e-ISSN: 2987-0836 DOI: https://doi.org/10.59585/ijhs

Publish: Association of Indonesian Teachers and Lecturers
International Journal of Health Sciences (IJHS)
Journal Homepage: https://jurnal.agdosi.com/index.php/IJHS/index
Volume 4 | Number 2 | June 2026 |

Nurses' Perception Of The Implementation Of Computer-Based Nursing Information Systems In Hospitals

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ABSTRACT

Advances in information technology have significantly transformed healthcare services , including nursing Computer -Based Practice Nursing Information Systems (CBNIS) are innovations designed to improve documentation efficiency , communication , and patient data management . Nurses ' perceptions of these systems play an important role in determining successful implementation . This study aimed to identify nurses ' perceptions regarding the implementation of Computer-Based Nursing Information Systems in hospitals .

This study employed a quantitative approach with a cross-sectional analytical design . The sample consisted of 50 nurses working in inpatient wards and selected through purposive sampling. Data were collected using nurse perception questionnaires and observation sheets regarding system utilization . Data were analyzed using univariate and bivariate analyses with the Chi- Square test .

The results showed that 70% of respondents had positive perceptions of the implementation of computer-based nursing information systems . Most nurses reported that the system improved documentation efficiency , facilitated access to patient information , and enhanced the quality of nursing care . Statistical analysis revealed a p- value of 0.001 ($p < 0.05$), indicating a significant relationship between nurses ' perceptions and the effectiveness of system implementation.

Keywords : Nursing Information Systems, Information Technology, Nurse Perception , Nursing Documentation , Hospital

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1. Introduction

Advances in information and communication technology have brought about significant changes in the modern healthcare system. Hospitals, as healthcare institutions, are required to improve the quality of their services by utilizing technology that supports effectiveness and efficiency. One example of this technology utilization is the implementation of a Computer-Based Nursing Information System (CBIS).

A Computer-Based Nursing Information System (CNI) is a system used to electronically support the assessment, planning, implementation, evaluation, documentation, and reporting of nursing care. This system enables faster, more accurate patient data management and integration with the hospital's information system.

Nurses are the primary users of nursing information systems, so their perceptions of the system significantly influence the success of implementation. Positive perceptions can increase technology acceptance, system compliance, and the quality of nursing documentation. Conversely, negative perceptions can hinder technology implementation in the workplace.

Implementing a nursing information system offers numerous benefits, such as reducing recording errors, improving access to patient information, accelerating the documentation process, and supporting clinical decision-making. However, in practice, several obstacles remain, such as limited training, a lack of technological skills, computer network issues, and resistance to work system changes.

According to the International Council of Nurses , the use of information technology in nursing can improve patient safety, service efficiency, and the quality of nursing documentation if supported by good user competence and acceptance.

Based on this description, this study was conducted to determine nurses' perceptions regarding the implementation of Computer-Based Nursing Information Systems in hospitals.

2. Research Methods

This study used a quantitative approach with a descriptive analytical design using a cross-sectional method . This study was conducted to determine the relationship between nurses' perceptions and the effectiveness of the implementation of a computer-based nursing information system at a single measurement point. This design was chosen because it can provide an overview of the level of nurses' acceptance of the information system used and its impact on the implementation of nursing documentation and services in the hospital.

a. Location and Time of Research

The study was conducted in the hospital inpatient ward during the period January–April 2025. The selection of the research location was based on the use of a computer-based nursing information system that has been implemented in the documentation process and daily nursing services.

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b. Population and Sample

The population in this study was all nurses working in the hospital's inpatient wards. The study sample consisted of 50 nurses selected using purposive sampling , which involves taking samples based on specific criteria aligned with the research objectives.

Inclusion criteria included nurses who had been actively working for at least one year, used nursing information systems in their daily practice, and were willing to participate in the study. Nurses who were on leave or inactive during the study period were excluded from the study.

c. Research Variables

The variables studied consist of:

1) Independent Variables

Nurses' perceptions of computer-based nursing information systems, including ease of use of the system, system benefits, speed of data access, information security, and system support for nursing work.

2) Dependent Variable

The effectiveness of the implementation of a computer-based nursing information system, which includes the quality of nursing documentation, work efficiency, accuracy of patient data recording, ease of access to information, and smooth nursing services.

d. Research Instruments

The instruments used in this study include:

1) **Nurse perception questionnaire** , to measure the level of acceptance and views of respondents towards nursing information systems.
2) **Observation sheet for the use of nursing information systems** , to assess the implementation of the system in daily service activities.
3) **Documentation of operational standards for the use of information systems** , as supporting data related to system implementation in hospitals.

The research instrument has undergone validity and reliability tests to ensure the accuracy and consistency of the measurement results.

e. Data collection technique

Data collection is carried out in several stages, namely:

1) Distribution of questionnaires to all respondents who meet the research criteria.
2) Direct observation of the use of nursing information systems in the documentation and patient care process.
3) Review documents related to the implementation of nursing information systems and applicable standard operating procedures.
4) Collection, examination and verification of data to ensure the completeness and accuracy of the information obtained.

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f. Data processing

The collected data is then processed through the following stages:

1) **Editing** , to check the completeness of respondents' answers.
2) **Coding** , namely assigning a code to each research variable.
3) **Data entry** , namely entering data into a computer program.
4) **Tabulating** , namely arranging data in the form of frequency distribution tables and cross tabulations.

g. Data analysis

Data analysis was carried out using the SPSS program with the following stages:

1) **Univariate Analysis**

Used to describe the characteristics of respondents, nurses' perceptions, and the effectiveness of nursing information system implementation in the form of frequencies, percentages, tables, and narratives.

2) **Bivariate Analysis**

The Chi- Square test was conducted at a 95% confidence level ($\alpha = 0.05$) to determine the relationship between nurses' perceptions and the effectiveness of computer-based nursing information system implementation. The decision-making criteria were:

- *p*- value < 0.05 indicates that there is a significant relationship between nurses' perceptions and the effectiveness of nursing information system implementation.
- *p*- value > 0.05 indicates that there is no significant relationship between the two research variables.

Through this analysis, it can be seen to what extent nurses' perceptions play a role in supporting the successful implementation of computer-based nursing information systems and their contribution to improving the quality of nursing services in hospitals.

3. Research Results And Discussion

a. Results

Table 1. Respondent Characteristics Based on Gender

Gender	Frequency	Percentage
Man	18	36%
Woman	32	64%
Total	50	100%

The majority of respondents were female, 32 people (64%), while 18 people (36%) were male.

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Table 2. Nurses' Perceptions of Nursing Information Systems

Category	Frequency	Percentage
Positive	35	70%
Negative	15	30%
Total	50	100%

Thirty-five respondents (70%) had a positive perception of the implementation of a computer-based nursing information system. This indicates that most nurses accept the use of information technology in nursing practice.

Table 3. Effectiveness of Nursing Information System Implementation

Category	Frequency	Percentage
Good	38	76%
Enough	9	18%
Not enough	3	6%
Total	50	100%

Most respondents assessed that the implementation of the nursing information system was in the good category, as many as 38 people (76%).

Table 4. Relationship between Nurses' Perceptions and the Effectiveness of Nursing Information System Implementation

Nurses' Perception	Good Implementation	Implementation Sufficient/Insufficient	Total	*p- value*
Positive	31	4	35	0.001
Negative	7	8	15	
Total	38	12	50	

The analysis results showed that nurses with positive perceptions tended to rate the implementation of the nursing information system better than nurses with negative perceptions. A *p*-value of 0.001 indicated a significant relationship between the two variables.

b. Discussion

The research results show that most nurses have a positive perception of the implementation of the Computer-Based Nursing Information System. This positive perception relates to the system's ease of use, speed of patient data access, improved documentation quality, and work efficiency.

Implementing a nursing information system allows for electronic recording of nursing care, reducing the risk of data loss and documentation errors. Furthermore, this system facilitates coordination between healthcare professionals by providing quick and accurate access to patient information.

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Nurses with positive perceptions tend to be more receptive to technological changes and more actively utilize systems in their daily practice. This impacts the quality of documentation and the effectiveness of nursing services.

Some respondents still hold negative perceptions, generally due to limited computer skills, lack of training, and technical challenges such as network disruptions or slow systems. Therefore, hospital management support in the form of training and guidance on system use is essential.

The results of this study indicate that the success of the implementation of a nursing information system is not only determined by the quality of the technology used, but also by the acceptance and readiness of users to utilize the technology.

4. Conclusion And Suggestions

a. Conclusion

Most nurses have a positive perception of the implementation of a Computer-Based Nursing Information System in hospitals. There is a significant relationship between nurses' perceptions and the effectiveness of the nursing information system implementation ($p = 0.001$). Positive perceptions contribute to improving the quality of nursing documentation and services.

b. Suggestion

1) Hospitals need to increase training in the use of nursing information systems for all nurses.
2) Information system development should be tailored to user needs to make it easier to use.
3) Hospital management needs to provide adequate technical support to overcome obstacles to system use.
4) Nurses are expected to continue to improve their information technology competencies to support quality nursing services.
5) Further research could use a larger sample size and involve various hospitals to obtain broader results.

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