al. (2017) demonstrated that a Clinical Care Classification (CCC)-based reporting system improved documentation completeness. Daily reporting is a crucial element of patient care in the inpatient ward. Sumantri and Yunengsih (2024) explain that accurate reporting supports interprofessional communication and continuity of care. In the Utsman bin Affan ward, where patients require intensive monitoring, a systematic reporting system is essential to ensure the safety and effectiveness of care.
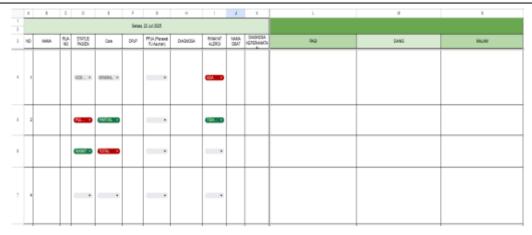
In Indonesia, Mahfud et al. (2025) evaluated a hybrid-based reporting system and found improved nursing documentation after culturally contextualized training. Spreadsheets were also shown to improve data visualization and reporting navigation (Horton & Roser, 2021). Implementation of EMR has also begun in accordance with the Ministry of Health's policy for digitizing medical records. Putri (2023) stated that manual reporting methods still lead to inaccurate information and reduce nurses' work efficiency. This is reinforced by Wirajaya Maha (2020), who advocates the use of technology in healthcare services to enable hospitals to compete and improve service quality. At Pati Islamic Hospital, reporting is still done manually using Microsoft Excel after data is transferred from medical records, which poses a risk of error (Rahmawati et al., 2023).

Nursing documentation is the process of systematically recording a nurse's actions and patient conditions. According to Hapsari (2014), this documentation serves as a communication tool, service quality evaluation, and legal evidence in healthcare. Timely and accurate documentation can improve patient safety and support effective clinical decision-making. Medical records themselves are important documents that include complete clinical information about patients and serve as a medical communication tool and legal evidence (Hapsari, 2014). Meanwhile, electronic medical records are digital systems for storing and managing medical data in an integrated manner (Apriliyani, 2021). According to Lastanti et al. (2023), spreadsheets are column- and row-based software that facilitate efficient data processing and analysis and are suitable for simple documentation such as daily nursing reports.

METHOD

This research uses a spreadsheet-based digital daily reporting system development project approach designed to improve the effectiveness and efficiency of nursing report recording in inpatient wards. This approach was chosen because it allows for the integration of technical, practical, and evaluative aspects, in contrast to pure research approaches that tend to focus solely on data analysis. This project is categorized as information technology development in the nursing field, with the output being a ready-to-use system that can be directly implemented in the hospital work environment. The system development stages adhere to a simple Software Development Life Cycle (SDLC) model, encompassing requirements analysis, design, implementation, and evaluation. In the initial phase, observations of the manual reporting process and interviews with nurses were conducted to identify problems and needs in the field. The spreadsheet template was designed with ease of use and data validation in mind. The system was implemented in an inpatient ward, with brief user training.

The evaluation was conducted after the system had been tested for one week using effectiveness indicators, namely speed of report filling, data accuracy, and user satisfaction level. The project's subjects were 14 nurses working in the inpatient ward of Pati Islamic Hospital. Eight nurses were granted spreadsheet editor access, while six nurses were granted viewer access to maintain data integrity and security. The location was selected based on accessibility, technological support, and hospital characteristics deemed representative for system implementation. Data collection was conducted through system usage training, observation of daily report completion times, and distribution of user evaluation questionnaires. The digital system usage process followed a procedural flow, starting from accessing the spreadsheet link, logging in, duplicating the report tab, changing the date, and the validation process through a digital signature by the nurse on duty. The spreadsheet template used included the main elements of daily reporting, including patient name, treatment room, patient status (inpatient/discharged), patient dependency level classification (minimal, partial, and total care), nurse in charge (PPJA), allergy history (yes/no), name of allergy medication, doctor in charge (DPJP), diagnosis, and morning, afternoon, and evening nursing plans. Data were analyzed descriptively. Quantitative data, including report completion time, were analyzed through a simple comparison between manual and digital reporting. Questionnaire data were analyzed by calculating average scores and percentages for assessment aspects such as ease of use, speed, and system usability. The analysis results were used as a basis for assessing the effectiveness of the digital system implementation and as recommendations for implementing similar systems in other nursing units.

RESULTS AND DISCUSSION
A. Results of the Implementation of the Digital Reporting System
The implementation of a digital daily reporting system was carried out in the inpatient ward of Utsman bin Affan RSI Pati. This system uses a spreadsheet as the main recording medium, with a reporting template designed to include important elements such as patient name, treatment room, patient status (inpatient/discharged), patient dependency level classification (minimal, partial, and total care), nurse in charge (PPJA), allergy history (yes/no), name of allergy medication, doctor in charge (DPJP), diagnosis, and morning, afternoon, and evening nursing plans. During the 7-day trial period, 14 nurses participated, with 8 serving as editors and 6 as viewers. The system followed a predetermined workflow: opening a spreadsheet link, logging in, duplicating the report tab, changing the date, entering patient data according to shift, and digitally signing the report. Observations showed that the average time to complete a digital report took less than 10 minutes, significantly faster than the manual method, which took more than 20 minutes. Furthermore, data validation is more secure thanks to the cell locking feature for fixed data and format validation. Users also find data recapitulation easier because the information is stored directly in the cloud and accessible to both the ward manager and the patient's attending physician.

B. User Satisfaction Evaluation
The evaluation was conducted through a Google Form-based questionnaire with five assessment aspects: ease of use, speed of filling, system appearance, data accuracy, and system usefulness. Based on the results of a questionnaire conducted with 14 respondents, consisting of nurses and ward heads in the Utsman bin Affan Ward, it can be concluded that there are significant differences between the manual recording system and the spreadsheet-based digital reporting system. Various aspects, such as ease of use, time efficiency, data security, and

satisfaction levels, indicate that the digital system is superior. The following table presents a systematic comparison between the two methods based on respondents' assessments:

Comparison Table of Manual Record Keeping and Digital Spreadsheets

No	Rated aspect	Manual Recording	Digital Spreadsheet
1	Recording Difficulties	50% of respondents found it quite difficult	More practical and easier to use
2	Risk of Data Loss	57.2% said data was easily lost	92.8% felt data was easy to track and secure
3	Delay in Compiling Reports	64.2% of respondents have experienced delays	78.6% felt reporting time was more efficient
4	Trust in Accuracy	42.9% have less confidence in the accuracy of manual reports	More trusted because it is systematic and accurate
5	The Need for a More Practical System	Considered less efficient	92.8% stated that they needed a practical and fast system.
6	Habits of Using	Used daily even though it is burdensome	35.7% are not used to it, but are starting to adjust
7	Ease of Use	Difficult and potentially incorrect input	85.7% said it was easier to use
8	Time Efficiency	Slower and more repetitive process	78.6% felt it was faster and saved time
9	Tracking & Data Storage	Difficult to track, archives can be lost	92.8% said tracking and storage was very easy
10	Display and Interface	Generally handwritten, unattractive appearance	85.7% rated the display as clear and user-friendly.
11	Satisfaction Level	Not satisfactory, many obstacles	78.6% satisfied, 14.3% neutral
12	Willingness to Use in the Future	Not recommended for long term	92.9% are willing to use it continuously

Based on the evaluation results, it can be concluded that the digital reporting system was well-received by nurse users. While there were some initial challenges in understanding the spreadsheet features, the brief training provided was quite helpful in overcoming these obstacles.

DISCUSSION

The implementation of a spreadsheet-based digital daily reporting system demonstrated improved efficiency, recording accuracy, and user satisfaction. This implementation also demonstrated a comparison of reporting times, with reports requiring more than 20 minutes, compared to spreadsheet-based reporting requiring less than 10 minutes. These findings align with research by Shafiee et al. (2022), which demonstrated that the development of an electronic nursing documentation system significantly improves recording efficiency and the quality of nursing care. In the context of time efficiency, most nurses in this study stated that reporting was faster than manual methods, supporting the opinion of Hermawan et al. (2024) who stated that electronic systems can reduce administrative burdens and speed up workflow. These results also confirm that simple innovations such as spreadsheets can answer documentation needs without requiring a complex system, as explained by Putri (2023) that a user-friendly system greatly influences the success of digital reporting in inpatient rooms. However, challenges include limited equipment and internet connectivity in some hospitals. Proposed long-term solutions

include procuring supporting equipment and providing regular training for new nurses to ensure continuous system adaptation. Overall, this system can serve as a model for simple yet effective nursing reporting innovations, replicating them in other wards or similar hospitals. This innovation also has the potential for further development by integrating the system into a mobile app or patient management dashboard to facilitate supervision and rapid clinical decision-making.

CONCLUSION

The research and design of this spreadsheet-based daily nursing reporting system successfully addressed various manual documentation issues, such as slow recording, high risk of input errors, and limited access to real-time information. Using Google Sheets as the primary platform enabled efficient, easily accessible digital recording and supported collaborative work between nurses across shifts. The developed template included standard structures such as patient identity, diagnosis, daily nursing actions, and the attending physician, and utilized date formats to expedite data input and validation. The one-week implementation of this system in the Utsman bin Affan ward of Pati Islamic Hospital (RSI) showed positive results. The use of spreadsheets has been shown to improve record-keeping efficiency, reduce errors, and increase nurse user satisfaction. Based on the results of the evaluation questionnaire, the system is easy to understand and use, even for nurses with no experience using digital platforms, due to its simple and systematic interface.

Overall, this innovation has met the project's primary goal of creating a simple, efficient, and applicable nursing documentation system in hospitals with limited technology. This template simplifies the recording process, accelerates information access, reduces data input errors, and supports real-time clinical decision-making. These results demonstrate that the digital reporting system has significant potential for widespread adoption as part of the transformation of nursing services. This project resulted in a practical and effective design, suitable for use in a hospital environment with limited budget and digital infrastructure. With further development, this system could serve as an initial model for digitizing nursing documentation that could be implemented on a larger scale, both in other hospitals and in more complex service units.

SUGGESTION

Based on the successful implementation of this digital reporting system, it is recommended that hospitals provide regular training and user guides to nurses and other medical personnel. This aims to accelerate system adoption, improve record-keeping efficiency, and reduce administrative burdens, allowing nurses to focus more on direct patient care. Hospital management is also expected to integrate this system into the Hospital Management Information System (SIMRS), so that its benefits can reach various service aspects, such as service quality evaluation, internal reporting, and data-driven decision-making. Infrastructure support, such as a stable internet connection and adequate work equipment, is crucial for maintaining the system's accuracy and real-time accessibility. This system needs to be expanded to other rooms or service units, such as intensive care units or emergency departments. This way, the benefits of work efficiency, ease of access, and data security can be felt evenly across all hospital units. Trials in other units can also serve as a basis for evaluating future improvements to the system's features and performance. For further development, it is recommended to add features such as a visual dashboard, patient progress charts, and an automated notification system. These features will not only strengthen documentation but also support faster and more accurate medical decision-making. With these suggestions, it is hoped that this reporting system can continue to develop into a vital part of the digitization of efficient, modern, and quality-oriented nursing services.

REFERENCES

Abd-Elmohsen, SA, Albzia, AA, Elgamil, MM, & Albarqy, IAH (2024). The Effectiveness of Electronic Nursing Documentation in Improving the Quality of Care of Hospitalized Patients. Bahrain Medical Bulletin, 46(3), 2243–2248. https://shorturl.at/P2GxI

Apriliyani, S. (2021). The use of electronic medical records to support the effectiveness of outpatient registration at Dr. Ranny's Clinic. Cerdika: Indonesian Scientific Journal, 1(10), 1399-1410. https://nlink.at/VCAm

Chand, S., & Sarin, J. (2019). Impact of Electronic Nursing Documentation (End) In Terms of Quality of Nursing Documentation. Journal of Nursing and Health Science, 8(3), 25–32. https://shorturl.at/DnbwT

Hapsari, CM (2014). Legal Study of the Use of Electronic Medical Records in Hospitals. Islamic University of Indonesia. https://nlink.at/tesis

Hermawan, PP, Abdussalaam, F., & Sari, I. (2024). Design of an Electronic Medical Record Data Processing Information System to Support Outpatient Reporting Management. Indonesian Journal of Information and Communication Management, 5(3), 2158–2169. https://doi.org/10.35870/jimik.v5i3.847

Horton, A., & Roser, S. (2021). Evaluating Nurse Data Navigation Training Program: A Quality Improvement Project. Studies in Health Technology and Informatics, 284, 179–180. https://doi.org/10.3233/SHTI210697

Inka Rahmawati, Falaah Abdussalaam, & Irda Sari. (2023). Electronic Medical Records Governance in Outpatient Installation Reporting Management Using the Waterfall Method. Decode: Journal of Information Technology Education, 3(2), 310–321. https://shorturl.at/MIreT

Lastanti, HS, Oktaviani, AA, & Besnedi, B. (2023). Improving the Implementation of Spreadsheet Concepts and Practices for Business Reporting for Higher Education Education Personnel. Indonesian Journal of Community Service, 4(3), 2580-2586. https://nlink.at/CjqF

Mahfud, Hartono, Achmad, S., & Anantanyu, S. (2025). Improving Indonesian nurse performance on nursing care documentation: A mixed-methods study of a culturally tailored hybrid roleplay intervention. 1–18. https://doi.org/10.52225/narra.v5i1.1488

Permana, JE, Gunawan, E., & Abdussalaam, F. (2022). Designing an Information System for Inpatient Medical Record Document Provision Time Forms Using Visual Studio 2010. JTIK Journal (Journal of Information and Communication Technology), 6(3), 453–458. https://doi.org/10.35870/jtik.v6i3.481

Putri, FA (2023). Creating a Daily Report of Incomplete Medical Records (KLPCM) Using Google Spreadsheet. AMMA: Journal of Community Service, 2(5), 504–508. https://www.journal.mediapublikasi.id/index.php/amma/article/view/3035

Raden, M. (2022). Comparative Analysis Between Electronic and Manual Medical Records. Journal of Research and Community Service, 1(9), 595. https://doi.org/10.59141/comserva.v1i9.67

Shafiee, M., Shanbehzadeh, M., Nassari, Z., & Kazemi-Arpanahi, H. (2022). Development and evaluation of an electronic nursing documentation system. BMC Nursing, 21(1), 1–12. https://doi.org/10.1186/s12912-021-00790-1

Sumantri, DN, & Yunengsih, Y. (2024). Analysis of the outpatient medical record reporting system in the pediatric polyclinic at Hospital X: A qualitative study. 18(9), 1111–1122. https://doi.org/https://doi.org/10.33024/hjk.v18i9.407

Wandira, DD, Nurbayani, R., & Abdussalaam, F. (2021). Designing an Outpatient Medical Records Information System Using Microsoft Visual Studio 2010 at the Bona Mitra Keluarga Clinic in Bojongsoang. Explore: Journal of Information Systems and Telematics, 12(2), 224. https://shorturl.at/9zwfH

Wiradinata, I., & Annisa. (2024). Utilization of Google Spreadsheet Technology to Improve Cost Control Oversight of Construction Service MSMEs to Achieve Golden Indonesia 2045. RESTIKOM Journal: Research in Informatics and Computer Engineering, 6(1), 122–129. https://doi.org/10.52005/restikom.v6i1.272

Wirajaya M, DK (2020). Analysis of Dharma Kerti Tabanan Hospital's Readiness to Implement Electronic Medical Records. Journal of Vocational Health, 5(1), 1. https://doi.org/10.22146/jkesvo.53017