

Preliminary Study on the Development of Web-based Electronic Nursing Care to Improve the Quality of Nursing Care for Nursing Students

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Abstrak

Latar Belakang: Asuhan keperawatan berbasis standar (SDKI, SIKI, SLKI) menuntut dokumentasi yang akurat dan sistematis. Namun, mahasiswa keperawatan masih menghadapi tantangan dalam penyusunan asuhan keperawatan secara manual. Pengembangan sistem *Web-based Electronic Nursing Care* (ENC) diharapkan dapat meningkatkan kualitas dan efisiensi dokumentasi keperawatan. **Tujuan:** Mengidentifikasi pengetahuan mahasiswa, kualitas asuhan keperawatan yang disusun, serta kebutuhan akan ENC berbasis web. **Metode:** Penelitian deskriptif kuantitatif dengan *accidental sampling* terhadap 10 mahasiswa semester akhir keperawatan. Data dikumpulkan melalui kuesioner dan observasi terhadap asuhan keperawatan berdasarkan SDKI-SIKI-SLKI. **Hasil:** Sebanyak 50% mahasiswa memiliki pengetahuan rendah, dan 70% menyusun asuhan keperawatan dengan kualitas rendah. Sebanyak 90% responden menyatakan kebutuhan terhadap sistem ENC berbasis web. **Kesimpulan:** Mayoritas mahasiswa masih memiliki pengetahuan dan kualitas askep yang rendah, namun menunjukkan antusiasme tinggi terhadap penggunaan sistem ENC. Pengembangan sistem berbasis web sangat direkomendasikan. Penelitian selanjutnya dengan sample yang lebih besar dibutuhkan untuk mengevaluasi efek dari system ENC terhadap luaran pembelajaran klinis.

Kata Kunci: Asuhan Keperawatan; Dokumentasi Keperawatan Elektronik; Pengetahuan; Kualitas Asuhan Keperawatan

Abstract

Background: Standards-based nursing care (SDKI, SIKI, SLKI) requires accurate and systematic documentation. However, nursing students still encounter challenges in manually preparing nursing care. The development of a web-based Electronic Nursing Care (ENC) system is expected to enhance the quality and efficiency of nursing documentation. **Objective:** To assess students' knowledge, the quality of nursing care they prepare, and the need for a web-based ENC. **Methods:** Quantitative descriptive research with accidental sampling of 10 final semester nursing students. Data were collected through questionnaires and observation of nursing care, in accordance with the SDKI-SIKI-SLKI guidelines. **Results:** 50% of students demonstrated low knowledge, and 70% arranged nursing care of low quality. As many as 90% of respondents expressed the need for a web-based ENC system. **Conclusion:** Although most students still demonstrate low knowledge and poor quality in nursing care planning, they show a strong interest in utilizing the ENC system. The development of a web-based system is highly recommended. Future studies with larger and diverse samples are needed to evaluate the impact of ENC systems on clinical learning outcomes.

Keywords: Electronic Nursing Documentation; Knowledge; Nursing Care Plan; Quality of Nursing Care Plan

Introduction

The development of information technology has had a significant impact in various fields, including healthcare and nursing education. Amid the increasingly complex and data-driven demands of healthcare, accurate, systematic, and compliant nursing documentation is becoming an essential part of professional nursing practice. One approach currently being developed to support this is web-based Electronic Nursing Care (ENC) (Puspitaningrum et al., 2023).

Nursing students, as prospective professional health workers, are expected to master nursing care plan (NCP) skills according to national standards, such as SDKI, SIKI, SLKI, and SPO PPNI. However, in practice, obstacles are still encountered in the form of limited documentation media, a low understanding of the concept of standardized nursing care, and a lack of practical assistance. Paper-based documentation is often inefficient, unsystematic, and complex in terms of quality assessment and lecturer supervision (Syabanasyah & Solehudin, 2024).

Previous studies have demonstrated that the utilization of nursing information systems can enhance accuracy, expedite documentation, and facilitate data-driven decision-making. Web-based ENC not only provides convenience in preparing NCP but also encourages independent learning, collaboration among students, and real-time monitoring and evaluation by lecturers (Mulyani et al., 2019; Puspitaningrum et al., 2023).

The use of the ENC system also increases the accuracy of nursing student documentation. Traditional paper-based methods can be prone to errors, such as illegible handwriting, incomplete notes, and difficulty maintaining consistency. Instead, electronic systems mitigate these risks by providing structured templates, automated alerts, and real-time access to patient information. This ensures that nursing students keep accurate and comprehensive records, essential for providing safe and effective care (Munangatire & Nambuli, 2022a).

Additionally, the ENC system facilitates improved communication and collaboration among nursing students and instructors. The ENC system allows students to easily share patient information, treatment plans, and feedback with their peers and educators. This enhanced communication fosters a collaborative learning environment where students can learn from each other and receive timely instructor guidance. Such collaboration is essential in developing critical thinking and problem-solving skills, which are crucial for providing high-quality nursing care (Potter & Perry, 2015).

Another significant advantage of the ENC system in nursing education is the ability to track and assess student progress. Educators can monitor student documentation practices, decision-making processes, and patient care outcomes through electronic records. This data-driven approach enables personalized feedback and targeted interventions, allowing students to improve their skills and competencies continually. The ability to identify areas of strength and weakness ensures that students receive the support they need to excel in their clinical practice (Puspitaningrum et al., 2023; Risdianty & Wijayanti, 2019).

With the existence of a web-based ENC system, students are expected to be able to provide nursing care that is more accurate, relevant, and tailored to the needs of patients (Az & Sonia, 2021). However, before further development, an initial study is needed to identify the extent of students' needs for this system, their level of knowledge in compiling NCP, and the quality of nursing care they have produced.

Method

This research employs a quantitative descriptive approach, utilizing student interviews and observation of nursing care reports. This study aims to determine the knowledge of nursing students in preparing nursing care, assess the quality of nursing care prepared by nursing students, and identify the needs of nursing students related to the use of web-based Electronic Nursing Care systems in the learning process and nursing practice. This research was conducted from October 2 to November 2, 2024, with 10 students from the nursing study program. Samples are taken based on accidental sampling. Accidental sampling was employed because this study was exploratory. The research instruments used included 1) a questionnaire of respondent characteristics; 2) a questionnaire of respondents' level of knowledge; and 3) checklist sheets to assess the quality of nursing care. Data analysis utilized the mean (SD) for numerical data and the proportion (%) for categorical data, which were then processed using the statistical computer software SPSS version 23.

Result

Table 6.1 Characteristics of Respondents (N=10)

Variable	Frequency	%
Gender		
Man	3	30%
Woman	7	70%
Semester		
Seven	8	80%
Eight	2	20%

Based on Table 6.1, the majority of respondents are female, with seven respondents (70%). And the majority of respondents are pursuing undergraduate education in their seventh semester, with as many as eight respondents (80%).

Table 6.2 Nursing Student Knowledge and Nursing Care Preparation (N=10)

Variable	Frequency	%
Knowledge		
Low	5	50%
Enough	3	30%
High	2	20%

Table 6.2 indicates that the majority of respondents have a limited understanding of nursing care, with five respondents (50%).

Table 6.3 Quality of nursing care compiled by nursing students (N=10)

Variable	Frequency	%
NCP Quality		
Low	7	70%
Enough	2	20%

High	1	10%
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Table 6.4 shows that the quality of nursing care, as observed by nursing students in their prepared nursing care, is at a low level, with seven respondents (70%).

Table 6.5 Web-based Electronic Nursing Care Needs based on respondents' perceptions (N=10)

Variable	Frequency	%
Need	9	90%
No need	1	10%

Table 6.5 shows that the majority of respondents, as many as 9, said they needed web-based Electronic Nursing Care.

Discussion

The study's results indicate that nursing students continue to encounter challenges in comprehending and applying the nursing process in its entirety and accordance with established standards. The low level of knowledge among students (50% in the low category) indicates that the cognitive aspects and skills required for compiling the NCP are not optimal, even though they are in the final semester.

This can be influenced by the lack of integration of technology in learning, limited access to nursing references and standards, and low intensity of direct practice in compiling NCP. This condition aligns with the findings of Munangatire and Nambuli, who identified that students often struggle to connect theory to clinical practice without the support of digital-based aids (Munangatire & Nambuli, 2022b).

In addition, the quality of the NCP compiled also reflects this, with 70% of students producing low-quality NCPs. Irregularities in the documentation structure, errors in nursing diagnoses, and inconsistencies in interventions are frequent problems. A web-based ENC that refers to SDKI-SIKI-SLKI will be very helpful in standardizing the process (Kozier & Snyder, 2011; PPNI, 2019; Prasetyanto & Sukihananto, 2019).

The positive response to the development of this system (90% stated that they need a web-based ENC) shows that students are already aware of the importance of digital transformation in nursing education. The study by Mufron et al corroborates that integrating technology into the learning process increases learning motivation, efficiency, and accuracy in clinical documentation (Mufron et al., 2024).

Previous studies suggest that the ENC system may improve several key dimensions (Rohmani et al., 2024):

Improved Structure and Standardization. ENC systems typically integrate national or institutional standards such as SDKI, SIKI, and SLKI. By providing structured templates and auto-guided fields, these systems help students systematically organize their assessments, diagnoses, interventions, and evaluations. This not only improves the accuracy and consistency of NCPs but also reduces errors of omission or redundancy that are common in paper-based documentation.

Supporting Evidence. Studies by Puspitaningrum et al. demonstrate that electronic documentation tools enhance adherence to standardized care protocols and improve the completeness and accuracy of documentation among students and novice nurses.

Enhanced Learning and Clinical Decision-Making. Web-based ENC include clinical decision support tools such as dropdowns, suggested diagnoses based on inputted data, and evidence-based intervention libraries. These features enhance clinical reasoning and help students make more accurate and logical connections between patient assessment and care planning. As students interact with these decision aids, they learn to think critically and make decisions based on clinical data, which improves the cognitive quality of their NCPs.

Therefore, the development of web-based ENCs should be initiated immediately and tested in the context of nursing education in Indonesia. In addition to improving the quality of aspects, this system also encourages learning independence and students' readiness to face nursing information systems in the workforce.

Conclusion

Based on the research results, it can be concluded that the majority of final-semester nursing students still possess a low level of knowledge in arranging nursing care. This also has an impact on the quality of nursing care that is prepared, where most students produce low-quality NCP. These findings indicate that gaps still exist in nursing practice learning, particularly in understanding and implementing Nursing Care Plan documentation standards based on SDKI, SIKI, and SLKI. Furthermore, the majority of respondents stated that they need an *Electronic Nursing Care web-based system*, indicating a real need for technology-based learning media. The development of this system is expected to help students prepare for ASKEP more systematically, accurately, and by established standards, while also supporting the independent learning process and the digitization of nursing education in the current era.

The limitation of this study is that it is still an initial study with a limited number of respondents, so the results cannot be generalized widely. Additionally, the measurement of knowledge and quality of NCP remains descriptive, lacking further testing on the effectiveness of the designed electronic media. This research has not yet reached the implementation stage of *web-based* systems, so the direct impact of its use cannot be measured.

Bibliography

- Az, I. S. O., & Sonia, D. (2021). Pengaruh Penulisan Formulir Catatan Perkembangan Pasien Terintegrasi Terhadap MIRM 13.3 di Kota Bandung. *Junal Ilmiah Manusia dan Kesehatan*, 4(3), 425–432.
- Kozier, E. B., & Snyder. (2011). *Buku Ajar Fundamental Keperawatan: Konsep, Proses, & Praktik* (7 ed., Vol. 1). EGC.
- Mufron, A., Maharjan, K., Mark, E., & Xavier, E. (2024). The Impact of Technology Integration in Learning on Increasing Student Engagement. *Journal Emerging Technologies in Education*, 2(2), 14. <https://doi.org/10.70177/jete.v2i3.1070>
- Mulyani, I., Zamzami, E. M., & Zendrato, N. (2019). Pengaruh sistem teknologi informasi pada manajemen data dan informasi dalam layanan keperawatan: Literature Review. *Inspiration: Jurnal Teknologi Informasi dan Komunikasi*, 9(2), 137–142.
- Munangathire, T., & Nambuli, S. M. T. (2022a). Nursing students' perceptions and experiences of utilising the nursing process at a university teaching hospital in Namibia.

- International Journal of Africa Nursing Sciences*, 16, 1–7.
<https://doi.org/10.1016/j.ijans.2021.100393>
- Munangatire, T., & Nambuli, S. M. T. (2022b). Nursing students' perceptions and experiences of utilising the nursing process at a university teaching hospital in Namibia. *International Journal of Africa Nursing Sciences*, 16, 100393.
<https://doi.org/https://doi.org/10.1016/j.ijans.2021.100393>
- Potter, & Perry. (2015). *Fundamental of Nursing Vol 1 & 2* (Vol. 1). Elsevier.
- PPNI. (2019). *Standar Luaran Keperawatan Indonesia (SLKI)*. DPP.
- Prasetyanto, D., & Sukihananto, S. (2019). Penerapan Sistem Informasi Keperawatan Virtually Nursing Technologies in Nursing Education: Sebuah Tinjauan Literatur. *Jurnal Penelitian Kesehatan" SUARA FORIKES"(Journal of Health Research" Forikes Voice"*, 10(2), 135–138.
- Puspitaningrum, I., Supriatun, E., & Putri, S. D. (2023). Dokumentasi keperawatan berbasis elektronik meningkatkan keselamatan pasien dan mutu asuhan keperawatan. *DIAGNOSA: Jurnal Ilmu Kesehatan dan Keperawatan*, 1(3), 255–267.
- Risdianty, N., & Wijayanti, C. D. (2019). Evaluasi penerimaan sistem teknologi rekam medik elektronik dalam keperawatan. *Carolus Journal of Nursing*, 2(1), 28–36.
- Rohmani, N., Zulkarnaen, D., & Cahyo, P. W. (2024). Web-Based Nursing Care Documentation for Students to Support Online Learning. *International Review of Research in Open and Distributed Learning*, 25(4), 14.
<https://doi.org/10.19173/irrodl.v25i4.7758>
- Syabanasyah, I., & Solehudin. (2024). Penerapan Metode Asuhan Keperawatan Dalam Catatan Perkembangan Pasien Terintegrasi. *EKOMA : Jurnal Ekonomi, Manajemen, Akuntansi*, 3(4), 817–825.