Research Paper

Computer Literacy and Utilization of Health Information Technology in Nurses' Documentation and Plan of Care

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ABSTRACT

Background: Integrating health information technology (HIT) in health care is essential for enhancing the quality, efficiency, and safety of patient care, particularly in nursing documentation and care planning. Effective use of HIT requires a strong foundation in computer literacy, yet the impact of computer literacy on HIT utilization in nursing has remained underexplored. This study examines the association between computer literacy and the utilization of HIT in nursing documentation and care planning among staff nurses in a tertiary hospital. It seeks to determine whether higher levels of computer literacy correlate with more effective use of HIT, potentially informing future training programs.

Methods: A descriptive correlational design was employed, focusing on staff nurses at a tertiary hospital in Lanao del Sur, Philippines, in 2023. A total of 128 nurses, selected through simple random sampling, participated in the study. Data were collected using a structured researcher-made instrument that assessed computer literacy and HIT utilization. The analysis included descriptive statistics such as frequencies, percentage distributions, Mean±SD, along with inferential statistics, specifically Pearson r correlation coefficient, conducted using SPSS software, version 25 at a 0.05 significance level.

Results: The study found that nurses exhibited high proficiency in basic computer skills, particularly in Microsoft Word (85%) and basic concepts (78%), but lower proficiency in troubleshooting and Microsoft PowerPoint. Significant positive correlations were found between computer literacy and HIT utilization for documentation in terms of basic concepts (r=0.901; P=0.027), Microsoft Word (r=0.919; P=0.026), Microsoft Excel (r=0.912; P=0.038), Microsoft PowerPoint (r=0.908; P=0.034), and basic troubleshooting (r=0.895; P=0.036). However, no significant correlations were observed between computer literacy and HIT utilization for care planning, with basic concepts, Microsoft Word, Microsoft Excel, Microsoft PowerPoint, and basic troubleshooting (P>0.05).

Conclusion: Computer literacy plays a critical role in effectively utilizing HIT for nursing documentation, but its influence on care planning is less pronounced. The findings suggest that targeted training programs should enhance basic and advanced computer skills to optimize HIT utilization, ultimately improving patient care outcomes in the digital age.

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Highlights

- Strong computer literacy, especially in basic skills and Microsoft Office, significantly enhances nurses' efficiency in using health information technology (HIT) for documentation.

- The nurses showed proficiency in managing patient data securely but had lower troubleshooting and template customization skills.

- While computer literacy boosts HIT documentation, additional skills are needed for effective care planning, suggesting targeted training could improve HIT use in complex tasks.

Plain Language Summary

This study explored how nurses' computer skills impact their use of digital health information technology (HIT) for recording patient information and planning care. Nurses with strong computer skills used HIT effectively for documenting patient data but found troubleshooting and customization challenging. Interestingly, computer skills did not significantly affect how nurses used HIT for planning care, suggesting that additional training or clinical experience may be needed. The study underscores the importance of advanced computer training to enhance HIT use in complex tasks, ultimately supporting better patient outcomes.

Introduction

Health information technology (HIT) refers to the electronic systems and tools that store, share, and analyze health information. In the health care sector, HIT encompasses a range of technologies, including electronic health records (EHRs), telemedicine, health information exchange, and clinical decision support systems (CDSS) (Dastani & Atarodi, 2022). Among these, HIT is used in nursing documentation and care planning, which is critical, as these processes form the foundation for patient outcomes (Nguyen et al., 2021).

Studies show that HIT facilitates better documentation practices by streamlining the collection and management of patient information. For example, adopting EHRs reduces the fragmentation of medical records across multiple health care facilities, thereby enhancing the continuity of patient care (Nguyen et al., 2021). This capability became increasingly crucial as health care systems rely more on electronic records and other digital tools. In turn, the ability of nursing professionals to effectively utilize these technologies was essential for ensuring optimal patient care (Kleib et al., 2021; Wynn et al., 2023).

HIT also proved valuable in care planning by improving data accessibility and analysis capabilities, enabling health care providers to develop more comprehensive and personalized care plans (Brown et al., 2020). For instance, integrating CDSS within EHRs allows clinicians to receive real-time recommendations based on patient data, helping them make informed decisions regarding treatment options and care strategies (Nguyen et al., 2021). This integration is particularly beneficial in managing chronic conditions, where continuous monitoring and adjustments to care plans are essential for achieving optimal patient outcomes (Kidenda et al., 2022; Mohammadnejad et al., 2023).

However, the successful implementation of HIT in nursing practice often depends on the computer literacy of individual nurses (Brown et al., 2020). Computer literacy is necessary for navigating complex HIT systems. Research indicates that nurses with higher levels of computer literacy document patient information more accurately, develop and implement care plans more effectively, and use HIT systems more efficiently (Brown et al., 2020; Wynn et al., 2023). Although previous studies have highlighted the general benefits of HIT in nursing (Amiri et al., 2020; Pangandaman, 2019), relatively few studies have examined the specific role of computer literacy in maximizing these benefits (Altmiller & Pepe, 2022; Brown et al., 2020; Mohammadnejad et al., 2023).

Despite the importance of computer literacy, a significant gap has remained in understanding how this competency directly affects HIT use in nursing documentation and care planning, especially within tertiary hospitals (Brown et al., 2020). This study aims to address this gap by exploring the association between computer literacy and HIT utilization in nursing doc-

umentation and care planning among staff nurses in a tertiary hospital. By investigating this relationship, the research sought to determine whether higher levels of computer literacy correlated with more effective HIT use, which could inform future training and development programs to enhance nurses' competencies. Understanding this association was essential for optimizing HIT system deployment and improving the overall quality of nursing care in the digital age.

Materials and Methods

Design, setting, and sample

The research utilized a descriptive correlational design. It is a research method used to identify and describe the relationship between two or more variables without manipulating them (Picazo-Sánchez et al., 2022). It is appropriate to examine the association between computer literacy and the utilization of HIT in nursing documentation and care planning among staff nurses.

The study was conducted in 2023 at Amai Pakpak Medical Center, a tertiary hospital in Lanao del Sur, Philippines. It is a performance governance system initiated by a government health facility with 438 bed capacity. The inpatient units include general medical and surgical wards, a maternity ward, pediatric services, and specialized units such as intensive care and emergency services. As a critical regional facility, its outpatient departments offer primary care, specialty clinics, and services in family health, maternal and child care, and mental health. The participants were selected based on the inclusion criteria to ensure the relevance and applicability of the findings. The inclusion criteria included registered staff nurses employed in the tertiary hospital and with at least one year of experience. These nurses were required to be involved in direct patient care and documentation, ensuring that their experiences with HIT were substantial and relevant to the study.

In opposition, nurses on extended leave or those with purely administrative roles were excluded from the study to maintain the focus on those actively engaged in patient care. Additionally, nurses who had not undergone any basic computer training were excluded, as the study aimed to assess the impact of existing computer literacy on HIT utilization rather than the effects of training.

The total population of staff nurses in the hospital was 192. A sample size 128 was yielded, as calculated using Raosoft, an online sample size calculator set at 0.05 margin of error and 95% confidence level. This method ensured that the sample was representative of the population, enhancing the statistical validity of the findings. Simple random sampling was employed to select participants, ensuring that every staff nurse in the population had an equal chance of being included in the study. This approach minimized selection bias and enhanced the generalizability of the results.

Instruments

A two-part, researcher-made instrument based on the literature (Eskandari et al., 2019; Gürdaş Topkaya & Kaya, 2015) was utilized to assess the staff nurses' computer literacy and HIT usage.

The first part was a multiple-choice computer literacy exam consisting of 50 items across four primary areas of computer literacy: Basic computer concepts (10 items), proficiency in Microsoft Office Word (10 items), Excel (10 items), and PowerPoint (10 items). The final section focused on basic troubleshooting skills (10 items) to cover essential competencies for effective HIT utilization in clinical settings. Each multiple-choice question offered four answer options. The proficiency level in computer literacy with the corresponding score is shown in Table 1.

Table 1. Computer literacy proficiency scale

Proficiency Level	Description	Score
Beginner	Basic understanding of computer concepts; can perform simple tasks like turning on a computer and using a mouse.	0 - 2
Novice	Familiar with basic applications such as word processors and email; can perform simple document edits.	3 – 4
Intermediate	Can navigate the internet effectively; proficient in using office applications (e.g. creating spreadsheet presentations).	5 – 6
Proficient	Competent in using advanced features of applications (e.g. formulas in spreadsheets, advanced formatting in word processors); can troubleshoot fundamental issues.	7 – 8
Expert	Highly skilled in multiple applications; can implement software solutions, perform complex data analysis, and assist others with technical issues.	9 – 10

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The second part of the instrument focused on assessing staff nurses' utilization of HIT in two key areas: Documentation and care planning. The documentation component evaluated nurses' proficiency using HIT systems to ensure accurate and efficient patient documentation. Meanwhile, the plan of care component examines how HIT develops, documents, and executes patient care plans. Each component consisted of 10 statements assessed through a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) to determine the extent of utilization. Higher scores indicate more utilization of HIT.

The first part of the instrument, the computer literacy exam, underwent item analysis to ensure the quality and relevance of each question in assessing nurses' basic computer skills. A total of 100 respondents possessing similar characteristics to the actual respondents completed the questionnaire. Each question was analyzed based on difficulty and discrimination indexes to ensure they effectively differentiate between high and low performers and accurately reflect fundamental computer competencies. Items either too easy, too complicated or did not contribute meaningfully to the overall score were revised or removed. No items were removed except for 2 items in basic computer concepts, 3 in Microsoft Office applications, and 3 in basic troubleshooting skills.

The researcher-made, two-part instrument was validated by a panel of 5 experts specializing in nursing informatics and HIT. The expert panel included two nurse supervisors with extensive backgrounds in nursing informatics, a Dean of the College of Information Technology, a chief nurse, and an information technology (IT) specialist employed at a tertiary hospital. These experts provided insights to ensure content validity, focusing on the items' clarity, relevance, and alignment with the study's objectives. The overall content validity index (CVI) was calculated to be 0.83, which indicates that the instrument is deemed acceptable and demonstrates good content validity. A CVI score of 0.83 suggests that a substantial majority of the experts agreed on the relevance and appropriateness of the items, affirming that the instrument effectively captures the constructs it is intended to measure (Pangandaman, 2018). Reliability testing was conducted with 30 respondents to assess the instrument's internal consistency. Using Cronbach α as the reliability coefficient, the instrument achieved a score of 0.87, indicating good reliability. This high score suggests that the items within each part of the instrument consistently measure the intended constructs, making the tool reliable for further research.

Data collection

Data collection was conducted through face-to-face interactions with the participants. This method allowed for the direct administration of the computer literacy exam and the HIT utilization questionnaire, ensuring that participants fully understood the questions and could seek clarification if needed. The face-to-face method also facilitated the establishment of rapport between the researchers and participants, enhancing the quality of the data collected. By engaging with participants in a controlled setting, the researchers could minimize distractions and other potential sources of bias, thereby ensuring the reliability of the responses. The data collection process was conducted in a manner that respected the time and privacy of the participants, with sessions scheduled at convenient times to avoid disrupting their work.

Data analysis

The study's data were analyzed using descriptive and inferential statistical methods. Descriptive statistics were used to summarize and describe the basic features of the data, including frequency distributions, percentages, and measures of central tendency and variability, such as Mean±SD. This analysis provided a comprehensive overview of the participants' computer literacy levels and their utilization of HIT in documentation and care planning. The Kolmogorov-Smirnov test was used to check the data normal distribution, and the $P>0.05$, indicating the normal distribution of the data. Therefore, the Pearson r correlation coefficient was used to determine the strength and direction of the association between the main variables. The analysis was conducted using SPSS software, version 25, a widely recognized statistical software package, which ensured the accuracy and validity of the results set at 0.05 alpha level of significance.

Results

Table 2 provides a demographic overview of the respondents, revealing that most of the subjects were female (67.2%), aged 31 to 40 years (48.4%), held a college degree (53.9%), and 16 to 20 years of experience (31.1%). Lastly, most of them (82.8%) had not received formal training in informatics.

Table 2. Demographic characteristics of the respondents

Variables		No. (%)
Sex	Female	86 (67.2)
	Male	42(32.8)
Age (y)	30 and below	16(12.5)
	31–40	62(48.4)
	41–50	48(37.5)
	51–60	2(1.6)
Educational attainment	College degree	69(53.9)
	MS student	41(32)
	MS	18(14.1)
Nursing experience (y)	5 and below	14(10.9)
	6 to 10	20(15.6)
	11 to 15	36(28.1)
	16 to 20	40(31.3)
	21 and above	18(14.1)
Formal training in informatics	Yes	22(17.2)
	No	106(82.8)

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In the context of the staff nurses' levels of computer literacy, Table 3 shows that they are proficient in basic concepts, Microsoft Word, and Microsoft Excel. However, the mean score for Microsoft PowerPoint and basic troubleshooting indicates an intermediate level of proficiency.

Table 4 provides insights into how staff nurses utilize HIT for nursing documentation. The Mean±SD, are reported for each item, along with an interpretation based on the level of agreement. The highest proficiency was noted in accessing previous patient records and histories through HIT systems, with a mean score of 4.50±0.52, interpreted as "strongly agree." Other areas where nurses reported strong proficiency include ensuring data security (41±0.54) and finding electronic documentation more reliable than paper charting (4.33±0.77). On the lower end, skills in customizing electronic templates and troubleshooting technical issues scored 3.55±0.92 and 3.36±1.03, respectively, both interpreted as "somewhat agree." The overall weighted mean of 4.04 indicates a general agreement on the effective use of HIT in nursing documentation.

Table 3. Staff nurses' level of computer literacy

Computer Literacy Area	Mean±SD	Interpretation
Basic Concepts	7.8±0.55	Proficient
Microsoft Word	8.51±0.65	Proficient
Microsoft Excel	7.21±0.58	Proficient
Microsoft PowerPoint	6.83±0.73	Intermediate
Basic Troubleshooting	6.02±0.8	Intermediate

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Table 4. Utilization of HIT for nursing documentation

HIT for Nursing Documentation	Mean±SD	Interpretation
I am proficient in navigating EHR systems for patient documentation.	4.25±0.69	Agree
I can efficiently input and retrieve patient data using HIT systems.	4.12±0.7	Agree
I effectively utilize HIT to track patient progress and outcomes.	3.93±0.81	Agree
I am skilled at customizing electronic documentation templates to suit specific patient needs.	3.55±0.92	Somewhat agree
I can troubleshoot basic technical issues while using HIT systems for documentation.	3.36±1.03	Somewhat agree
I am confident in ensuring data security and patient privacy when using HIT systems.	4.41±0.54	Agree
I can accurately document patient care activities in EHRs with minimal errors.	4.02±0.63	Agree
I find electronic documentation complete and more reliable than traditional paper charting.	4.33±0.77	Agree
I can easily access previous patient records and histories through HIT systems.	4.5±0.52	Strongly agree
I efficiently use HIT systems to share documentation with other healthcare professionals.	4.2±0.61	Agree
Weighted mean=4.04	-	Agree

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Table 5 presents the utilization of HIT in nursing care planning. The mean scores reflect how comfortable and proficient nurses use HIT tools for various aspects of care planning. The highest mean score of 4.40±0.63 was observed for improving the accuracy and efficiency of care planning due to HIT, indicating strong agreement among nurses. Other high-score areas include electronic tools for updating care plans (4.37±0.73) and prioritizing patient care activities (4.26±0.73). Areas requiring further development include adjusting care plans based on patient condition changes (3.53±0.92) and ensuring care plans align with patient preferences (3.93±0.83). The overall weighted mean of 4.15 suggests that nurses generally agree on the effective use of HIT in care planning.

Table 6 highlights the correlation between the level of computer literacy among staff nurses and their utilization of HIT for documentation and care planning. Significant

Table 5. Utilization of HIT for nursing care planning

	HIT (IT) for Nursing Care Plan	Mean±SD	Interpretation
1.	I am comfortable using electronic tools to develop and update patient care plans.	4.37±0.73	Agree
2.	I am skilled at integrating evidence-based guidelines into electronic care plans.	4.03±0.64	Agree
3.	I effectively use HIT to set and monitor patient care goals.	3.81±0.81	Agree
4.	I can efficiently adjust care plans using HIT based on changes in patient conditions.	3.53±0.92	Somewhat agree
5.	I am confident using HIT systems to prioritize and organize patient care activities.	4.26±0.73	Agree
6.	I can collaborate with other healthcare team members through HIT systems to create comprehensive care plans.	4.1±0.71	Agree
7.	I am proficient in using HIT to ensure care plans are aligned with patient preferences and values.	3.93±0.83	Agree
8.	I find that using health IT improves the accuracy and efficiency of care planning.	4.4±0.63	Agree
9.	I can use HIT to track the outcomes of care plans over time.	4.21±0.7	Agree
10.	I efficiently utilize HIT for patient and family education as part of the care planning process.	4.12±0.71	Agree
	Weighted mean=4.15	-	Agree

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Table 6. Correlation, computer literacy, and utilization of HIT

Computer Literacy Area	HIT for Documentation			HIT for Nursing Care Plan		
	Pearson r	P	Interpretation	Pearson r	P	Interpretation
Basic concepts	0.901	0.027	Significant	0.101	0.809	Not significant
Microsoft Word	0.919	0.026	Significant	0.148	0.815	Not significant
Microsoft Excel	0.912	0.038	Significant	0.142	0.826	Not significant
Microsoft PowerPoint	0.908	0.034	Significant	0.111	0.822	Not significant
Basic troubleshooting	0.895	0.036	Significant	0.109	0.815	Not significant

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positive correlations were found between computer literacy areas (basic concepts, Microsoft Word, Microsoft Excel, Microsoft PowerPoint, and basic troubleshooting) and the utilization of HIT for documentation, with correlation values ranging from 0.895 to 0.919 and P between 0.026 and 0.038. These results indicate that higher levels of computer literacy are significantly associated with more effective use of HIT in documentation. However, the correlations between computer literacy and the use of HIT for nursing care planning were not significant, with correlation values ranging from 0.101 to 0.148 and P between 0.809 and 0.826. This suggests that while computer literacy positively impacts documentation practices, its influence on care planning is less pronounced.

Discussion

The demographic analysis in this study highlights several implications for enhancing HIT utilization and computer literacy among nursing staff. The broader nursing workforce trends in a tertiary hospital, dominated by young female individuals, imply a flexible and potentially adaptive workforce. This demographic composition suggests a high potential for engagement in HIT-related training programs, especially those that employ interactive and collaborative learning approaches well-suited to younger adults (Nguyen et al., 2021). Moreover, the substantial representation of nurses with college degrees, as well as a notable portion with master's degree units or completed master's degrees, indicates a foundational level of education that can be further leveraged to enhance technology skills and critical thinking in HIT applications. Studies have shown that higher educational attainment in nursing correlates with a greater willingness and capacity to engage in continued learning, which could facilitate the uptake of new HIT skills and improve patient care outcomes (Alotaibi & Federico, 2017; Pangandaman, 2018). The diversity in nursing experience within the sample, ranging from newly practicing nurses to those with over two decades of experience, also has implications for training. Younger, less experienced nurses might benefit from training that builds computer literacy and situates HIT use within practical, patient-centered care. Conversely, for more experienced nurses, training could focus on updating existing skills and integrating HIT proficiency with their clinical expertise, which may support better data management and decision-making in complex cases (Kleib et al., 2021).

In the context of the computer literacy level of staff nurses, the results reveal that while most nurses are highly proficient in fundamental applications like Microsoft Word and basic computer concepts, technical areas such as PowerPoint and troubleshooting present challenges. These gaps reflect a trend in the literature, where health care professionals are adept with basic software applications but lack confidence in advanced technical tasks (Pangandaman, 2023; Pfob et al., 2021; Tegegne et al., 2023). Such gaps have critical implications for HIT utilization, as advanced skills are increasingly needed for navigating complex health information systems (Pfob et al., 2021).

Regarding HIT utilization for nursing documentation, this study reveals that nurses are proficient in navigating EHR systems, ensuring data security, and utilizing electronic documentation tools. The highest proficiency levels were noted in accessing previous patient records and ensuring data security, reflecting a strong understanding of and confidence in using HIT for these critical tasks. These findings are consistent with the work of Kritsotakis et al. (2021), who reported that high levels of computer literacy among nurses were associated with more efficient and secure management of EHRs (Kritsotakis et al., 2021). However, the lower scores in customizing electronic documentation templates and troubleshooting technical issues observed in this study suggest areas where further training could enhance HIT utilization, making the documentation process more efficient and

tailored to patient needs. This finding aligns with studies emphasizing the need for continuous training to address specific weaknesses in HIT use among nursing staff (Kleib et al., 2021; Tegegne et al., 2023).

Regarding the utilization of HIT for nursing care planning, the study found that nurses are generally comfortable using electronic tools to develop and update care plans, integrate evidence-based guidelines, and prioritize patient care activities. The highest agreement was seen in the perceived improvement in the accuracy and efficiency of care planning due to HIT. Nonetheless, the lower scores in adjusting care plans based on changes in patient conditions and ensuring alignment with patient preferences indicate areas that require further development. This finding suggests that while HIT is effectively used in routine care planning tasks, its application in dynamic and patient-centered care adjustments could be improved. This observation aligns with the literature results that while HIT has significantly enhanced the efficiency of routine tasks, its potential for supporting more complex, individualized care planning is not yet fully realized (Amiri et al., 2020; Kritsotakis et al., 2021).

The correlation analysis in this study further underscores the significance of computer literacy in the effective use of HIT for nursing documentation. Strong positive and significant correlations were found between computer literacy and HIT utilization for documentation. This finding highlights the importance of enhancing computer literacy to improve documentation practices, as higher proficiency in computer skills translates to more effective use of HIT systems. These results are supported by a study that found that nurses with higher informatics competencies were more adept at utilizing HIT for documentation purposes (Alexopoulos et al., 2022). Conversely, the correlations between computer literacy and HIT utilization for nursing care planning were not significant, indicating that factors other than computer literacy may play a more critical role in this aspect of nursing practice. This outcome could be attributed to the complexity of care planning, which may require technical skills, clinical judgment, and experience (Hamann & Bezboruah, 2020; Piscotty et al., 2015).

The study emphasizes the critical role of computer literacy in maximizing the benefits of HIT in nursing documentation. While nurses are generally proficient, targeted improvements in specific areas of computer literacy could further enhance their ability to utilize HIT effectively, particularly in more complex tasks such as care planning and troubleshooting. The findings suggest that healthcare institutions should focus on comprehensive computer literacy training to optimize HIT utilization, ultimately improving patient care outcomes. This recommendation is consistent with the literature that advocates for ongoing education and training to keep pace with the evolving technological demands in healthcare (Kleib et al., 2021; Nguyen et al., 2021; Tegegne et al., 2023).

This study presents several limitations that impact the generalizability and scope of its findings. Due to staff diversity, nurses' demographic characteristics may not fully represent nurses across other institutions, especially in rural or primary care environments. The technology of the tertiary hospital may not represent the updated informatics competencies required in the clinical setting in other locales or regions. The limited number of participants with formal training in informatics also constrains the analysis, making it challenging to assess the impact of informatics education on HIT use comprehensively. Finally, the study's cross-sectional design captures only a single point in time, limiting insights into how computer literacy and HIT utilization may evolve with ongoing experience or training.

Conclusion

The findings of this study underscore the pivotal role that computer literacy plays in the effective utilization of HIT among staff nurses, particularly in the realm of nursing documentation. High levels of proficiency in basic computer applications, such as Microsoft Word and general computer concepts, are strongly correlated with improved HIT usage, leading to more efficient and secure documentation practices. However, the study also reveals significant areas for improvement, particularly in more advanced technical skills like troubleshooting and complex software functions, which are crucial for maximizing the benefits of HIT. Despite the positive correlation between computer literacy and HIT use in documentation, the lack of a significant relationship with nursing care planning suggests that other factors, such as clinical judgment and experience, maybe more influential in this domain. These insights highlight the need for targeted, ongoing training programs that enhance basic computer skills and address more specialized competencies. By doing so, healthcare institutions can better equip their nursing staff to fully leverage HIT, thereby improving both the efficiency and quality of patient care.

Ethical Considerations

Compliance with ethical guidelines

The study adhered to all ethical standards, focusing on obtaining the necessary permissions and ensuring compliance with ethical guidelines. Before the study commenced, permissions were obtained from the appropriate hospital authorities and ethics committees. This process included obtaining approval from Institutional Review Boards (IRBs) to ensure that the study met all ethical standards, including protecting participants' rights and the confidentiality of their information. The Mindanao State University-College of Health Sciences college-based Ethics Committee approved the study (CHS-REC-0817-2021). Written informed consent was obtained from all participants before they were included in the study. The confidentiality of the participants' information was strictly maintained throughout the study, with data being anonymized and stored securely to prevent unauthorized access. These ethical considerations were crucial in ensuring that the study was conducted in a manner that respected the dignity and rights of the participants while also ensuring the validity and reliability of the research findings.

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Authors' contributions

All authors contributed equally to the conception and design of the study, data collection and analysis, interception of the results and drafting of the manuscript. Each author approved the final version of the manuscript for submission.

Conflict of interest

The authors declared conflict of interest.

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